Title
Southern California Channel Islands Bibliography, through 1992

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Comprises 4035 references to the scientific literature on Southern California's Channel Islands. The Bibliography was compiled by the Channel Islands National Marine Sanctuary and is presented here in a February 1993 version.

The Santa Barbara Museum of Natural History presents a California Channel Islands Bibliography on its website. It has more recent references and overlaps considerably with this bibliography. However this bibliography has some references not in their database, so it is maintained in original form.

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# 1. Abbott PL, Kies RP, Bachmann WR, Natenstedt CJ (San Diego
State Univ., Dep. Geol. Sci., San Diego, CA; Stanford Univ.,
Stanford, CA; Nor. Res. Cent., Norway; Union Oil Co., United-
States). A tectonic slice of Eocene strata, northern part of
California continental borderland. Larue DK, Steel RJ. in Cenozoic
marine sedimentation; Pacific margin, U.S.A.: Society of Economic
Paleontologists and Mineralogists, Pacific Section ; Cenozoic
marine sedimentation; Pacific margin, U.S.A.; 1983 May 18;
Sacramento, CA,. Stanford Univ., Stanford, CA: Society of Economic
Paleontologists and Mineralogists, Pacific Section; 1983. p.
151-168.  29 refs., illus., 1 table, strat. cols., sect., sketch
maps. sedimentation/tectonic controls/sedimentary rocks/clastic
rocks/conglomerate/sedimentary
petrology/paleogeography/Eocene/Paleogene/Tertiary/Pacific
Coast/continental borderland/San Miguel Island/Santa Cruz
Island/Santa Rosa Island/San Nicolas Island/rhyolite/volcanic
rocks/SRD.

# 2. Atwood JL, Elpers MJ, Collins CT. Survival of breeders in
Santa Cruz Island and mainland California scrub jay populations.
Condor 1990;92(3):783-788 AUTH AFFL: Manomet Bird Obs., Box 936,
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fspub/Aphelocoma coerulescens insularis/communal breeding/Santa
Cruz Island/SRD.

# 3. Belyea RR. Stratigraphy and depositional environments of
the Sespe Formation, northern Peninsular Ranges, California
[dissertation]. : San Diego State University; 1984.
Master's; 206 p., 101 refs., illus., 9 tables.
Orange County/Sespe Formation/Vaqueros Formation/Jolla Vieja
Formation/stratigraphy/Eocene/Miocene/sedimentation/environment/f
luvial environment/Arizona/channels/Cristianitos fault
zone/Paleogene/Tertiary/grabens/Gypsum
Canyon/Jurassic/lithofacies/lower
Miocene/Neogene/Mexico/paleogeography/Peninsular
Ranges/provenance/San Joaquin Hills/Santa Ana Mountains/Santa Cruz
Island/Santiago Creek/Sonoran Arc/Southern
California/transgression/upper Eocene/SRD.

# 4. Bereskin SR, Edwards LN. Mid Tertiary stratigraphy,
southwestern Santa Cruz Island. in Geology of the Northern Channel
Islands. Weaver, D. W. ed. Los Angeles, CA: Am. Assoc. Petroleum
Geologists and Soc. Econ. Paleontologists and Mineralogists,
Pacific Sec.; 1969. p. 68-79.
illus., table, faunal lists.
Mid-Tertiary formations on southwestern Santa Cruz Island are: (1)
Vaqueros Formation -- paleoecologic and stratigraphic evidence
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indicate an inner shelf to nonmarine environment (Zemorrian to lower Saucesian); Rincon Formation -- a middle to outer shelf bathymetry, shoaling to the east or northwest (Saucesian); San Onofre Breccia -- inner to middle shelf with portions possibly nonmarine, thickens and coarsens to the northeast toward a high (Saucesian to Relizian); Monterey and Blanca Formations -- Beechers Bay Member of the Monterey was deposited at depths increasing with time from middle shelf to bathyal, paleoslope dipped southwest (Relizian to Luisian and possibly Mohnian).
fspub/mid-tertiary formations/Santa Cruz Island/SRD.

5. Liston A, Rieseberg LH, Mistretta O. Ribosomal DNA evidence for hybridization between island endermic species of Lotus. Biochem Syst Ecol. Oxford : Pergamon Press. 1990. 1990;18(4):p.239-244
Foreign Includes references. Article.
lotus/lotus scoparius/interspecific hybridization/ribosomal dna/restriction mapping/endangered species/introgression/california//lotus scoparius ssp/traskiae/lotus argophyllus ssp/ornithopus/san clemente island/california/genetic assimilation/AGRICOLA.

6. Pennings SC. Spatial and temporal variation in recruitment of Aplysia californica Cooper: Patterns, mechanisms and consequences. J. EXP. MAR. BIOL. ECOL 1991;146(2):253-274.
Recruitment of the sea hare, Aplysia californica , was examined at 10 rocky reefs off the coast of Santa Catalina Island, CA, for up to 3 yrs or more. A. californica recruit primarily to the red alga Plocamium cartilagineum . Recruitment intensity (number of recruits/kg Plocamium) differed dramatically but consistently between reefs, and varied between months. Recruitment during Jan-Feb probably consists of larvae spawned locally, in the Channel Islands area, during the summer peak in reproduction. Recruitment during Jun to Sept probably consists of larvae spawned in the Baja, California, Mexico, region which are carried north by summer currents. Reproduction is cued by high temperatures in the summer, and occurs over a large range of body sizes. Winter recruits that survive to the summer reproduce at masses of 500 g or more, while summer recruits reproduce the same season at masses of around 0.75 g. Survival of winter recruits is low, but survivors have high fecundity because of their large body size. The asynchronous seasonal reproductive patterns of Channel Island and Baja California populations may be important to the population dynamics of these populations since they are linked by a common larval pool.
population dynamics/reproduction/marine molluscs/Aplysia california/Plocamium cartilagineum/seasonality/temporal variation/INE/USA/ California/Santa Catalina Island/IE/Mexico/Baja California/recruitment/ASFA.

7. BERELSON W M. THE FLUSHING OF TWO DEEP-SEA BASINS SOUTHERN CALIFORNIA BORDERLAND. LIMNOL OCEANOGR36 (6). 1991. 1150-1166.
DEP. GEOLOGICAL SCIENCES, UNIV. SOUTH. CALIF., LOS ANGELES, CALIF. 90089-0740. BA.
A time series of water temperature, salinity, and nutrient measurements has been made in San Pedro and San Nicolas Basins of the southern California borderland between 1977 and 1988. These basins exhibit temporally coincident changes in temperature and nutrient content defining a period of basin flushing (1982-1984) and a period of stagnation (1984-1987). During the flushing period, cooler, oxygen- and NO3--rich water replaces warmer, oxygen- and NO3--depleted bottom water. Flushing produces a decrease of 0.2.degree.C in the average temperatures of San Pedro Basin bottom

water (790-900 m) and an increase in the average oxygen content by 12 .mu.M. These values are 0.1 and 3 for San Nicolas Basin (1,400-1,800 m). The residence time of water in San Pedro Basin during the flushing period is 12 .+-. 6 months and 9 .+-. 2 months in San Nicolas Basin. A box model approach, constrained by the time-series data for the stagnation period, was used to determine values of the effective vertical eddy diffusivities for the 790-m horizon in San Pedro Basin and 1,400-m horizon in San Nicolas Basin (1.3 .+-. 0.4 and 9.9 .+-. 3.4 cm2 s-1 respectively).
OXYGEN CONTENT TEMPERATURE SALINITY NUTRIENT LEVEL/Biosis.

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Fed govt report evapotranspiration removes a significant amount of water from the owens valley, which is a water source for los angeles. evapotranspiration estimates were made in seven locations varying in geohydrology and vegetation. estimate methodologies included the bowen-ratio, eddy-correlation, and penman combination methods. air temperature, vapor-density deficit, and net radiation appear to directly effect evapotranspiration, which ranges from 301 mm/year in low-density scrub sites to 1137 mm/year in high-density meadows. (21 graphs, 1 map, 4 photos, 56 references, 8 tables).
Ecology, terrestrial/evapotranspiration/monitoring, env-water/ california/ecology, plant/hydrology/plant cover/climatolog/EnviroLine.

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California/sedimentary petrology/sedimentary rocks/clastic rocks/conglomerate/sedimentation/environment/coastal environment/sedimentary structures/environmental analysis/San Diego County/Eocene/Paleogene/Tertiary/United States/Southern California/San Diego/continental borderland/textures/marine transport/rivers/channels/alluvial fans/coastal plains/deltas/lithofacies/shelf environment/submarine environment/cyclic processes/transgression/progradation/basins/fan deltas/GEOREF.

11. Tibby RE, Terry RD. Physical and chemical characteristics of water over the sourthern California shelf. Oceanographic Survey of the Continental Shelf Area of Southern California. 1959(20):138-168
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NPS/Physical Oceanography/Oceanography.

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Performer: Environmental Research Lab.-Narragansett, Newport, OR. Mark O. Hatfield Marine Science Center.
Macrobenthic data from samples taken in 1980, 1983 and 1985 along a pollution gradient in the Southern California Bight (USA) were analyzed at 5 taxonomic levels (species, genus, family, order, phylum) to determine the taxon and sample size sufficient for assessing pollution impacts on 5 measures of community structure. Two statistical designs were compared: a t-test for differences between reference and impacted stations where the error term was (1) among-year variation at the reference station (impact effects design), (2) replicate (within-station) sampling error (location effects design). The estimated statistical power (1-Beta) to detect impacts was a function of type and magnitude of impact, level of taxonomic identification, the statistical design, and the sample size (ni = number of sampling years at the reference station for the impact effects design, and nl = number of replicate samples per station for the location effects design). Four replicate 0.1 sq m van Veen grabs per station were needed to ensure community-wide, unbiased estimates of Shannon's, 1-Simpson's and McIntosh's Index. Family-level identification appeared to be a good choice for assessing pollution impacts at the study site as it ensured a high probability (1-Beta > or = to 0.80) of detecting intermediate or larger impacts on most (impact effects design) or all (location effects design) of 5 measures of community structure when ni and nl > or = to 4. The level of taxonomic identification and sample size should be considered along with other sampling variables (e.g. sample unit size, sieve mesh size) when seeking a statistically rigorous, cost-effective study design sufficient to meet pollution assessment objectives.
Sample preparation/Classification/Marine ecosystems/Site surveys/Water pollution sampling/Experimental design/Systematics/Santa Monica Bay/Reprints/Environmental impact assessments/Benthos/Taxonomy/Environmental monitoring/Water pollution effects/Southern California Bight/NTIS.

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An American fishery on the Pacific saury (Cololabis saira Brevoort) of the California Current has been considered intermittently over the last three decades. Recently, interest in the eastern Pacific stocks has increased due to rising prices and diminished catches of this species in the western Pacific. Japanese, Soviet, and American exploratory research on this species in the eastern Pacific has been intensified during the past several years. As yet no fishery has developed on this species in the California Current region. It is the purpose of this paper to review two bodies of data on saury abundance collected on cruises of the California Cooperative Oceanic Fisheries Investigations (CalCOFI) conducted jointly by the University of California, Scripps Institution of Oceanography and NOAA'S National Marine Fisheries Service Laboratory, LaJolla, Calif. In addition to summarizing current data collected by surveys in the California Current area, an attempt will be made to answer the following questions: What is the range of natural fluctuations in abundance of Pacific saury in the California Current survey area. What seasons or areas within the California Current area are

the most likely for scouting for fishable saury concentrations.
Fishes/Ocean currents/Abundance/Exploration/Resources/Surveys/
Fisheries/Sampling/Food supply/California/Cololabis
saira/California current/NTISNOAA/NTIS.

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eddy dynamics in the California Current system. Oceans '89OCEANS
'89: THE GLOBAL OCEAN. VOLUME 3: NAVIGATION, REMOTE SENSING,
UNDERWATER VEHICLES/EXPLORATION 1989:pp. 1009-1014 Scripps Inst.
Oceanogr., Mail Code A030, La Jolla, CA 92039, USA. Recent advances
in observational and modeling technology have brought a mesoscale
ocean analysis and short-range forecasting (nowcasting) within
reach. The observational tools comprise a new generation of remote-
sensing instruments, some of which are already orbiting or soon to
be launched, supplemented by in situ oceanic and atmospheric
observations. The modeling progress stems from recent research in
developing eddy-resolving models and nesting these regional models
in larger-scale general circulation models. This paper describes an
integrated approach, using all these techniques, to study mesoscale
eddy dynamics in the California Current system.
mesoscale features/oceanic eddies/INE, California Current/
mathematical models/prediction/satellite sensing/oceanographic
data/ meteorological data/ocean circulation/dynamical
oceanography/OceanAbstracts.

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* ORDER COLEOPTERA ** SUBORDER POLYPHAGA *** SUPERFAMILY
BUPRESTOIDEA **** BUPRESTIDAE ***** AGRILUS CHALCOGASTER, AGRILUS
HESPENHEIDEI, AGRILUS INHABILIS, AGRILUS INHABILIS CHALCOGASTER,
AGRILUS INHABILIS CUPRINUS, AGRILUS INHABILIS INHABILIS, AGRILUS
PULCHELLUS, AGRILUS PULCHELLUS SPECIES GROUP, AGRILUS
RUBROVITTATUS, AGRILUS UTAHENSIS, ENGYAULUS PULCHELLUS VAR.
MARTINI. LAND & FRESHWATER ZONES/NEARCTIC
REGION/USA/CALIFORNIA/INYO COUNTY/ NEW SUBSPECIES/NEW MEXICO/EDDY
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distribution/California channel
islands/seabirds/reproduction/breeding/phenology.

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Calif., USA; Univ. Windsor, CAN.
sedimentary rocks/sedimentation/sedimentary
petrology/geochemistry/provenance/clastic rocks/trace
elements/conglomerate/Jolla Vieja Formation/Sespe Formation/Poway

Conglomerate/Eocene/Paleogene/Tertiary/clasts/tuff/pyroclastics and glasses/data/rhyolitic composition/statistical analysis/Las Palmas Gravel/Sonora/Baja California/Southern California/California Channel Islands/geology/sedimentary petrology/Channel Islands National Marine Sanctuary/CINMS.

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geomorphology/landform evolution/coastal/Santa Cruz Island/erosion/fspub/gullies/watersheds/remote sensing/SRD.

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oceanography/continental shelf/geophysical surveys/sonar methods/acoustical surveys/reflection/seismic surveys/tectonics/Anacapa Passage/Monterey Formation/folds/Santa Cruz Island Fault/Dume Fault/anticlines/Santa Rosa Island Fault/high resolution methods/SRD.

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A new serotype of calicivirus was isolated from California sea lions (Zalophus californianus) with severe vesicular disease. Neutralizing antibodies were found in 27 of 82 (32.9%) serum samples from California sea lions and in 15 of 146 (10.3%) serum samples from Steller sea lions (Eumetopias jubatus) tested. The seropositive animals were widely dispersed along the margins of the eastern Pacific basin, from the Bering Sea to the Santa Barbara Channel. Seropositive samples were found from as early as 1976 through the present time. This new calicivirus serotype, San Miguel sea lion virus type 13, was inoculated into weaned pigs, resulting in induction of severe vesicular disease, which spread to all pigs, including uninoculated pen contacts. Virus was continually shed by most of the pigs throughout the 2-week duration of the experiment. pigs/calicivirus/infectivity/serotypes/isolation/characterization /zalophus/inci dence/mammals/geographical distribution/great basin/pacific slope/eumetopias jubatus/AGRICOLA.

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SCRIPPS INSTITUTION OCEANOGRAPHY, GEOL. RES. DIV., UCSD, LA JOLLA, CALIF. 92093-0220. BA.
We measured concentrations of the two cosmogenic nuclides 32P and 7Be and radiogenic 234Th in the Southern California Bight during June and October 1989 in water depths up to 80 m. The depth of the mixed layer was 18 and 28 m, respectively, and the thermocline was well developed. The depth profiles of 32P are similar to an earlier profile in September 1987 but the column inventories are .apprx. 5 times lower. 32P activity is fairly uniform in the mixed layer and decreases monotonically with depth below it. On the other hand, 7Be concentrations are nearly uniform to depths of 60-80 m. The integrated inventories of both dissolved 32P and 7Be are appreciably lower, by factors of 5-10, than their expected secular equilibrium concentrations for their mean oceanic injection rates. We show that the low inventories of 32P and 7Be are not due primarily to their decreased injection rates but rather to vertical mixing. The vertical eddy diffusivity and the consequent sustained new production based on upward NO3-fluxes have been estimated as > 7 cm s-1 and .apprx. 1 g C m-2 d-1 from the observed profiles of .BETA.e, 32P, and NO3-.
THORIUM-234 THERMOCLINE NITROGEN OXIDE/Biosis.

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The report provides a catalog of measurements of biological effects of pollutants along the Pacific Coast. Information reported includes the types of tests performed, sampling dates, locations, number of stations, amounts of data generated, and bibliographic citations for published results. The catalog is part of a task of the National Status and Trends Program (NS&TP) to review and evaluate historical measurements of biological effects and to help identify candidate measures for possible use in future NS&TP monitoring of marine environmental quality. The information portrayed in the catalog was generated from an on-line data base established for the task. The catalog includes 170 studies or surveys conducted from 1951 to the present, in which some 59,000 samples were tested or analyzed using various methods. Most studies were conducted between 1972 and 1985. The most frequently studied areas were near the metropolitan areas bordering Puget Sound, the Southern California Bight, and San Francisco Bay. About 305 different types of tests were identified, based on evaluations of the details of methodological protocols. A total of 107 species and 16 communities were used as biological indicators.
Historical aspects/Environmental quality/Pacific Ocean/Coastal regions/Water pollution sampling/Tables Data/Site surveys/Biological indicators/Bioassay/Sediments/Estuaries/Toxic substances/Chemical compounds/Biological effects/Water pollution effects/Catalogs Publications/NTIS.

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National Weather Service, Salt Lake City, Utah. Western Region. The Catalina Eddy, a small-scale vortex in the bight of southern California, has long been a serious problem for the forecaster. It disrupts the normal stratus pattern and can cause marked cooling in the southern California coastal area. The eddy is shown to result when an eastward-moving upper trough nears southern California, with strong northerly surface winds prevailing along the California coast. An objective aid for predicting the eddy is presented. It was found that with a surface pressure gradient of five to ten millibars from 35N 125W to Los Angeles, positive vorticity advection resulting in vorticity values of seven to ten units at Los Angeles will generate the eddy. Primitive equation prognostic vorticity charts are shown to be highly useful in forecasting development of the Catalina Eddy. .
Weather forecasting/Sea breezes/California/Eddies/Atmospheric circulation/Meteorological charts/Atmospheric disturbances/Vortices/ Spaceborne photography/Catalina eddy/Santa Catalina Island/ESSA 6 satellite/ESSA 2 satillite/NTISNOAA/NTIS.

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Sardine and anchovy spawning was analyzed regarding its relation to sea-surface temperature and upwelling, using CalCOFI cruise data and Bakun's upwelling indices. Sardines spawn in a much wider temperature range (13 degree -25 degree C) than anchovy (11.5 degree -16.5 degree C). Two maxima of spawning occur in the California Current: at 15 degree C and 23 degree C. An additional peak is present in the Gulf of California at about 19 degree C. Only one maximum is evident for anchovy spawning, at about 14 degree C. The distribution of spawning as a function of upwelling was also analyzed for both species. There is a maximum for sardines at intermediate values of upwelling. There are two maxima for anchovy: a minor one at low levels of upwelling and a major one at the maximum values of upwelling. Sardines are eurythermic as compared to anchovies, but spawn only at intermediate values of upwelling, whereas anchovies are stenothermic but spawn at much wider ranges of upwelling, particularly at low and high values. spawning populations/surface temperature/upwelling/abiotic factors/ Engraulis mordax/Sardinops caerulea/INE, California Current/ISE, California Current/ISE, California Gulf/Oceanic Abstracts.

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Observations taken during the course of the Northern California Coastal Circulation Study (NCCCS) pilot experiment from March through August of 1987 show that shelf currents often converge near Cape Mendocino, resulting in offshore transport. This convergence occasionally, though not always, is accompanied by convergence in the large-scale winds. A cyclonic eddy, roughly 20 km in diameter, is commonly found on the south side of the Cape, where, on the shelf, the average currents are directed to the north. The water temperature in this area is colder than that observed north of the Cape, where the average current is to the south. Correlation between currents and the local wind near the Cape is lower than expected from previous results obtained during the Coastal Ocean Dynamics Experiment (CODE) conducted in the same general region, though farther south, along a straight section of the coast. Similarly, temperature and wind fluctuations at a given location are less correlated than they were during CODE. shelf currents/shelf dynamics/sediment transport/INE, USA, California, Cape Mendocino/OceanAbstracts.

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The primary purpose of Technical Support Study 8 was to provide information that would improve the representation of dry-deposition in modeling activities of the SJVAQS. The state of dry deposition measurement and modeling techniques were reviewed. A program of model development, field measurement and model evaluation was proposed. Inferential dry-deposition measurements were recommended to be performed as additions to the surface meteorology and air-quality measurements during summer 1990. Recommended direct

measurements of gaseous dry deposition have been postponed until summer 1991. A coordinate program of airborne and tower-based eddy-correlation measurements is being planned.
dry deposition/monitoring measurements/California, San Joaquin Valley/air quality/meteorology/PollutionAbstracts.

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Marine Algae.

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genetics/channel islands/populations.

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Note: Also available from NTIS as set of 48 reports PC E99, PB-296 657-SET. This document has been produced in compliance with Section 110(h)(1) of the Clean Air Act amendments of 1977. The Federally enforceable regulations contained in the State Implementation Plans (SIP's) have been compiled for all 56 States and territories (with the exception of the Northern Mariana Islands). They consist of both the Federally approved State and/or local air quality regulations as indicated in the Federal Register and the Federally promulgated regulations for the State, as indicated in the Federal Register. Regulations which fall into one of the above categories as of January 1, 1978, have been incorporated. As mandated by Congress, this document will be updated annually. State and/or local air quality regulations which have not been Federally approved as of January 1, 1978, are not included here; omission of these regulations from this document in no way affects the ability of the respective Federal, State, or local agencies to enforce such regulations.
Air pollution abatement/Regulations/California/National government/State government/Local government/Law/Jurisprudence/Law enforcement/Implementation/air pollution planning/Santa Barbara County/air pollution/Environmental Management/Environmental Planning/resource management.

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Continental Borderland Symposium; 1975 Sep 22; Santa Cruz Island. : Am. Assoc. Pet. Geol., Pac. Sect.; 1976. Misc. Publ. 24. p. 196-215. 42 refs., illus., tables, sketch maps.
fspub/petrology/igneous rocks/volcanic/Miocene/southwest/Santa Cruz Island/basalt/andesite/dacite/lava flows/flow breccia/pyroclastics/petrography/geochemistry/magnesia/iron/silic a/alumina/pota sh/titanium/SRD.

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illus., tables.
The Pozo Formation is at the base of the Tertiary section, and is overlain successively by the Canada, Jolla Vieja, and Cozy Dell formations. Numerous faunules and zonules are recognized; they are, from bottom to top: Turritella-Ostrea faunule, Cibicides-Trochammina zonule (the Pozo Formation), Eponides zonule, Bulimina-Plectofrondicularia zonule (the middle Canada Formation), and the Cibicides-Cassidulina zonule (the upper part of the Canada Formation). Environmental conditions are discussed and faunal lists are included. fspub/Pozo Formation/Santa Cruz Island/SRD.

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AUTH AFFL: Dep. Biol. Sci., Univ. California, Santa Barbara, CA 93106. Intertidal populations of black abalone Haliotis cracherodii at Santa Cruz Island, California, vary in density among surge channels from < 1 to 126 abalone/m super(2). Dense populations are characterized by high levels of intraspecific secondary substratum use ("stacking") for attachment surfaces, though it is rare in low density areas. Use of shell surfaces by black abalone appears not to be an evolved adaptive strategy. Individuals in stacks fed significantly more than expected, yet solitary abalone next to stacks shared food trapped by stacks. Laboratory experiments showed that stacking is density dependent and probably the result of limitation of primary attachment space.
fspub/population density/spatial distribution/settling behavior/marine mollusks/secondary substratum/stacking behavior/Santa Cruz Island/SRD.

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illus.
physical geology/caves/Painted Cave/Santa Cruz Island/SRD.

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A quasi three-dimensional, finite difference model, that simulates freshwater and saltwater flow separated by a sharp interface, has been developed to study layered coastal aquifer systems. The model

allows for regional simulation of coastal groundwater conditions, including the effects of saltwater dynamics on the freshwater system. Vertically integrated freshwater and saltwater flow equations incorporating the interface boundary condition are solved within each aquifer. Leakage through confining layers is calculated by Darcy's law, accounting for density differences across the layer. The locations of the interface tip and toe, within grid blocks, are tracked by linearly extrapolating the position of the interface. The model has been verified using available analytical solutions and experimental results. Application of the model to the Soquel-Aptos basin, Santa Cruz County. California, illustrates the use of the quasi three-dimensional, sharp interface approach for the examination of freshwater-saltwater dynamics in regional systems. Simulation suggests that the interface, today, is still responding to long-term Pleistocene sea level fluctuations and has not achieved equilibrium with present day sea level conditions. fresh water/salt water intrusion/aquifers/flow in stratified systems/hydrodynamics/groundwater/three dimensional models/simulation models/coastal areas/california/AGRICOLA.

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El Nino-Southern Oscillation (ENSO) events cause a decline in upwelling-based primary productivity throughout the California Current system and southern Gulf of California. However, in the Canal de Ballenas, central Gulf of California, primary productivity is based on tidal mixing and appears unaffected by ENSO events. Between the ENSO year of 1983 and the anti-ENSO year of 1985 we censused 4 piscivores (Bryde's whale Balaenoptera edeni ; common dolphin Delphinus delphis ; blue-footed booby Sula nebouxii and brown booby S. leucogaster) and 3 planktivores (fin whale B. physalus ; black storm-petrel Oceanodroma melania ; and least storm-petrel O. microsoma). For all species the number of individuals sighted per hour declined by 77 to 94% over the 3 yr period. This suggests that during ENSO events the Canal de Ballenas may serve as a refugium of high productivity and prey abundance for these highly mobile marine animals. Southern Oscillation/environmental effects/primary production/growth/plankton feeders/marine birds/marine mammals/refuges/ISE/California Gulf/Canal de Ballenas/El Nino phenomena/ASFA.

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U.S. GEOL. SURVEY MS496, 345 MIDDLEFIELD RD., MENLO PARK, CALIF. 94025, USA. BA. A decade of observation in South San Francisco Bay [California, USA] demonstrates that estuarine phytoplankton biomass fluctuates at the time scale of days to weeks, and that much of this variability is associated with fluctuations in tidal energy. During the spring seasons of every year from 1980-1990, episodic blooms occurred in which phytoplankton biomass rose from a baseline of 2-4 mg chlorophyll a m-3, peaked at 20-40 mg chlorophyll a m-3, and then returned to baseline values, all within several weeks. Each episode of biomass increase occurred during neap tides, and each bloom decline coincided with spring tides. This suggests that daily variations in the rate of vertical mixing by tidal stirring might control phytoplankton bloom dynamics in some estuaries. Simulation experiments with a numerical model of phytoplankton population dynamics suport this hypothesis. The model incorporates biological processes (light-dependent growth, zooplankton grazing, benthic grazing) and physical processes (sinking, vertical mixing)

as controls on the biomass distribution of phytoplankton in a 10-m water column. Numerical simulations indicate that phytoplankton dynamics are highly sensitive to the rate of vertical mixing (parameterized as an eddy diffusivity Kz), such that biomass increases rapidly at small Kz (5 m2 d-1), but not at large Kz (50 m2 d-1). Cyclic variation of Kz between 5 and 50 over a 14-d period (simulated neap-spring cycle) yields simulation results that are similar to bloom events observed in this estuary.
BIOMASS GRAZING GROWTH LIGHT EFFECT SEASONALITY TIDAL CYCLE TIDAL ENERGY VERTICAL MIXING SINKING CHLOROPHYLL A NUMERICAL MODEL SAN FRANCISCO BAY CALIFORNIA USA/Biosis.

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Metcalf & eddy inc, calif,.
Measured were groundwater and soil nitrogen and phosphorus concentrations beneath a rapid infiltration land application site located in hollister, calif. the site has received primary municipal effluent for 30 years. measurements were compared with measurements taken at adjacent locations outside the range of the land application system. after percolation through 7 m of unsaturated gravelly and sandy loams, total nitrogen values in the underlying aquifer approached values recorded at offsite control locations. influent values of 40.2 mg/l total nitrogen decreased to less than 4 mg/l in the shallow aquifer. nitrate-nitrogen did not pose a pollution hazard. effective phosphorus removal required percolation through greater amounts of the soil, but the sorption capacity of the soil has not been exhausted even after 30 years of continuous wastewater application. (4 diagrams, 5 graphs, 18 references, 2 tables).
Nitrogen/phosphorus/infiltration/wastewater disposal, land/ groundwater/water quality criteria/soil chemistry/soil analysis/aerated lagoons/california/water levels/epa conf pape/EnviroLine.

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feral pigs/Santa Cruz Island.

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of nitrate concentration in nitrogen-depleted subtropical surface waters. MAR. BIOL 1990;107(1):53-60.
Recent improvements in the analytical determination of nitrate and nitrite allow measurements of nanomolar concentrations in nitrogen-depleted surface waters, revealing variability not previously observable. The new methods allow direct observation of net nitrate consumption and production measured as changes in nitrate concentration over time in incubated samples of seawater. We find that nitrate concentrations in nitrogen-depleted surface waters show regional differences, and sometimes diel differences. The variability in nitrate concentration reflects differences in atmospheric inputs, in physical forcing, as well as in the biological processes of nitrate uptake and nitrification. Examples are shown from the Southern California Bight (1986-1987), the equatorial Pacific (Feb-Mar, 1988), and the eastern subtropical Atlantic (Mar-Apr, 1989). nitrate/nitrogen/marine environment/subtropical zones/Southern California Bight/Pacific Ocean/Equatorial Region/Atlantic Ocean/Eastern Region/nutrient concentrations/CSA Life Sciences Collection.

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Contract: N000146WR24027.
Performer: Naval Postgraduate School, Monterey, CA
An extensive Ocean Prediction Through Observation, Modeling, and Analysis (OPTOMA) domain, off Northern and Central California, was surveyed in November 1986, during OPTOMA 23. Surface dynamic height (SDH), sea surface temperature (SST), and other fields were mapped with a Gandin objective analysis (OA) model; stream function nowcasts and hindcasts of the mesoscale oceanic field were generated by a quasigeostrophic (QG) model, initialized and updated with OA fields of dynamic topography. The westward propagation, at 5-to-10 km/day, of an anticyclone was the predominant mesoscale event; cyclonic features were quasi-stationary. The Generalized Digital Environmental Model had accurate averages and ranges of values, but was not representative of the mesoscale field, Because the mesoscale field did not change much over the ten-day period, persistence fields scored well. QG hindcasts were most sensitive to data density, The transition in the autumn of 1986 in the California Current System was a chronic event; winds favorable for upwelling fluctuated and diminished in late Oct. but occurred during short periods through Dec. A balance of alongshore pressure gradient and wind stress at Monterey shifted from a maximum southward in late Nov. to maximum northward two weeks later. The northward nearshore flow was observed in satellite imagery, SDH and SSH OA fields, and in QG hindcasts.
Ocean currents/Nowcasting/Hindcasting/Ocean models/California current/OPTOMA Project/Theses/Eddies Fluid mechanics/NTIS.

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Accelerated sea level rise that is predicted to occur as a result of the greenhouse effect is likely to have a significant effect on the world's salt marshes. For salt-marsh vegetation to remain productive and even to survive in a period of rising sea level, the marsh must accrete sufficient sediment to maintain the marsh surface within an appropriate tidal range. Accretion and subsidence

were studied in three south San Francisco Bay salt marshes that differed greatly in subsidence over the past few decades. Marsh accretion as a result of sedimentation and peat of formation has been able to compensate for high rates of subsidence and the low rate of sea level rise and to maintain the elevation of the marsh surface above mean high water (MHW).
USA, California/INE, USA, California, San Francisco Bay/salt marshes/ greenhouse effect/sea level changes/sedimentation/peat/subsidence/ accretion/Oceanic Abstracts.

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A high-resolution, multi-level, primitive equation ocean model is used to examine the response to wind forcing of an idealized flat-bottomed oceanic regime along an eastern ocean boundary. A band of steady alongshore, upwelling favorable winds, either with or without alongshore variability, is used as forcing on both an f-plane and a beta -plane. In each experiment a wind-driven equatorward coastal jet and a poleward undercurrent are generated. In time the coastal jet and undercurrent become unstable and lead to the development of eddies and jets with relatively strong onshore and offshore directed flows. The results of this study support the hypothesis that steady wind forcing is one of several possible important generation mechanisms for eddies in the California Current System. wind-driven circulation/mathematical models/eddy flux/jets/INE, California Current/ISE, California Current/OceanAbstracts.

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The impacts of wastewater discharges in coastal waters are largely exhibited in sediment composition changes. Processes controlling the accumulation of organic material in sediments near submerged sewage outfalls are described. A simplified model is then formulated for predicting deposition and organic accumulation in surface sediments. The model is based on mathematical descriptions of coastal transport, particle dynamics, and organic carbon cycles and includes a second-order kinetic description for the coagulation and settling of sewage particles and natural organic material. Sample calculations are presented demonstrating the importance of coagulation and settling behavior and tidal motion in determining the pronounced changes in deposition and sediment composition near outfalls.
coastal water/wastewater discharges/sediments/outfalls/sewage/Southern California Bight/PollutionAbstracts.

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* PISCES ** SUPERCLASS GNATHOSTOMATA *** CLASS TELEOSTOMI ****
DIVISION TELEOSTEI ***** SUPERORDER PARACANTHOPTERYGII ******
GADIFORMES ******* SUBORDER GADOIDEI ******** MERLUCCIIDAE
********* MERLUCCIUS PRODUCTUS.
FEEDING/CARNIVOROUS FEEDING/PREDATION/PREY/EUPHAUSIIDAE (CRUSTACEA)
& SMALLER ZOOPLANKTON/PREY BIOMASS VARIABILITY CORRELATIONS WITH
FISHERY, NORTHERN PACIFIC/PREDATOR PREY INTERACTIONS/FISHERY
EFFECTS ON ZOOPLANKTON PREY BIOMASS, NORTHERN PACIFIC/PACIFIC
OCEAN/NORTHERN PACIFIC/CALIFORNIA CURRENT/ZOOPLANKTON PREY BIOMASS
VARIABILITY IN RELATION TO FISHERY/Zoological Index.

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CALIFORNIA CHANNEL ISLANDS/GEOLOGY/VASCULAR PLANTS/ROCKY
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: Am. Assoc. Pet. Geol., Pac. Sect.; 1976. Misc. Publ. 24. p.
228-240. 8 refs., chart, table, geol. sketch map.
fspub/Blanca Formation/stratigraphy/Miocene/igneous
rocks/pyroclastics and glasses/sedimentary rocks/southwest/Channel
Islands/Santa Cruz Island/Near Point/Bowes Point/Sierra
Blanca/thickness/Blanca Formation/clastic
rocks/terrigenous/pyroclastics/tuff/breccia/sandstone/conglomerat
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analysis/marine/shallow/provenance/ash flow/tephra/SRD.

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SITKA, ALASKA USA.; ALASKA SEA GRANT REP. 1988;88-4:95-98.
Mussel culture began 750 years ago in France when an Irish sailor put a fish trap made of wooden poles on the tide flats. Instead of fish, he caught blue mussels when spat settled in great abundance on his poles. Mussels proved to be an easily obtainable food source in France and the Irishman's discovery eventually led to a culture system called the bouchot system, which is still in use in France. Blue mussels are grown in Washington on Puget Sound. They are also grown commercially along the New England coast, and on oil rigs in the Santa Barbara channel of southern California. Each of these areas has chronic water quality problems. Alaska has innumerable fiords and protected bays with excellent water quality that should provide suitable sites for shellfish culture. With good planning, technical support, and protective regulations, Alaska could easily become the mariculture center of North America.
aquaculture development/marine aquaculture/Mytilus/spat/INE/USA/ Alaska/mussel culture/ASFA.

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We sampled mesoscale physical, chemical and biological structure in the coastal region of northern California in May, 1987. The circulation was dominated by an equatorward-flowing coastal jet and by set of mesoscale eddies. High-velocity flow in the core of the coastal jet was composed of low-salinity, low-nutrient water. Cyclonic coastal eddies were observed near Cape Mendocino and Pt. Arena. The Cape Mendocino eddy is examined in detail. This eddy is a common feature which was present both before and after the spring transition, suggesting a relatively weak coupling between the eddy and the local wind field. The coastal circulation strongly affected the chemical and biological structure of the region. The coastal jet and cyclonic eddy increased primary production and phytoplankton biomass by increasing the nutrient supply to the euphotic zone. The change in slope of density surfaces in association with high-velocity flow in the jet and eddy raised isopycnals carrying nutrients to the surface layer. The inshore edge of the coastal jet marked the boundary between rich coastal water and oligotrophic offshore water. Since the jet was not carrying nutrients in the surface layer, advection by this feature was not an important nutrient source for the coastal ocean. The cyclonic flow and secondary circulation associated with the eddy appeared to act as a nutrient pump which provided a continuing input of high nutrient, low chlorophyll water to the center of the eddy. This resulted in low chlorophyll in the eddy center, and high chlorophyll and a large excess in dissolved oxygen at its outer edge. The coupling between physical and biological structure in the study region differs from that described for systems dominated by wind-driven coastal upwelling.
PHYTOPLANKTON BIOMASS EUPHOTIC ZONE NUTRIENT SUPPLY PRIMARY PRODUCTION NUTRIENT PUMP WIND-DRIVEN COASTAL UPWELLING/Biosis.

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Currently available measurements of ccl3f concentrations in the troposphere are compared with concentrations expected on the basis of available production and release data. calculations are compared with previously published experimental measurements. current predictions are presented as a function of time, eddy diffusion profile, and tropospheric lifetime. the most probable lifetime for ccl3f is from 15-20 years. changes in absolute calibration of the electron capture gas chromatography data, however, would lead to revisions in the estimated lifetimes. (3 graphs, 27 references, 3 tables).
Chlorofluoromethanes/ozone/troposphere/monitoring, env-air/ ireland/area comparisons/california, univ/southern hemispher atmospheric diffusion/stratosphere/meteorology/chromatography, gas/washington/EnviroLine.

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Pacific Ocean/oceanography/marine geology/California/United States/Santa Cruz/transport/currents/salinity/temperature/variations/structure /bottom features/sediments/chemical composition/analysis/stratigraphy/sedimentation/rates/sedimentary structures/Pleistocene/Quaternary/Cenozoic/Holocene/GEOREF.

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SCIR.
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The Island Scrub Jay (Aphelocoma coerulescens insularis) is found only on Santa Cruz Island, 30 km from the coast of southern California (34 degree 00'N, 119 degree 42'W). Not as well studied as the jays of the adjacent mainland, many aspects of its biology remain unknown. In this note, the author documents predation by Island Scrub Jays on the nests of House Finches (Carpodacus mexicanus). Although such predation is well known among other Corvids, no specific reports of it have been published before for the Island Scrub Jay.
fspub/Aphelocoma coerulescens insularis/Carpodacus mexicanus/Santa Cruz Island/SRD.

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bathylagus/smelts/california

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The technical report summarizes current information on the physical oceanography of the Pacific Coast of Washington and Oregon, including information on currents, water mass characteristics, vertical stratification and mixing, upwelling, and waves. A general outline of the California current system is given, including the California and Davidson surface currents, the California and Washington undercurrents, and shelf currents. Conditions affecting local and nearshore currents, considered important in the event of an oil spill, are discussed. A summary of wave data is included from several sources including the Corps of Engineers WIS (Wave Information Study), based on meteorological information, and the Minerals Management Service's Coastal Wave Statistical Data Base (CWSDB), based on high quality data from a system of buoys. Washington State/Oregon/Environmental transport/Continental shelves/Stratification/Water pollution/Mixing/Precipitation Meteorology/Water runoff/Oil spills/Upwelling/Ocean waves/Ocean temperature/Salinity/Ocean currents/Coastal regions/Physical oceanography/Pacific Northwest Region United States/NTIS.

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Lamont Geological Observatory Palisades N Y 203250 Research supported in part by NSF. Published in Pure and Applied Geophysics v63 p179-95 1966. A layer of a few hundred meters thickness with suspended matter (a nepheloid zone) was discovered by Ewing and Thorndike near the bottom on the continental slope of the North Atlantic. A downward pressure gradient is produced in this layer due to increment of water density with suspensoid. When only the Coriolis force balances with this pressure gradient, a bottom nepheloid current flows southwestward parellel to the depth contours with a velocity of about 10 (cm/sec) for a slope of one degree. The pressure gradient for fluid with locally variable density above a sloping bottom is treated and an extra term due to density gradient along the slope is derived. The vertical profiles of the nepheloid current with an effect on the vertical eddy viscosity are computed. Two kinds of vertical distributions of eddy viscosity are determined from the observed nepheloid distributions and used in the calculations: constant but different values at two layers and those increasing with height. The effect of the change of density along the bottom is treated by introducing dimensionless variables. Rossby number of the nepheloid current becomes about 0.01 indicating inertia terms to be negligible. Rossby number of turbidity currents ranges from 2 (in a decaying area) to 5 (developing area), suggesting that inertia terms are more important than Coriolis terms. The trajectories of turbidity currents are computed from motion of a mass of mud under the Coriolis force and friction, and the results are applied to those inferred by Hand and Emery in the San Diego Trough off California. (Author). Ocean currents/Hydrodynamics/Sedimentation/Turbulence/Equations of motion/Diffusion/Coriolis effect/Density/Viscosity/Mud/Contine ntal shelves/Nepheloid zones/NTIS.

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Dep. Biol. Sci., Deakin Univ., Geelong, Vic. 3217, Australia. Heavy metals, halogenated hydrocarbons, and petroleum hydrocarbons in the world's marine and estuarine waters have long been recognized as some of the most potentially deleterious contaminants to biota, and to human consumers of seafoods. During the past two decades, various strategies have been developed to monitor and evaluate the adverse impacts of these compounds in marine waters: one of the most successful efforts has involved the use of bivalve shellfish as sentinel organisms, a technique which has become popularly known as the "Mussel Watch". It is the aim of this article to discuss the need for a more comprehensive contaminant biomonitoring programme in southeastern Australia, with special attention to the marine environment of the State of Victoria. heavy metals/marine pollution/pollution monitoring/hydrocarbons/PSE , Australia, Victoria/coastal waters/marine mollusks/Bivalvia/publi c health/bioaccumulation/INE, USA, California/Oceanic Abstracts.

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BIOMETRICS/MEASUREMENTS/SIZE/JUVENILES, EL NINO EVENT CORRELATION, NORTHERN PACIFIC/FEEDING/CARNIVOROUS FEEDING/PREDATION/PREY/ZOOPLA NKTON/AVAILABILITY, LARVAL & JUVENILE GROWTH CORRELATIONS, NORTHERN PACIFIC/PREDATOR PREY INTERACTIONS/ZOOPLANKTON ABUNDANCE, LARVAL & JUVENILE GROWTH CORRELATIONS, PACIFIC/FOOD AVAILABILITY/ZOOPLANKTON, LARVAL & JUVENILE GROWTH RATE RELATIONSHIPS, NORTHERN PACIFIC/WHOLE ANIMAL PHYSIOLOGY/GENERAL PHYSIOLOGICAL CONDITION/ENVIRONMENTAL FACTORS/PHYSICAL ENVIRONMENT/CLIMATE & WEATHER/EL NINO EVENT, LARVAL & JUVENILE GROWTH VARIATION RELATIONSHIP, PACIFIC/LIFE CYCLE & DEVELOPMENT/LIFE CYCLE/DEVELOPMENTAL STAGES/LARVA/GROWTH RATE,

INTERANNUAL VARIATION RELATED TO FOOD AVAILABILITY, PACIFIC/JUVENILE STAGES/DEVELOPMENT/GROWTH/GROWTH RATE/LARVAE & JUVENILES, INTERANNUAL VARIATION IN RELATION TO FOOD, PACIFIC/PACIFIC OCEAN/NORT HERN PACIFIC/CALIFORNIA CURRENT/LARVAL & JUVENILE GROWTH, VARIATION IN RELATION TO FOOD AVAILABILITY/Zoological Index.

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fspub/Los Angeles County/geochemistry/igneous rocks/volcanic/southwest/Los Angeles Basin/Santa Monica/Santa Monica Mountains/Los Angeles/Glendora/Santa Cruz Island/basalt/dacite/andesite/plate tectonics/subduction zones/Miocene/subduction/SRD.

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illus., tables, sect.
fspub/Santa Cruz Island Schist/Willows Plutonic Complex/petrology/igneous rocks/metamorphic rocks/Santa Cruz Island/Jurassic/upper Jurassic/Alamos Pluton/metasedimentary/metaplutonic/facies/spilite/keratophyre/quartz keratophyre/gabbro/ultramafic family/microdiorite/leucotonalite/dikes/complexes/mineral assemblages/genesis/SRD.

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fspub/structural geology/tectonics/paleomagnetism/Neogene/Topanga Formation/Monterey Formation/Rincon Shale/Transverse Ranges/Miocene/Tertiary/shale/clastic rocks/marine environment/Point Mugu/Santa Cruz Island/Santa Ynez Range/declination/rotation/Santa Maria Basin/Santa Monica Mountains/SRD.

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A carbon budget has been developed for the euphotic zone in the surface waters of the Santa Monica Basin off Los Angeles, California, by CaBS. This grant provided several components of the budget: primary production, new production (equivalent to the sinking flux of biogenic particles out of the euphotic zone), standing stocks of particulate matter including particulate organic carbon, nitrogen and chlorophyll. Ancillary measurements of plant nutrients (nitrate, phosphate, silicic acid) were also made relative to primary and new production rates. The residence time of particulate matter in the euphotic zone was also determined as this is important for removal of particle-reactive substances, such as certain metals, hydrocarbons and chlorinated hydrocarbons.
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Baja California were occupied seasonally, with a peak in sightings coinciding with the spring peak up upwelling and biological production. The Costa Rica Dome area was occupied year round, suggesting either a resident population, or that both northern and southern hemisphere whales visit, with temporal overlap. The modal group size was one for all areas and seasons, but the frequency of groups with two or more whales was significantly higher in sightings made near the Galapagos Islands and the coast of Ecuador and northern Peru.
SEASONAL VARIATION HABITAT SELECTION FORAGING OCEANOGRAPHY BAJA CALIFORNIA COSTA RICA DOME ECUADOR PERU GALAPAGOS ISLANDS/Biosis.

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A solution to the steady state, three-dimensional atmospheric diffusion equation is presented. the solution is used to predict conversion of air pollutants from gaseous to particulate form, and describes setting, deposition, and first-order removal. the analytical solution of the equation in three dimensions, with wind speed and eddy diffusivities independent of height, is the basis for a model that calculates material balance and determines the relative roles of conversion and removal in governing gaseous and particulate concentration levels. using the model, gaseous and particulate pollutant material balances in the los angeles airshed are predicted. (5 graphs, 1 map, 41 references, 4 tables). Urban atmosphere/particulates/mathematic models-air/air chemistry/atmospheric diffusion/sulfates/nitrates/ hydrocarbons-air/aerosols/winds/los angeles/nitrogen oxides/ sulfur dioxide/EnviroLine.

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California/seismology/earthquakes/Pacific Coast/structural geology/neotectonics/seismicity/seismotectonics/Santa Barbara County/Ventura County/United States/Southern California/Transverse Ranges/upper Quaternary/Quaternary/Santa Barbara Channel/Ventura Basin/magnitude/mechanism/elastic waves/P waves/faults/fault planes/uplifts/geodesy/extension/plate tectonics/GEOREF.

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Automated meteorological observations at coastal and island stations, instrumented aircraft flights, and coastal soundings were made between July 1983 and June 1985 to define the variations of the lower atmosphere over the northern half of the Gulf of California during the two important climatic seasons, the mid-latitude winter and the subtropical summer. A marine layer is well defined over water during both seasons but dissipates within a few kilometers inland. The winter large-scale pressure field is dominated by the Great Basin high over the southwestern United States. Modulated by upper level synoptic activity, it causes 3 to 6 days events of northwesterly winds (8-12 m/s) directed along the gulf's axis, which are coherent over basin scales, and bring cool,

dry desert air over the gulf. A dynamical analysis of subdiurnal motions shows that the cross-gulf momentum balance is geostrophic, the along-gulf balance is ageostrophic, with the along-gulf pressure gradient opposed by friction at the surface. These results are consistent with a scale analysis of the equations of motion in the marine layer over the Gulf of California.
climatology/atmospheric circulation/ocean-atmosphere system/seasonal variations/temporal variations/fixed stations/ISE, California Gulf/ winter/summer/meteorological data/winds/lower atmosphere/Oceanic Abstracts.

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* PISCES ** SUPERCLASS GNATHOSTOMATA *** CLASS TELEOSTOMI ****

DIVISION TELEOSTEI ***** SUPERORDER ACANTHOPTERYGII ******
PERCIFORMES ******* SUBORDER PERCOIDEI ******** SCIAENIDAE
********* ATRACTOSCION NOBILIS.
BIOCHEMISTRY/METABOLIC BIOCHEMISTRY/ENZYMES/GENETIC STRUCTURE OF
POPULATIONS ANALYSIS, CALIFORNIA (MARINE)/GENETICS/POPULATION
GENETICS/BIOCHEMICAL ASSESSMENT, CALIFORNIA
(MARINE)/EVOLUTION/VARIA TION/POLYMORPHISM/ALLOZYME VARIATION,
CALIFORNIA (MARINE)/GENETIC VARIATION/POPULATIONS, BIOCHEMICAL
ANALYSIS, CALIFORNIA (MARINE)/BIOC HEMICAL VARIATION/GENETIC
STRUCTURE OF POPULATIONS, CALIFORNIA (MARINE)/PACIFIC
OCEAN/NORTHERN PACIFIC/SOUTHERN CALIFORNIA BIGHT/G ENETIC STRUCTURE
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Chemical analysis of macroscopic aggregates and whole water samples
shows that 26-34% of total POC, N, protein, carbohydrate, lipid,
and particulate dry weight in surface waters of the Santa Barbara
Channel and 4-8% in the Gulf of California exist as particles of
marine snow >=3 mm in longest dimension. Twenty percent of these
aggregates in the Gulf of California and 5% in the Santa Barbara
Channel were of recognizable zooplankton origin. Macroscopic
aggregates from the Gulf of California had significantly lower C,
N, and protein content and significantly higher ash content than
the total particulate matter. Aggregates in both locations had
significantly higher C:N ratios than the total POM. Calculated
sinking rates of macroscopic aggregates indicate that marine snow
serves as a major source of vertical flux to the benthos. As
enrichment sites for nutritionally valuable substances, macroscopic
aggregates are rich food sources and significantly alter the
microscale distribution and composition of POM in neritic waters of
the pelagic zone.
Nutrients/Particulate matter/Carbon/Nitrogen/Marine
snow/Zooplankton/Proteins/Carbohydrates/Lipids/Chemical
analysis/macroscopic aggregates/neritic waters/enrichment
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fspub/stratigraphy/Eocene/paleogeography/San Nicolas Island/San
Miguel Island/Santa Rosa Island/Santa Cruz Island/San
Diego//sedimentation/continental
margin/turbidite/sandstone/conglomerate/faults/SRD.

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13 refs., illus., sketch map.
fspub/tectonophysics/plate tectonics/Channel Islands/Santa Cruz

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fspub/sedimentary petrology/sedimentary rocks/breccia/Miocene/Santa Rosa Island/Santa Cruz Island/stratigraphy/paleoenvironment/sedimentation/middle Miocene/clastic rocks/terrigenous/lithofacies/environmental analysis/paleocurrents/basins/lithostratigraphy/tectonics/structu re/faults/SRD/ SRD.

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fspubstructural geology/tectonics/evolution/southeast/Channel Islands/Santa Cruz Island/Santa Cruz Island Fault/Cenozoic/faults/SRD/SRD.

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fspub/sedimentary petrology/sedimentary rocks/clastic rocks/terrigenous/Miocene/southwest/Channel Islands/Santa Cruz Island/Santa Rosa Island/paleogeography/transport/middle Miocene/pyroclastics/conglomerate/sandstone/siltstone/lithofacies /massive/unsor ted/bedding/graded bedding/paleocurrents/provenance/sedimentation/turbidity currents/traction currents/SRD/SRD.

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Photo-identification of uniquely-marked individuals was the primary research tool used in studies of pilot whale (Globicephala macrorhynchus) social organization at Santa Catalina Island, California (1983-8) and the Big Island of Hawaii (1985-8). Pilot whales showed fairly high site fidelity, especially in Hawaii. Pod cohesiveness over time was marked in Hawaii but less evident at Catalina. Pods in both study areas were composed primarily of presumed adult females with juveniles and calves. Presumed adult males were rare, and when seen, did not associate with the same pod all the time. Pair-wise association analyses at Catalina showed some degree of social affiliation between some individuals. Thirty-four to 45% of pilot whales in the 2 study areas were identifiable which compares favorably with bottlenose dolphins (44%) but is lower than humpback whales (92%) and Risso's dolphins (67-95%). Despite some problems, photo-identification is a promising technique for studying pilot whale social organization.
Globicephala macrorhynchus/photography/identification/INE/USA/California/ISE/Hawaii/social behaviour/ASFA.

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High frequency acoustics (104 kHz) and stratified (BIONESS) net

tows were used to map the vertical and horizontal distribution of macrozooplankton scattering layers on and seaward of the continental shelf off Vancouver Island, in June and August of 1986. The macrozooplankton scattering layers were dominated by euphausiids, primarily Euphausia pacifica and Thysanoessa spinifera. During both surveys, dense aggregations were found in the same two general regions. The first was along the shelf break, where highest biomass was observed (averages over a few kilometres of transect reaching to about 200 mg dry weight .cntdot. m-3 = about 40 individuals .cntdot. m-3 and > 4 g dry weight .cntdot. m-2). A second, broader and more diffuse aggregation occupied the deeper southeast end of the shelf (area about 200 km2, biomass 1-2 g .cntdot. m-2). The scattering layers showed a consistent diel vertical migration. Daytime depth was deeper at the shelf break (.apprx. 150-200 m) than on the shelf (.apprx. 100-150 m) and occasionally extended to the bottom. These day-depths corresponded to the California Undercurrent waters of 6-7.degree. C, a salinity of 33.75-34.permill. and sigma-T > 26.5. Distribution patterns were coincident with those of upwelled regions, high phytoplankton biomass, and high hake and herring biomass. They were also associated with the shelf break jet and the recurrent Tully eddy. There is a strong possibility of aggregation in restricted areas through the coupling of advection and vertical swimming behavior of the animals.
EUPHAUSIA-PACIFICA THYSANOESSA-SPINIFERA BIOMASS SWIMMING BEHAVIOR ADVECTION HIGH FREQUENCY ACOUSTICS STRATIFIED NET TOW/Biosis.

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Open top chambers allow exposure of plants to more nearly ambient conditions and atmospheric control. however, as wind velocity increases and carries ambient air over the top of the chamber, eddy currents cause vetical mixing and contaminate the test atmosphere. an open top chamber with a baffle to reduce vertical mixing is described. more effort should provide an even better chamber in which the greenhouse effect is further minimized. (1 diagram, 1 graph). Greenhouses/ventilation/greenhouse effect/humidity/ atmospheric temperature/oxidants/pathology, plant-lab/air pollution damage/EnviroLine.

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California/structural geology/tectonics/Pacific Coast/oceanography/continental shelf/Pacific Ocean/geophysical surveys/seismic surveys/Santa Barbara County/United States/Southern California/Transverse Ranges/Point Conception/Point Arguello/Santa Maria Basin/Santa Ynez Mountains/Santa Barbara Channel/reflection methods/seismic methods/structure/faults/folds/fault zones/Hosgri Fault/evolution/offshore/Northeast Pacific/Cenozoic/Phanerozoic/GEOREF.

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Contents: Population Assessment, Pribilof Islands, Alaska; Weights and sex ratios of northern fur seal pups 1989; Behavior and biology of northern fur seals, St. George Island; Census of northern fur seals on Bogoslof Island; Population and behavioral studies, San Miguel Island, California; and Entanglement studies, juvenile male roundups St. Paul Island, Alaska.
Pribilof Islands/Alaska/Census/Abundance/Breeding/Saint George Island/Maps/Weight Mass/Sex/Animal behavior/San Miguel Island/California/Bogoslof Island/Populations/Seals Mammals/Conservation/Northern fur seal/Entanglement/Callorhinus ursinus/NTIS.

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During the summers of 1987 and 1988, 77 near-surface satellite-tracked drifters were deployed in or near cold filaments near Point Arena, California (39 degree N), and tracked for up to 6 months as part of the Coastal Transition Zone (CTZ) program. The CTZ drifter results show that the California Current can be characterized in summer and fall as a meandering coherent jet which on average flows southward to at least 30 degree N, the southern end of the study domain. From 39 degree N south to about 33 degree N, the typical core velocities are of O(50 cm/s) and the current meanders have alongshore wavelengths of O(300 km) and onshore-offshore amplitude of O(100-200 km). The lateral movement of this jet leads to large eddy kinetic energies and large eddy diffusivities, especially north of 36 degree N. The initial onshore-offshore component of diffusivity is always greater than the alongshore component in the study domain, but at the southern end, the eddy diffusivity is more isotropic, with scalar single particle diffusivity (K super(xx) + K super(yy)) of O(8 x 10 super(7) cm super(2)/s). The eddy diffusivity increases with increasing eddy energy.
near-surface layer/coastal upwelling/seasonal variations/water masses/boundary currents/water temperature/statistical analysis/coastal jets/drifters/thermal structure/INE, California Current/surface circulation/ocean currents/oceanic eddies/filaments/Oceanic Abstracts.

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seasonal variation of the physical characteristics and of large-scale current patterns of the California Current system is examined using harmonic analysis applied to the 23 years of California Cooperative Oceanic Fisheries Investigations data collected between 1950 and 1978. The amplitude and phasing of seasonal variation in dynamic height and the overall standard deviation of dynamic height define three domains: oceanic, coastal, and an intervening transition zone. The transition zone is a broad band centered approximately 200-300 km offshore and parallel to the coast in which the seasonal range of dynamic height is a relative minimum and the standard deviation is a maximum. The transition zone is coincident with the core of flow of the California Current. A strong interaction between the core of the California Current and the mesoscale eddy field is evident. INE, California Current/dynamical oceanography/dynamic height/ mesoscale eddies/current data/statistical analysis/seasonal variations/ocean currents/OceanAbstracts.

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Sediments and organisms were examined for concentrations of organic and metal contaminants from near the Los Angeles County (JWPCP) municipal outfall at Palos Verdes (PV) station 7-3, the Los Angeles City (Hyperion) municipal outfall at Santa Monica Bay (SMB) station 6-4 and reference station SMB 2-3 near Malibu Beach. Mass emission rate of copper was almost twice as high from Hyperion as from JWPCP, while mass emission rate of DDTs was an order of magnitude higher from JWPCP than from Hyperion. The degree of contamination of organisms by DDTs increased with proximity to PV7-3 but contamination by PCBs was similar at PV 7-3 and SMB 6-4. metals/wastewater discharges/outfalls/contamination/PCB compounds/ Southern California Bight/PollutionAbstracts.

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Marine algae, substrate, invertebrates, subtidal, Anacapa Island.

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fspub/structural geology/tectonics/Pacific Coast/tectonophysics/plate tectonics/paleomagnetism/Miocene/Los Angeles County/Anacapa Island/Santa Cruz Island/San Miguel Island/Santa Catalina Island/Santa Barbara Island/shear/rotation/igneous rocks/Neogene/Tertiary/Pacific Plate/North American Plate/SRD.

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Significant lateral P velocity variations extending to at least 15 km depth. Most major faults mapped on the surface have a signature in the deeper crustal structures. A deep low-velocity trough underlies the Montalvo trend in the Santa Barbara Channel. A narrow high-velocity ridge is associated with basement rocks south of the Santa Cruz Island fault. Lateral velocity variations suggest that earthquake hypocenters and fault plane solutions calculated assuming a laterally homogeneous crust-model may be significantly in error.--Modified journal abstract.
seismology/crust/oceanography/continental shelf/Pacific Ocean/geophysical surveys/seismic surveys/velocity structure/Santa Barbara Channel/Transverse Ranges/raypaths/geophysical profiles/refraction methods/deep seismic sounding/deep seated structures/P waves/body waves/elastic waves/faults/fault planes/earthquakes/continental borderland/discontinuities/low velocity zones/North American Pacific/Santa Cruz Island/SRD.

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Leuroglossus stilbius (Bathylagidae) was abundant in the nearshore Santa Barbara Basin (SBB), but less so in the more offshore Santa Cruz Basin (SCB). Stenobrachius leucopsarus (Myctophidae) was abundant in both basins. L. stilbius is adapted morphologically to feed by suction and to eat smaller, less active organisms. S. leucopsarus is better adapted to feed by grasping, and to eat larger, faster, and more elusive prey. In the SBB, L. stilbius fed, mostly at night in surface waters, on larvaceans and salps all year, reflecting the seasonally consistent abundance of these prey items. In the SCB, it fed less intensely, mostly at night in surface waters, and its diet varied with the seasonal abundance of its gelatinous prey. S. leucopsarus fed mainly on crustaceans, and it did not exhibit a distinct chronology. It ate similar prey all year in both basins, but euphausiids dominated the diet when they were most abundant. Thus L. stilbius is well adapted to inshore, eutrophic midwater habitats.
vertical distribution/feeding behaviour/Leuroglossus stilbius/Stenobrachius leucopsarus/abundance/INE/USA/California/Santa Barbara/circadian rhythms/ASFA.

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JACKSON R D, GAY LW, WEAVER H L. DETERMINATION OF SENSIBLE HEAT FLUX OVER SPARSE CANOPY USING THERMAL IR DATA. AGRIC FOR METEOROL44 (3-4). 1989. 197-216. USDA-ARS HYDROL. LAB., NAT. RESOUR. INST., BELTSVILLE, MD. 20705. BA. Surface temperatures, Ts, were estimated for a natural vegetative surface in Owens Valley, California [USA], with infrared thermometric observations collected from an aircraft. The region is quite arid and is composed primarily of bushes (.apprx.30%) and bare soil (.apprx.70%). Application of the bulk transfer equation for the estimation of sensible heat, H, gave unsatisfactory values when compared to Bowen ration and eddy correlation methods over a particular site. This was attributed to the inability with existing data to properly evaluate the resistance to heat transfer, rah. To obtain appropriate rah-values the added resistance to heat transfer, kB-1, was allowed to vary although there is both theoretical and experimental evidence that kB-1 for vegetative surfaces can be treated as constant. The present data indicate that for partial canopy cover under arid conditions kB-1 may be a function of Ts measured radiometrically. The equation determining kB-1 was simplified and tested over another arid site with good results; however, this had a limited data set (i.e., 6 data points). The dimensionless kB-1 equation is simplified for use over full canopy cover and is shown to give satisfactory estimates of H over a fully-grown wheat crop. WHEAT CROP VEGETATION BUSHES SURFACE TEMPERATURE CALIFORNIA USA/Biosis.

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quantitative analysis of the vegetation of Santa Rosa Island, and provides a baseline against which future comparisons of the condition of vegetation resources can be made. Santa Rosa Island has a grazing history that spans nearly 150 years. A number of insular endemic plants occur on the island, some are apparently quite limited in distribution and were not encountered in the vegetation study. Management of the island to preserve viable populations of the endemics, and to allow for the restoration of natural plant assemblages will require the removal of alien herbivores, and a complex active restoration scheme. A long-term commitment by NPS managers of both monies and personnel are necessary to achieve these goals. The success of the endeavour will be a great accomplishment in ecosystem restoration. Santa Rosa Island/Ranches/Land use/Grazing land/Vegetation/Baseline measurements/Permits/Hunting/Ecosystems/Plant communities/Channel Islands National Park/Natural resources management/NTIS.

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eastern boundary currents/dynamics/modelling/coast effect/continent al slope/bottom topography effects/equations of motion/transport processes/current meandering/vertical water movement/heat transport/ offshore/oceanic eddies/INE, California Current/hydrodynamics/under currents/coastal upwelling/coastal transition zones/filaments/Oceanic Abstracts.

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are not correlated with the upwelling. This also suggests that the wind-driven part alone might be a better estimate of the ensemble average eddy heat flux. heat transfer/eddy flux/coastal upwelling/INE, USA, California/ oceanographic data/water currents/water temperature/wind-driven circulation/CODE/OceanAbstracts.

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A survey in the Southern California Bight indicated that much of the floatable particulates in the vicinity of primary treatment outfalls-mostly composed of grease and wax-originated in wastewater. These particulates also contained appreciable concentrations of coliform bacteria. The particulates from primary effluents had large proportions of unsaturated 18-carbon fatty acids, whereas secondary effluent particulates resembled open-ocean particulates in proportions of fatty acids. Larger particulates were quickly dispersed. Surface concentrations of <=3-mg hexane-extractable matter/m2 probably are aesthetically acceptable. AM. Pacific Ocean/Seawater/Particulates/Marine environments/Wastewater discharges/Outfalls/Primary treatment/Coliforms/Bacteria/Surveys/ California Coast/US West Coast/floatable particulates/Southern California Bight/PollutionAbstracts.

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Marine Algae.

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Although some fisheries biologists have expressed concern over the practicality of hatchery enhancement of marine fisheries, hatchery technology has advanced significantly during the 1980s. Marine hatchery enhancement programs are now addressing ecology and genetics as well as animal husbandry. To describe the genetic structure of white seabass (Atractoscion nobilis) and apply the information to hatchery enhancement, we used starch-gel electrophoresis to assess the level and distribution of genetic variability of seabass from nine areas in the southern California Bight. Average heterozygosity per sample estimates ranged from 0.02 to 0.064. Indices of genetic identity between samples were greater than 0.99. Because only 3% of the total gene diversity was due to intersample differences, and because an estimate of number of migrants exchanging genes among samples was approximately 9 per generation, we believe little population subdivision exists within the study area.
Atractoscion nobilis/natural populations/cultured organisms/ISE/population genetics/ASFA.

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Coll. Oceanogr., Oregon State Univ., Corvallis, OR 97331, USA. In summer 1988, repeated mesoscale surveys of a grid extending 200 km offshore between 37 degree N and 39 degree N in the coastal transition zone off northern California were made, obtaining continuous acoustic Doppler current profiler data and conductivity-temperature-depth data at standard stations 25 km apart on alongshore sections 40 km apart. All surveys showed a baroclinic

equatorward jet, with core velocities of > 50 cm/s at the surface decreasing to about 10 cm/s at 200 m, a width of 50-75 km and a baroclinic transport of about 4 Sv. The core of the jet lay between the 8.6 and 9.4 m super(2) s super(-2) contours of geopotential anomaly (relative to 500 dbar). Three current meter moorings, deployed at 25-km separation across the jet at the beginning of the survey sequence, provided time-series of the velocity; throughout the 37-day deployment, at least one mooring was within the core defined by the 8.6 and 9.4 m super(2) s super(-2) contours. The subsurface waters adjacent to the continental margin were warmer and more saline than those offshore, indicating net northward advection by the California Undercurrent over the inshore 100 km and equatorward advection farther from shore.
current profiles/mesoscale eddies/coastal upwelling/offshore/near-surface layer/baroclinic motion/jets/seasonal variations/surface circulation/INE, USA, California, Point Arena/water masses/summer/thermal structure/coastal transition zones/filaments/Oceanic Abstracts.

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Repeated mesoscale surveys of a 40-km-wide, 100-km-long, coastal region near Point Arena, California, were conducted during the upwelling season (April-August) in 1981 and 1982. Each survey included conventional conductivity-temperature-depth casts at standard locations over the continental shelf and slope between 38 degree N and 39 degree 10'N, and continuous operation of a Doppler acoustic log to obtain velocity profiles in the 20- to 150-m depth range. "Synoptic" surveys covered the entire grid in 2-3 days. Circulation patterns during all but one of the surveys were very complex and included meandering equatorward flow, cyclonic and anticyclonic eddies, and inshore countercurrents. Overall average fields are relatively simple. They show broad equatorward surface flow, a very weak inshore countercurrent, and a definite poleward undercurrent at the shelf break. INE, USA, California, Point Arena/continental shelves/coastal upwelling/mesoscale features/CTD observations/velocity profiles/ ocean circulation/coastal currents/shelf dynamics/dynamical oceanography/continental slope/Coastal Ocean Dynamics Experiment/OceanAbstracts.

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A facility designed to recover 42 gal of fuel oil, 133 lb of ferrous metal, 8 lb of nonferrous metal, and 100 lb of glass from each ton of municipal refuse is described. A 200-TPD demonstration plant in El Cajon, California, uses the Occidental flash pyrolysis technology, which involves heating the organic fraction of the refuse to 950degF in a noncombusting, inert N environment to yield char, gasses, and fuel oil. Refuse is 1st shredded coarsely, ferrous metal removed magnetically, and most of the inorganic material separated by air classification in a N environment. The organic fraction is dried, the remaining inorganic removed in a screen and an air table, and the organic material put through a secondary shredder. Light particles are combined with the secondary shredder output and stored as feedstock for the pyrolysis reactor, where the refuse-derived fuel oil is produced. Glass is removed from the inorganic portion by froth flotation, and Al by eddy current separation. The facility is jointly funded by EPA and Occidental Research. FT.
Waste reuse/Water recycling/Fuel oils/Pyrolysis/Waste treatment plants/Materials recovery/California/Solid waste treatment/Pilot

plants/Municipal wastes/El Cajon/EPA/Occidental Research Corp/PollutionAbstracts.

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fspub/Willows Complex/Alamos Pluton/geochronology/absolute age/Jurassic/southeast/Santa Cruz Island/dates/minerals/zircon/hornblende/diorite/keratophyre/K-Ar/Pb/basement/ig neous rocks/age/SRD.

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fspub/Blanca Formation/sedimentary petrology/sedimentary rocks/clastic rocks/terrigenous/Miocene/southwest/Channel Islands/Santa Cruz Island/provenance/pyroclastics/clasts/petrography/faults/displacements/strike slip/effects/SRD/SRD.

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fspub/Vaqueros Formation/San Onofre Breccia/Rincon Formation/sedimentary petrology/sedimentary rocks/conglomerate/breccia/sedimentation/Miocene/south/Channel Islands/Santa Cruz Island/Santa Rosa Island/San Miguel Island/controls/structural controls/tectonics/uplifts/lithofacies/clastic rocks/terrigenous/SRD/SRD.

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fspub/Vaqueros Formation/San Onofre Breccia/Rincon Formation/Blanca Formation/Monterey Formation/stratigraphy/Miocene/sedimentary rocks/southwest/Channel Islands/Santa Cruz Island/Santa Rosa Island/clastic rocks/terrigenous/breccia/conglomerate/sandstone/mudstone/lithofacies/clasts/petrography/lithostratigraphy/correlation/provenance/tectonics/evolution/uplifts/ folds/effects/SRD.

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fspub/San Onofre Breccia/Willows Diorite/Blanca Formation/stratigraphy/Miocene/lithostratigraphy/paleogeography/Santa Cruz Island/reconstruction/unconformities/transgression/basement/SRD/SRD.

204. Menke AS, Miller DR (Nat. Hist. Mus. Los Angeles Cty., 900 Exposition Blvd., Los Angeles, CA 90007). Distributional notes on the tiger beetles of the California Channel Islands (Coleoptera: Cicindelidae). Entomology of the California Channel Islands: Proceedings of the first symposium. ; 1985. p. 105-112.
Tiger beetles are widespread and often abundant predatory insects in littoral habitats. Cicindela is the only one of the four North

American genera in the family Cicindelidae inhabiting the sea coast and Channel Islands of southern California. The first island record of Cicindela was made by Fall (1897) in a treatment of the Coleoptera of the Channel Islands. Freitag (1965) listed a species from Santa Cruz Island in his revision of the Nearctic members of the Cicindela maritima complex. However, a comprehensive survey for island tiger betles has only been completed recently (Nagano, 1982) in which seven of the islands are reported to harbor five species of Cicindela . The present paper is a review and update of Nagano (1982) with new records and discussions.
fspub/Cicindelidae/Cicindela/geographical distribution/Santa Cruz Island/SRD/SRD.

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This historical perspective on CalCOFI in its early years (1947 to 1964) focuses on two important aspects. The first concerns how the scope and design of CalCOFI research on the California Current, and on the Pacific Ocean more generally, were originally formulated- that is, how the marine scientists and fisheries management specialists, industry leadership, and state and federal policy officials defined their research strategies and future needs in 1947-49. The state of American ocean research when the project was first designed will also be discussed. The second aspect concerns the dramatic development of the range and modes of scientific inquiry in the early years of CalCOFI research.
historical account/marine ecology/USA/California/fishery oceanography/CalCOFI/ASFA.

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COASTAL FISHERIES INSTITUTE, CENTER FOR WETLAND RESOURCES, LOUISIANA STATE UNIVERSITY, BATON ROUGE, LA. 70803-7503. BA.
The drift of northern anchovy, Engraulis mordax, larvae in the California Current to unfavourable offshore areas may be an important factor contributing to larval mortality, and hence it may affect recruitment and subsequent adult population size. A simulation model based on a finite-difference approximation to the advection-diffusion equation was developed to aid in the study of larval anchovy drift. Model components included the long-term mean geostrophic and wind-driven current velocities to 50 m depth, and turbulent diffusion. The model predicted larval distributions in the Southern California Bight and offshore regions after 30 days of drift, and these distributions were used to assess the extent of cross-shore and alongshore larval transport that occurs when spawning takes place at different locations, seasons, and during times of increased offshore-directed Ekman transport. Offshore transport was minimal in most simulations. Simulations of drift starting from the location of peak spawning showed strongest seasonal effects, with currents during the season of peak northern anchovy spawning (March) resulting in reduced offshore dispersal when compared with currents at other times of the year. March currents also produced the greatest downshore (southeasterly) transport of larvae, and strong seasonal currents, such as the nearshore, northwesterly flowing California Countercurrent, can greatly affect the alongshore 30-day larval distributions. Offshore directed Ekman transport, associated with upwelling, does not strongly affect the drift of larvae in the nearshore region, but large increases in overall Ekman transport, or extension of spawning into offshore regions, can result in significant seaward transport of larvae out of the Southern California Bight.

ADULT MORTALITY POPULATION WIND SPAWNING WATER CURRENT TRANSPORT DISTRIBUTION UPWELLING/Biosis.

207. Fischer PJ, Rudat J, Ticken E. Recognition of active (Holocene) faulting, southern California borderland. Geol. Soc. Am., Abstr. Programs. 1979;11(3):p.78
Calif. State Univ., Dep. Geosci., Northridge, Calif., United-States
The Geological Society of America, Cordilleran Section, 75th annual meeting, San Jose, Calif., April 9-11, 1979 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).
California/structural geology/neotectonics/Pacific Coast/oceanography/continental shelf/Pacific Ocean/geophysical surveys/seismic surveys/United States/Southern California/continental borderland/Holocene/Quaternary/faults/displacements/active faults/fault zones/topography/reflection methods/seismic methods/Northeast Pacific/acoustical surveys/sonar methods/geophysical methods/GEOREF.

208. United States Geological Survey. Draft environmental statement. Oil and gas development in the Santa Barbara Channel outer continental shelf off California. 1975;1:II-163 and II-197
NPS/physical oceanography/physical oceanography/currents/water masses/waves.

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SCIR.
honey bees/exotic/african bees .

210. Kern M, Sogge M, van RCI. Water-vapor pressure in nests of the San Miguel Island song sparrow. CONDOR 1990;92(3):761-767.
The water-vapor pressure (P sub(N)) in nests of the San Miguel Island race of Song Sparrows (Melospiza melodia micronyx)) averaged 16 torr, but varied considerably between nests and within individual nests during successive days of incubation. Large daily fluctuations occurred throughout the incubation period and did not parallel concurrent changes in ambient vapor pressure (P sub(I)). Daily rates of water loss from nest eggs (M@)u multiplied by sub(H2O)) averaged 28 mg/day, but also varied considerably within and between nests and did not correlate with changes in P sub(I). M@)u multiplied by sub(H2O) increased 6-33% after the third day of incubation. P sub(N) was significantly higher and M@)u multiplied by sub(H2O) significantly lower in nests located in sheltered gullies than in nests from a windswept slope. These data suggest that Song Sparrows do not regulate P sub(N) to achieve hatching success.
nests/water vapour/hatching/breeding success/USA/California/Melospiza melodia micronyx/pressure/CSA Life Sciences Collection.

211. (Performer: National Transportation Safety Board, Washington, DC. Bureau of Accident Investigation.) Marine Accident Report - Sinking of the U.S. Tug BARCONA by the U.S. Navy Nuclear Attack Submarine USS HOUSTON (SSN 713), San Pedro Channel, near Santa Catalina Island, California, June 14, 1989. ; 1990. Report No.: NTSBMAR9005. 54p.
Paper copy available on Standing Order, deposit account required (minimum deposit $100 U.S., Canada, and Mexico; all others $200). Single copies also available in paper copy or microfiche. PC A04/MF A01.

The report explains the sinking of the U.S. tug BARCONA by the U.S. Navy nuclear attack submarine USS HOUSTON (SSN 713) in San Pedro Channel near Santa Cataolina Island, California, on June 14, 1989. The safety issues discussed in the report are emergency quick release mechanisms on towing vessels; watertight doors on tugs; submarine operations near the surface in heavily trafficked areas; submarine crew fatigue; accident notification; and emergency position indicating radio beacons. Safety Recommendations addressing these issues were made to the U.S. Coast Guard, the U.S. Navy, Connolly Pacific Company, and the American Waterways Operators.
Submarines/Towing/Ships/Accident investigations/BARCONA tug/Emergency preparedness/Water traffic/Marine accidents/NTIS.

212. Roden GI. Mesoscale flow and thermohaline structure around Fieberling Seamount. J. GEOPHYS. RES. (C OCEANS 1991;VOL. 96, NO. C9:pp. 16,653-672 Sch. Oceanogr., Univ. Washington, Seattle, WA 98195, USA.
The circulation and thermohaline structure around Fieberling and the three neighboring seamounts to the ESE are examined on the basis of high-resolution observations in August 1989. In the upper layers, the primary interaction is with well-defined intrusions of water of subtropical and subarctic origin, linked to the outer boundary of a southward meandering California current. The effects of flow-topography interaction are complex and vary with depth. At the level of Fieberling's top, about 450 m, the impinging subtropical flow is deflected anticyclonically, and several eddies are generated. Uplift of isopycnals suggestive of upwelling is observed above the tops of all four seamounts. The height of the upwelling cones varies between 120 and 240 m, depending upon background stratification, and their axes are sometimes tilted, apparently by shear of the large-scale flow. Strong subsurface jets, 10-20 km wide and 500-1000 m thick, with speeds up to 30 cm/s, have been found in the vicinity of the seamounts. In the lower layers the primary interaction is with large-scale flow from the southeast.
mesoscale features/thermohaline circulation/seamounts/INE, Fieberling Seamount/INE, California Current/current meandering/botto m topography effects/upwelling/subsurface currents/jets/stratificat ion/flow measurement/ocean currents/thermal structure/salinity profiles/Oceanic Abstracts.

213. Dorman CE. Possible role of gravity currents in northern California's coastal summer wind reversals. J. GEOPHYS. RES. (C OCEANS 1987;VOL. 92, NO. C2:pp. 1497-1506
Dep. Geol. Sci., San Diego State Univ., San Diego, CA 92115, USA.
North winds along the northern California coast in the summer of 1982 were interrupted by six events with southerly winds. One of these four events is presented in detail. At the start of this event the marine layer is thickened in the southern California bight. This event is interpreted as a gravity current surging up the coast. The basic reservoir is the thickened marine layer in the southern California bight. Northerly progression is interrupted by a blocking wave near Point Arena where an eddy forms. It is hypothesized that most of the major wind reversals along the northern California coast during the summer are gravity currents of Kelvin waves in the marine layer that are formed to the south. INE, USA, California/dynamical oceanography/ocean-atmosphere system/ air-sea interaction/gravity waves/surges/summer/atmospheric motion/ continental shelves/shelf dynamics/Kelvin waves/Coastal Ocean Dynamics
Experiment/OceanAbstracts.

214. Reed WE, Kaplan IR, Sandstrom M, et al. Petroleum and anthropogenic influence on the composition of sediments from the Southern California Bight. 1977 oil spill conferenceAMERICAN PETROLEUM INSTITUTE. PUBLICATION 4284 (1977?):pp. 183-188
Univ. of California, Dept. of Earth and Space Sciences, Los Angeles, CA 90024. Concentrations of petroleum hydrocarbons and industrial chemicals were detected in nearly all benthic and sandy intertidal sediment samples collected from the southern California borderland. Low levels of petroleum contamination in combination with recent biogenic contributions were interpreted primarily on the basis of fully-saturated cycloalkanes in the absence of cyclic alkenes, the presence of a gas chromatographically-unresolved baseline envelope, and the presence of an homologous series of alkyl aromatic hydrocarbons. The inner basins of the Southern California Bight exhibit higher concentrations of weathered petroleum than either the farther offshore basins or the sandy intertidal zone. Near Tanner-Cortez banks and in the San Nicolas Basin, sediments appear to contain unweathered petroleum and high levels of anthropogenic chemicals. The possible sources of hydrocarbons found in the sediments, in addition to shipping losses and harbor traffic, include municipal and industrial wastewaters, previously undetected submarine oil seeps, submarine chemical dumps, and geochemically mature, organic-rich Tertiary shales. from AA.
Water pollution/Petroleum wastes/Hydrocarbons/California Coast/Sediments/Southern California Bight/PollutionAbstracts.

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FEEDING/CARNIVOROUS FEEDING/PREDATION/PREDATORS/ENGRAULIS MORDAX (PISCES)/PLANKTON ABUNDANCE EFFECTS ON PREDATOR GROWTH RATE, NORTHERN PACIFIC/PREDATOR PREY INTERACTIONS/PLANKTON ABUNDANCE EFFECTS ON PISCEAN PREDATOR GROWTH, NORTHERN PACIFIC/ENVIRONMENTAL FACTORS/PHYSI CAL ENVIRONMENT/CLIMATE & WEATHER/EL NINO EFFECTS ON ABUNDANCE, IMPLICATIONS FOR PISCEAN PREDATOR, PACIFIC/ECOLOGY/ECOLOGICAL ENERGETICS/BIOMASS/PLANKTON, PISCEAN PREDATOR GROWTH RELATIONSHIP, NORTHERN PACIFIC/LIFE HABIT/AQUATIC HABIT/PLANKTON/ABUNDANCE EFFECTS ON PISCEAN PREDATOR GROWTH RATE, NORTHERN PACIFIC/PACIFIC OCEAN/NORTHERN PACIFIC/CALIFORNIA CURRENT/EL NINO INFLUENCED ABUNDANCE IMPLICATIONS FOR PISCEAN PREDATOR/INVERTEBRATA/Zoological Index.

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WATER MASSES/CURRENTS/PHYSICAL OCEANOGRAPHY/OCEANOGRAPHY/BIOLOGICAL OCEANOGRAPHY.

218. Alldredge AL, Elias M, Gotschalk CC. Effects of drilling muds and mud additives on the primary production of natural assemblages of marine phytoplankton. Mar. Environ. Res. 1986;19(2):157-176
Address: DEP. BIOL. SCI., UNIV. CALIF., SANTA BARBARA, CA 93106. The effects of two types of drilling mud and eight mud additives on the primary production of natural assemblages of marine phytoplankton from the Santa Barbara Channel, California [USA], were examined. Exposure for 4 h to BaSO4, Ca-, Cr- and Fe-

lignosulfonate, Drispac (a polyanionic cellulose polymer), X-Pel-G (gilsonite), Soltex (a sulfonated asphalt) and a synthetic reference drilling mud at concentrations ranging over seven orders of magnitude did not significantly alter primary production of phytoplankton relative to untreated controls. A used drilling mud from the Santa Barbara Channel significantly enhanced primary production of phytoplankton exposed for 4 h to mud diluted by a factor of 101 to 107. Exposure for up to 120 h to low concentrations of BaSO4, iron-lignosulfonate, paraformaldehyde and both the reference drilling mud and used Santa Barbara mud did not significantly alter primary production. Long-term exposure to Soltex and gilsonite significantly reduced primary production, but only at exposure times considerably longer than would be expected in nature. Drispac enhanced primary production by 50% after exposure for 120 h to 1 .mu.g liter-1. Phytoplankton composition was not altered by long-term exposure to the muds or additives. These results suggest that, where dilution is rapid, discharge of muds containing the additives studied here would not significantly alter the primary production of natural. phytoplankton assemblages in the vicinity of drilling platforms. rapid dilution/iron lignosulfonate/drilling mud/mud additives/primary production/phytoplankton/Santa Barbara Channel/marine biology/pollution/petroleum.

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fspub/mealybugs/Santa Cruz Island/SRD/SRD.

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fspub/igneous rocks/nomenclature/northern/petrology/Santa Cruz Island/stratigraphy/Tertiary/volcanic rocks/volcanics/SRD.

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fspub/Santa Cruz Island/flora/remote sensing/SRD/SRD.

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fspub/insects/Santa Cruz Island/SRD/SRD.

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Other-US Includes references. Article.
erechtites/weeds/plant competition/plant colonization/vesicular arbuscular mycorrhizae/california/AGRICOLA.

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The effects of facultative epiphytes on a bivalve host were studied on an islet near Santa Catalina Island, California. The primary

cover in the mid-intertidal zone was a mosaic of red algal turf (Corallina officinalis, Gigartina canaliculata , and Gelidium coulteri) and clumps of the mussel Mytilus californianus . In certain circumstances the algae attached to and overgrew the mussels. In other marine habitats, facultative epibionts benefit bivalve hosts by masking them from predators. At Catalina, spiny lobsters (Panulirus interruptus) and oystercatchers (Haematopus bachmani) preyed on intertidal mussels. However, in tagging studies, overgrown mussels displayed a nonsignificant trend towards lower survivorship. A factorial experiment manipulating exposure to predators and the cover of epiphytes demonstrated that overgrowth significantly reduced survivorship. There was no significant statistical interaction between treatment effects, indicating that the presence of algae did not protect the mussels from predators.
competition/interspecific relationships/algae/Mytilus californianus/survival/epiphytes/USA/California/Catalina Island/INE/USA/Santa Catalina Island/marine molluscs/camouflage/predation/ASFA.

225. PICKWELL G V, BEZY R L, FITCH J E, HAURY L R. NORTHERN OCCURRENCES OF THE SEA SNAKE PELAMIS-PLATURUS IN THE EASTERN PACIFIC WITH A RECORD OF PREDATION ON THE SPECIESAN OFFSHORE EDDY IN THE CALIFORNIA CURRENT SYSTEM PACIFIC OCEAN 4. PLANKTON DISTRIBUTIONS. CALIF FISH GAME69 (3). 1983. 172-177.PROG OCEANOGR13 (1). 1984. 95-112.
MARINE SCI. DIV., NAVAL OCEAN SYSTEMS CENT., SAN DIEGO, CA 92152. BA MARINE LIFE RESEARCH GROUP, SCRIPPS INSTITUTION OF OCEANOGRAPHY, LA JOLLA, CALIF. 92093, USA. BARRM.
Four specimens of the yellow-bellied sea snake, P. platurus, from southern California [USA] and the outer coast of Baja California [Mexico] represent the northernmost records of this species in the eastern Pacific. Three of the snakes were probably carried northward by a warm countercurrent (Davidson Current) along the coast of Baja California and southern California during the warm periods of 1972-1973 and 1976-1977. One of the individuals had been ingested by a puffer Sphoeroides cf. annulatus; this represents the 2nd reported instance of predation on the species in nature.
DAVIDSON CURRENT PREDATION CALIFORNIA USA BAJA-CALIFORNIA MEXICO/ZOO PLANKTON DINOFLAGELLATE MICRO PLANKTON CHLOROPHYLL PHEOPHYTIN/Biosis.

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Rice Univ., Houston, Tex., United-States AAPG-SEPM annual meeting, Houston, Tex., April 1-4, 1979 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).
California/stratigraphy/Neogene/Japan/Pacific Ocean/oceanography/ocean circulation/Radiolaria/biostratigraphy/paleoecology/United States/Asia/California Current/Japan Current/Deep Sea Drilling Project/Tertiary/Cenozoic/paleo oceanography/paleocirculation/paleocurrents/currents/boundary currents/modern/evolution/sediments/core/paleobathymetry/marine environment/North Pacific/GEOREF.

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NPS/Physical oceanography/oceanography/currents.

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agrifolia regeneration on Santa Cruz Island, California [Poster presentation]. Symposium on Ecology and Management of Oak and Associated Woodlands: Perspectives in the Southwestern United States and Northern Mexico; 1992 Apr 27; Sierra Vista, Arizona. 3pp. SCIR.
fspub/oak/feral pig/management/restoration biology/Santa Cruz Island.

229. Atwood J, Elpers M, Collins C. Survival of breeders in Santa Cruz Island and mainland California scrub jay populations. CONDOR 1990;92(3):783-788. Aphelocoma coerulescens/USA/California/communal breeding/survival/CSA Life Sciences Collection.

230. Hickey BM (Performer: Washington Univ., Seattle. School of Oceanography. Funder: Department of Energy, Washington, DC.) California basin study (CaBS). Annual progress report, November 15, 1989-November 14, 1990. ; 1990. Report No.: DOEER603338. 18p. Sponsored by Department of Energy, Washington, DC. Portions of this document are illegible in microfiche products. PC A03/MF A01 Contract: FG0585ER60333. Previous studies of geochemical recycling processes in the upper water column in the Southern California Bight focused on the seasonal cycle. Inspection of satellite sea surface color images as well as information from studies in other areas suggest that the cycling processes have significant variability on time scales of hours and days. To allow our seasonal studies to be examined in the context of the higher frequency variability, an interdisciplinary mooring was maintained near the midpoint of Santa Monica basin (known as station 305) from January to July, 1990. The Hickey group had the primary responsibility of deploying and recovering the mooring. The mooring consisted of a vector measuring wind recorder mounted above a toroidal buoy, below which were suspended two current/temperature recorders, a transmissometer, and two PAR sensors. The PAR sensors, which provide an estimate of phytoplankton growth rates, were deployed as part of the Trees proposal. At two additional nearby moorings, sediment traps were deployed at selected depths throughout the water column by Landry and by Soutar. To allow some investigation of lateral advection of material, current meters were deployed at the same depths as several of the sediment traps both at this site and also at the site farther along the basin axis. The data from these experiments have not yet been processed. 6 refs., 10 figs. California/Climates/Compiled Data/Continental Shelf/Global Aspects/Mineral Cycling/Monitoring/Moorings/Oceanic Circulation/Oceanography/Phytoplankton/Progress Report/Sampling/Seasonal Variations/Temperature Monitoring/West Coast/Tables data/Coastal Regions/Pacific Ocean/Sediments/Water Currents/EDB/580000/NTIS.

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Sch. Oceanogr., Coll. Ocean and Fish. Sci., Univ. Washington, Seattle, WA 98195, USA.
By injecting a cloud of SF sub(6) into Santa Monica Basin at a depth of 790 m and observing its vertical spread, Ledwell and Watson (1991) estimate the average diapycnal diffusivity between 750 and 850 m as K sub(p) = 2.5 x 10 super(-5) m super(2)/s. This diffusivity is higher than inferred from microstructure measurements in the open-ocean thermocline for typical internal wave levels. To examine shear and strain in the basin, we dropped expendable current profilers (XCPs) and calculated strain from conductivity, temperature, and depth (CTD) casts. Shear and strain

are above the GM76 model spectrum, and comparisons with published parameterizations indicate more than enough shear variance to account for the high diffusivity reported by Ledwell and Watson. Thus, the eddy diffusivity in Santa Monica Basin is not at odds with lower values estimated from microstructure measurements in the open ocean, but is due to an elevated internal wave field. The spectral shapes, however, differ from typical open-ocean spectra. ocean basins/diffusion coefficients/vertical advection/INE, USA, California, Santa Monica Basin/mathematical models/strain/shear/dee p-water masses/internal wave effects/wave spectra/thermocline/curre nt profiles/tracers/Oceanic Abstracts.

232. Send U. Vorticity and instability during flow reversals on the continental shelf. J. PHYS. OCEANOGR 1989;VOL. 19, NO. 10:pp. 1620-1633 Inst. Meereskd., Univ. Kiel, Duesternbrooker Weg 20, 2300 Kiel 1, FRG. Flow reversals during relaxation of the equatorward wind on the northern California shelf are studied with observations and a simple numerical model. In order to simulate the basic dynamics of the flow reversals and instability, a contour dynamics model is developed for barotropic flow on an exponentially sloping bottom, in which potential vorticity is advected and relative vorticity changes only by movement across topography or advection. It is shown how an intrusion of low potential vorticity along the coast can generate a single "eddy" on the unstable flow behind it. This inshore potential vorticity minimum is likely to originate on the sheltered wide shelf north of Point Reyes. INE, USA, California, Point Reyes/shelf dynamics/vorticity/air-sea interaction/atmospheric forcing/coastal upwelling/barotropic instability/mathematical models/continental shelves/dynamical oceanography/OceanAbstracts.

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WATER POLLUTION/AIR-WATER INTERACTIONS/POLLUTANT DEPOSITION/INSECTIC IDES/CALIFORNIA COAST/PESTICIDES/DDT/AIR POLLUTANTS/SOUTHERN CALIFORNIA BIGHT/AERIAL FALLOUT/PollutionAbstracts.

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Contains some algal distributional records for the Southern California Islands.

235. HAKANSON JL. CONDITION OF LARVAL ANCHOVY (ENGRAULIS MORDAX) IN THE SOUTHERN CALIFORNIA BIGHT, AS MEASURED THROUGH LIPID ANALYSIS. MAR BIOL (BERL) 102(2) 1989: 153-159, ILLUSTR.
* PISCES ** SUPERCLASS GNATHOSTOMATA *** CLASS TELEOSTOMI **** DIVISION TELEOSTEI ***** SUPERORDER CLUPEOMORPHA ****** CLUPEIFORMES ******* SUBORDER CLUPEOIDEI ******** ENGRAULIDAE ********* ENGRAULIS MORDAX.
WHOLE ANIMAL PHYSIOLOGY/GENERAL PHYSIOLOGICAL CONDITION/LARVA, INDICATION USING LIPID COMPONENTS, CALIFORNIA (MARINE)/BIOCHEMISTRY/C HEMICAL COMPOSITION/LIPID & FATTY ACID CONTENT/LARVA, INDICATORS OF GENERAL PHYSIOLOGICAL CONDITION, CALIFORNIA (MARINE)/PACIFIC OCEAN/NO RTHERN PACIFIC/SOUTHERN CALIFORNIA BIGHT/LARVAL CONDITION, LIPID COMPONENTS AS INDICATORS/Zoological Index.

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BIOLOGICAL OCEANOGRAPHY/WATER MASSES/CURRENTS/PHYSICAL OCEANOGRAPHY/OCEANOGRAPHY.

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marine snow/settling behavior/Santa Barbara Channel/San Pedro Basin/oceanography/marine biology.

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Santa Cruz Island/geologic maps/igneous and volcanic rocks/Tertiary/SRD.

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AUTH AFFL: Rutgers Univ., Dep. Geogr., New Brunswick, NJ; 24 refs., illus., sketch map.
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SCCCAMP 1985 was a comprehensive air quality and meteorological monitoring project conducted in the Santa Barbara Channel and adjacent areas from Point Sal to Point Dume. Among the tasks included in the study are analyses of a historical meteorological and ozone data base. The report describes the results of the historical data analysis task of the study. The objectives of this task are to (1) characterize meteorological and ozone concentration patterns during a six-year historical period (1979-1984), (2) identify relationships between meteorological variables and high ozone concentrations, and (3) compare the meteorological conditions and ozone concentrations observed during the SCCCAMP 1985 study with those during the same seasonal period in the historical data base in order to assess the representativeness of the SCCCAMP 1985 study period and individual high ozone events within the period.
Concentration Composition/Comparison/Field tests/Seasonal variations/California/Ozone/Mathematical models/Meteorological data/Atmospheric chemistry/Coastal regions/Air pollution sampling/Air quality data/Regional analysis/South Central Coast Cooperative Aerometric Monitoring Program/Historical aspects/NTIS.

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In Carpinteria Salt Marsh, Salicornia virginica (pickleweed) grows at lower marsh elevations than does Arthrocnemum subterminalis (Parish's glasswort). Standing biomass of both species was greatest immediately adjacent to their abrupt border, suggesting that conditions for plant growth were best here. We utilized field experiments, in which growth rates of naturally occurring and transplanted individuals of both species were measured in four marsh zones, to investigate the role of edaphic factors and competition in maintaining this zonation pattern. The frequency of flooding, and hence soil waterlogging, was greatest at lower marsh elevations, whereas salinity was higher at higher marsh elevations. Consequently, it was not clear, a priori, which part of the marsh had the most severe physical conditions.
competition/abiotic factors/salt marshes/ecological zonation/INE, USA, California, Carpinteria/plant populations/salinity tolerance/Sa licornia virginica/Arthrocnemum subterminalis/flooding/Oceanic Abstracts.

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CALIFORNIA COAST/CURRENTS/OIL SLICKS/POLLUTANT DISPERSAL/SEASONAL VARIATIONS/SOUTHERN CALIFORNIA BIGHT/PollutionAbstracts.

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Macrobenthic data from samples taken in 1980, 1983 and 1985 along a pollution gradient in the Southern California Bight (USA) were analyzed at 5 taxonomic levels (species, genus, family, order, phylum) to determine the taxon and sample size sufficient for assessing pollution impacts on 5 measures of community structure. Four replicate 0.1 m super(2) van Veen grabs per station were needed to ensure community-wide, unbiased estimates of Shannon's, 1-Simpson's and McIntosh's Index. Family-level identification appeared to be a good choice for assessing pollution impacts at the study site as it ensured a high probability (1-beta greater than or equal to 0.80) of detecting intermediate or larger impacts on most (impact effects design) or all (location effects design) of 5 measures of community structure when n sub(i) and n sub(i) greater than or equal to 4. pollution effects/indicator species/approximation/community composition/statistical analysis/biological sampling/ISE/Southern California Bight/zoobenthos/ASFA.

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California/geochemistry/organic materials/Pacific Ocean/hydrocarbons/occurrence/sediments/petroleum/genesis/interpr etation/United States/Southern California/Santa Barbara Basin/cores/Holocene/Quaternary/chemical composition/composition/Northeast Pacific/GEOREF.

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Performer: Lawrence Livermore National Lab., CA. Environmental Sciences Div. Performer: Texas Univ. at Austin, Port Aransas. Marine Science Inst. Funder: Minerals Management Service, Los Angeles, CA. Pacific OCS Region.) Adaptations of Marine Organisms to Chronic Hydrocarbon Exposure. Volume 2 of 2. Final rept. ; 1989. 485p. See also Volume 1, PB90-263344. Prepared in cooperation with Lawrence Livermore National Lab., CA. Environmental Sciences Div., and Texas Univ. at Austin, Port Aransas. Marine Science Inst. Sponsored by Minerals Management Service, Los Angeles, CA. Pacific OCS Region. PC A21/MF A03 Contract: DI1412000130159. Volume II contains the appendices to Volume I. Volume I discusses a three-year study of trophic activities and relationships and reproductive strategies of organisms near a natural petroleum seep in the Santa Barbara Channel. The objectives were to provide an evaluation of the effects of chronic hydrocarbon exposure on bottom dwelling organisms in the Southern California Bight. The primary emphasis of the project was related to the meiofauna, those small organisms ranging in size from 0.1-1mm that live between sediment sand grains. The project included a one-year study of meiofauna food supplies and other potential controlling factors on their populations. Particular emphasis was given to the reproduction and life history of harpacticoid copepods, a class of meiofauna thought to be particularly susceptible to effects of oil. The second and third years of the study consisted of intra-annual comparisons of community metabolism, microbial activity, sediment geochemistry and meiofaunal grazing. Experiments of faunal recolonization of sediments and determinations of carbon sources for deposit feeders were also carried out. The strongest single theme emerging from the results is that petroleum is biologically oxidized by microbes, whose activities increase the rate of community metabolism and change the sedimentary environment. Those changes, in turn, define the types and activities of other microbes and the distribution of multicellular organisms.
Exposure/Sediments/Crude oil/Oil reservoirs/Benthos/Marine microorganisms/Biogeochemistry/Santa Barbara Channel/Hydrocarbons/Southern California Bight/Biological effects/Sediment water interfaces/Aquatic ecosystems/Water pollution effects/Biological adaptation/Meiofauna/Oil pollution/NTIS.

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turbulent entrainment/oceanic eddies/spawning grounds/fish eggs/ fish larvae/Engraulis mordax/INE, USA, California, Point Conception/ INE, Southern California Bight/OceanAbstracts.

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AUTH AFFL: Dep. Syst. and Ecol., Univ. Kansas, Lawrence, KS 66045.
The authors evaluated population characteristics of feral sheep (Ovis aries) on Santa Cruz Island from 1979 to 1981. Santa Cruz Island supported an estimated 21,240 feral sheep on 22,000 ha; mean densities were as high as 2.1 sheep/ha. Sheep attained adult weight by 2.5 years. Physical condition varied seasonally according to reproductive chronology, with no evidence of emaciation. A young age structure suggested an increasing population, and female-biased sex ratios probably resulted from higher mortality of reproductively active males. Lambing occurred during a 1-month period that coincided with the onset of the growing season; lamb survival was close to 100%. The authors concluded that feral sheep were maintaining a healthy population despite habitat degradation due to long-term overgrazing, and recommended that feral sheep be removed from the island. That recommendation was carried out.
fspub/population structure/sheep/Santa Cruz Island/feral population/wildlife management/demography/SRD.

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Long-term overgrazing by feral sheep has resulted in moderate to severe ecological impacts to about one-half of Santa Cruz Island. Feral sheep were generalist herbivores, consuming a variety of plants according to availability and phenology. Insular endemic species in particular were preferred, and sheep reared on their hind legs to reach leaves of endemic shrubs. Effects of sheep on a grassland community included reduced herbaceous cover, increased bare ground, altered community structure, decreased litter, and increased erosion. Sheep browsing impacted shrubs by altering growth form and preventing regeneration, and by completely defoliating lower-growing shrubs.
fspub/grazing/plant communities/environmental degradation/feral populations/sheep/Santa Cruz Island/SRD.

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sketch map.
fspub/Catalina Schist/San Onofre Breccia/sedimentary petrology/sedimentary rocks/clastic rocks/terrigenous/Miocene/southwest/coastal/Santa Monica Mountains/Long Beach/Oceanside/Channel Islands/Santa Cruz Island/Santa Rosa Island/Anacapa Island/offshore/Patton Ridge/Santa Rosa Cortes Ridge/paleogeography/faults/plate tectonics/middle Miocene/upper Miocene/distribution/Mexico/Tijuana/provenance/displacements/San Andreas Fault/effects/sedimentation/SRD/SRD.

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See also Volume 2, PB90-263351. Prepared in cooperation with Lawrence Livermore National Lab., CA. Environmental Sciences Div., and Texas Univ. at Austin, Port Aransas. Marine Science Inst. Sponsored by Minerals Management Service, Los Angeles, CA. Pacific OCS Region. PC A17/MF A03 Contract: DI1412000130159.
A three-year study was undertaken of trophic activities and relationships and reproductive strategies of organisms near a natural petroleum seep in the Santa Barbara Channel. The objectives were to provide an evaluation of the effects of chronic hydrocarbon exposure on bottom dwelling organisms in the Southern California Bight. The primary emphasis of the project was related to the meiofauna, those small organisms ranging in size from 0.1-1mm that live between sediment sand grains. The project included a one-year study of meiofauna food supplies and other potential controlling factors on their populations. Particular emphasis was given to the reproduction and life history of harpacticoid copepods, a class of meiofauna thought to be particularly susceptible to effects of oil. The second and third years of the study consisted of intra-annual comparisons of community metabolism, microbial activity, sediment geochemistry and meiofaunal grazing. Experiments of faunal recolonization of sediments and determinations of carbon sources for deposit feeders were also carried out. The strongest single theme emerging from the results is that petroleum is biologically oxidized by microbes, whose activities increase the rate of community metabolism and change the sedimentary environment. Those changes, in turn, define the types and activities of other microbes and the distribution of multicellular organisms. Exposure/Sediments/Crude oil/Oil reservoirs/Benthos/Marine microorganisms/Biogeochemistry/Santa Barbara Channel/Hydrocarbons/Southern California Bight/Biological effects/Sediment water interfaces/Aquatic ecosystems/Water pollution effects/Biological adaptation/Meiofauna/Oil pollution/NTIS.

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and Embiotoca jacksoni , occurred during most or all seasons and were classified as residents or partial residents. Several abundant species were marine immigrants that seasonally use the slough as spawning and nursery grounds; this resulted in higher abundance and species richness during summer. Species collected during winter largely were slough residents. Species composition and richness varied with distance from the slough entrance. The ocean assemblage was most different, and its similarity to other stations decreased progressively with distance inland and into the tidal creeks.
species diversity/INE, USA, California, Monterey Bay, Elkhorn Slough/ abundance/community composition/Pisces/distribution/temporal variations/spatial variations/biological surveys/Oceanic Abstracts.

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Spadella legazpichessi , S. nana , and S. schizoptera . These species are related in part by the structure fo the adhesive digital organs. The substratum apparently preferred by S. pimukatharos is a sediment rich in fragments of coralline algae.
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geology/faults
/displacements/southwest/Channel Islands/Santa Cruz Island/Santa
Rosa Island/Santa Monica Mountains/Los
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DEP. GEOL. MINERALOGY, INST. POLAR STUDIES, OHIO STATE UNIV.,
COLUMBUS, OHIO 43210, USA. BA.
Scales of the anchoveta [Engraulis ningens] were abundantly
represented among fish remains preserved in partly laminated marine
sediments on the upper continental slope of Peru. Hake scales were
less common. Sardine scales occurred only sporadically. Recent
accumulation rates of scales indicate that prior to exploitation
the anchoveta standing stock off Peru was .apprx. 5 times that of
northern anchovy off California [USA]. During glacial time,
clupeoids were less abundant off Peru and were more evenly
distributed among sardines and anchoveta. Evidence from fish scales
and phytoplankton assemblages suggests that the coastal waters off
Peru did not respond to continental glacial and neoglacial advances
simply by cooling. High accumulation rates of scales from warm-
water fishes and tests of cool-water phytoplankton preceded and
succeeded an interval containing low numbers of dominantly warm-
water taxa. This interval coincided with the 2nd neoglacial advance
(2000-2700 yr. B.P.). Similar but less well-defined warm-water and
cool-water assemblages coincided with the 3rd neoglacial advance
(200-400 yr B.P.) and the last glacial retreat. Upwelling intensity
probably fluctuated more widely during early and late phases of
glacial and neoglacial cooling episodes, accounting for the mix of
distinctly warm-water and cool-water assemblages and perhaps for an
enhanced productivity. A weakened Intertropical Convergence Zone or
strengthened coastal countercurrent may explain the warm-water
marine faunas and floras and wet climates on the mainland of Peru
inferred by others for neoglacial or glacial time.
ENGRAULIS-RINGENS ANCHOVETA CLUPEOID SARDINE SCALE PHYTO PLANKTON
GLACIATION PALEO CLIMATOLOGY MARINE ENVIRONMENT CALIFORNIA
USA/Biosis.

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California/stratigraphy/Miocene/paleomagnetism/sedimentation/prov
enance/paleocu rrents/Pacific Coast/tectonophysics/plate
tectonics/Los Angeles County/Ventura County/United States/Southern
California/Neogene/Tertiary/Santa Monica Mountains/Transverse
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The purpose of the San Clemente Basin Experiment (SCBE) was to survey the upper ocean currents and temperature in a region southwest of San Clemente Island (SCI). To accomplish this, two cruises were made in this area during which currents were measured by using a shipboard mounted Acoustic Doppler Current profile (ADCP), and temperature was measured during the second cruise by deploying Expendable Bathythermographs (XBT). The first cruise took place during 17-21 July 1989 and the second one during 2-6 September 1989. Data indicate a variety of features. Two different flow patterns were observed. Strong poleward alongshore flow (about 40 cm/s) occurred 5-15 km west of SCI and small scale eddies were seen further offshore, i.e., farther than 15 km west of SCI. The alongshore flow intensified poleward, reaching 300 m depth. The small scale eddies have a length scale of about 10 km and are believed to be associated with larger scale horizontal shear due to the California current. Keywords: Coastal circulation; Nearshore eddies; Ocean current structure; Geostrophic flow; Thermal properties; Sea water; Theses. (edc).
Acoustic detectors/Basins Geographic/Bathythermographs/California/Circulation/Coastal regions/Doppler systems/Expendable/Water flow/Geostrophic currents/Horizontal orientation/Inshore areas/Length/Patterns/Santa Barbara Islands/Scale/Sea water/Shear properties/Structural properties/Thermal properties/Theses/Eddies Fluid mechanics/Ocean currents/Nearshore eddies/San Clemente Island California/ADCP/Acoustic Doppler Current Profile/Coastal circulation/Nearshore eddies/Ocean current structure/Geostrophic flow/Thermal properties/Sea water/NTIS.

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new species/taxonomy/animal morphology/Halicyclops hurlberti/Halicy clops aequoreus/Halicyclops clarkei/Halicyclops fosteri/INE, USA,

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climatic conditions/thermoregulation/USA/Alaska/Pribilof

Island/USA/ California/San Miguel Island/Galapagos/pups/marine mammals/heat balance/weather/Arctocephalus galapagoensis/Callorhinus ursinus/survival/models/bioenergetics/environmental effects/INE/USA/Alaska/Pribilof Island/ISE/ Galapagos/INE/USA/California/San Miguel I./ASFA.

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SCRIPPS INST. OCEANOGR., LA JOLLA, CALIF. 92093, USA. BA.
Zooplankton was sampled through 8 depth intervals above about 500 m along a transect of the eastern tropical Pacific (ETP), 23.degree. N-3.degree. S, encompassing 4 environments. The California Current-ETP transition off Baja California [Mexico] and the mouth of the Gulf of California is inhabited by California Current species at their southern limits, and by the galatheid red crab Pleuroncodes planipes together with euphausiids (e.g., Euphausia eximia) of an abundance-based recurrent group of species, distinguished using the criterion of > .hivin.x [mean] abundance (numbers under unit area of sea surface) at common localities, adapted to productive zones marginal to the O2-deficient part of the ETP. Tropical species appear here where water with surface temperature > 26.degree. C and O2 concentration of < 0.1 ml l-1 beneath a shoaling thermocline replaces the upwelling environment off Baja California. The zone 22.degree.-10.degree. N harbors euphausiids of 2 groups: the vertically migrating tropical species (e.g., E. diomedeae) which tolerate intense O2-deficiency at their daytime depths and enter the oxygenated mixed layer at night, and non-migrating Stylocheiron species [S. elongatum, S. carinatum, S. affine, S. longicorne and S. maximum] which have vertical ranges extending up into the mixed layer. Most of these ETP-adapted species are denser farther south, in the north equatorial countercurrent, but 3 ETP endemics (e.g., E. distinguenda), all vertical migrators belonging in 1 subgeneric division of Euphausia, are densest in the most O2-deficient regions. The zone of the North Equatorial Countercurrent maintains high densities of 3 groups: the widely-ranging, ETP-adapted tropical species, the 4 common Stylocheiron species [S. carinatum, S. affine, S. longicorne and S. maximum] which, while recurring in abundance at the same localities, differ in depth and the mesopelagic tropical-subtropical species, not tolerant of O2-deficiency, which occur here in easterly tongues of range. At the equator (93.degree. W), westerly ranging species (e.g., E. paragibba) and westerly Nyctiphanes simplex appear to migrate between equatorial currents which differ in direction with depth, thereby maintaining their narrow ranges along the equator. The marginal proliferators such as E. eximia, prominent off Baja California, are again abundant here, availing of the equatorial divergence for high productivity and of the oppositely-directed currents for geographical stability. A 2nd recurrent grouping of species, based on presence of their larvae at common localities, yielded groups also distinguishable by whether the larvae lived within or beneath the mixed layer. Ontogenetic strengthening of vertical migration capability is demonstrated by many species, with older larvae, juveniles and adults showing ranges, respectively, increasing from a few meters to up to 400 m. The pattern is the same in O2-deficient regions as elsewhere. Regional distribution of euphausiid volume (wet displacement biomass) tended to agree with zooplankton volume, with maxima at the equator, 8.degree. N, and at some localities off Baja California and the Gulf of California where red crab volume peaked. The depth at which euphausiid volume is equal in amount day and night, across which vertical migration takes place, is designated

the equilibrium depth (EqD) for euphausiid volume. EqD for euphausiids generally agreed with EqD for zooplankton volume, indicating that euphausiids play a role in determining depth of EqD for zooplankton volume. Euphausiids comprised 13% (.hivin.x) of zooplankton volume. Eighty percent (.hivin.x) of euphausiid volume migrated across EqD, the value showing no significant regional differences. Thirty-seven percent (.hivin.x) of zooplankton volume engaged in such migration, but in the region south of 14.degree. N encompassing the broad O2-deficient zone, the value was 26%, which compares with 18% previously determined for biomass transferring in a comparable way between epiplankton and planktostad in the same region. EUPHAUSIA-EXIMIA EUPHAUSIA-DIOMEDEAE EUPHAUSIA-DISTINGUENDA EUPHAUSIA-PARAGIBBA STYLOCHEIRON-ELONGATUM STYLOCHEIRON-CARINATUM STYLOCHEIRON-AFFINE STYLOCHEIRON-LONGICORNE STYLOCHEIRON-MAXIMUM NYCTIPHANES-SIMPLEX PLEURONCODES-PLANIPES ZOO PLANKTON BAJA-CALIFORNIA MEXICO GULF OF CALIFORNIA NORTH EQUATORIAL COUNTERCURRENT MIGRATION ONTOGENY/Biosis.

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SCIR.
fspub/bees/feral bees/exotics/non-natives.

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The workshop provided an important opportunity for those studying climate research to meet with those evaluating potential impacts as a bridge to formulating and developing effective policy responses. Participants identified an extensive range of capabilities at the University of California campuses and laboratories, spanning experience in biogeochemical cycling, atmospheric and oceanic modeling, data and model analysis and intercomparison, monitoring and observation capabilities, and hydrology and surface processes. These diverse capabilities together create a significant strength in study of our physical and chemical environment. Climate Caucus members identified a number of important initiatives that could extend understanding of potential changes in California. More detailed analysis of existing model simulations, model improvements including nesting of mesoscale models, and more extensive analyses of available data sets could provide important insights into potential changes in hydrology and in the intensity of the California current. Increased computer resources could provide both an incentive and the glue to enhance collaboration between physical

and biological studies. A strong commitment to pursue these opportunities could assure significantly more definitive assessments of the potential impacts of climate change on California and provide a firmer basis for policy consideration. (ERA citation 15:033103). California/Carbon Dioxide/Climate Models/Emission/Environmental Impacts/Forecasting/General Circulation Models/Geochemistry/Global Aspects/Meteorology/Seasonal Variations/Variations/Meetings/Climates/Greenhouse Effect/EDB/540120/Climatic changes/Air pollution/NTIS.

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Fachber. Geowiss., Univ. Bremen, Postfach 330440, 2800 Bremen 33, FRG. A new 56-year record, spanning the years 1931-86, of trace metal accumulation rates for Cd, Cu, Ni, Pb and Zn is constructed from the laminated sediments of the Santa Barbara Basin, southern California. The sedimentary record yields information on short-term climatic changes and allows a resolution of 1 year (plus or minus 2 years) for age assignments. Concentrations of Cu, Ni and, especially Pb, in bulk sediment solids reflect anthropogenic input. The Pb sediment profile reflects recent developments in Pb consumption: the introduction of unleaded gasoline in the U.S.A. is documented by a levelling off of the Pb concentrations in the sediments. Within the Cd and Zn profiles, there is no suggestion of anthropogenic input. However, flux calculations indicate that industrial pollution does contribute to the accumulation of Zn in the basin sediments, while the Cd content can be attributed entirely to contributions from natural sources.
marine pollution/heavy metals/INE, USA, California, Santa Barbara Basin/sediment pollution/copper/nickel/lead/zinc/cadmium/sedimen/Oceanic Abstracts.

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Satellite thermal imagery and in situ biological and physical data are presented that describe the spatial variability of phytoplankton biomass and species composition in relation to the physical structure at the sea surface during persistent upwelling off northern California. Surface patterns in temperature, geostrophic velocity, chlorophyll, and particle size structure show that the coastal zone was dominated by two water masses separated by a well-defined physical boundary. This boundary is apparent in satellite thermal imagery as a cold front and in dynamic height as a meandering jet in the California Current. Broad tongues and narrow filaments of cold, chlorophyll-rich water that extended over 100 km offshore were present in our study area. These features were bounded by the meandering coastal jet.
biomass/phytoplankton/INE/USA/California/coastal upwelling/coastal jets/current meandering/satellite sensing/INE/California Current/nearshore dynamics/ASFA.

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INST. MAR. RESOUR., A-018, SCRIPPS INST. OCEANOGR., UNIV. CALIF. SAN DIEGO, LA JOLLA, CALIF. 92093, USA. BA.
The transport of nitrate into the euphotic zone appears to be a major factor regulating the standing stock and production of phytoplankton in southern California [USA] coastal waters. The rate of photosynthetic C assimilation is proportional to the rate of nitrate assimilation and to the ratio of nitrate:total N assimilated. The phytoplankton standing stock (g C.cntdot.m-3) and its production rate are related to the depth of the vertical nitrate concentration gradient. The chemical composition of the particulate organic matter, as the POC:PON ratio, is related to the C:N assimilation ration of the phytoplankton. Regenerated production, measured as ammonium assimilation, is proportional to the nitrate assimilation rate, implying parallel and concurrent increases in the production of heterotrophic microplankton and phytoplankton attending new inputs of nitrate into the euphotic zone. The vertical diffusion of nitrate, when calculated from the vertical nitrate concentration gradients and nitrate assimilation rates, appears to give reasonable estimates of the vertical eddy diffusivity coefficient for nitrate.
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Reithrodontomys megalotis , the western harvest mouse, is found throughout much of the western United States, including three of the eight California Channel Islands. It is believed to be a recent introduction to San Clemente Island but has been recognized as separate subspecies on Santa Catalina and Santa Cruz Islands. I examined mitochondrial DNA isolated from R. megalotis specimens from Santa Catalina Island and two mainland locations. The mitochondrial genome of vertebrates is a relatively small, circular molecule fairly easy to isolate from fresh or frozen tissue samples. It is inherited maternally without recombination so it provides a definitive marker of maternal phylogeny.
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10 km and are believed to be associated with larger scale horizontal shear due to the California Current. Keywords: Coastal circulation; Upper ocean currents; Nearshore eddies. (edc). Basins Geographic/Bathythermograph data/California/Circulation/Coastal regions/Currents/Meters/Eddies Fluid mechanics/Directional/Doppler systems/Expendable/Water flow/Horizontal orientation/Inshore areas/Length/Oceanographic data/Patterns/Scale/Santa Barbara Islands/Sea testing/Sea water/Shear properties/Structural properties/Summer/Temperature/Ocean currents/Ocean circulation/San Clemente Basin California/NTIS.

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A temporal record of oxygen and NO sub(3) super(-) concentrations in the bottom water of the Santa Barbara Basin indicates that outside waters spill over into the basin seasonally. It is proposed that an annual bottom-water cycle leads ultimately to varve production. The greater degree of bottom-water oxygen depletion that occurs regularly in late summer and fall was coincident with a smaller pool of pore-water Fe, penetration of Sigma H sub(2)S up to the sediment-water interface, maximal numbers of benthic Foraminifera, and bacterial mat growth. The latter was indicated by increases in concentrations of extractable ATP, organic C, and total N in sediments from the depth intervals 0-0.25 and 0.25-0.5 cm. The greatest numbers of siliceous phytoplankton skeletons were found on the sea floor soon after the late spring, surface-water, Chl a maximum. This event coincides with additions of new and more-oxygenated seawater to the deep basin.
varves/marginal basins/sediment analysis/bottom water/sediment-water interface/oxygen/benthos/INE, USA, California, Santa Barbara Basin/chlorophylls/seasonal variations/Oceanic Abstracts.

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Since barite is commonly used as weighting agent in oil- and gas-well drilling mixtures, the distribution pattern of Ba in marine sediments near drilling sites may provide an indicator of anthropogenic chemical contamination from these operations. Barium content of benthic sediments (as determined by isotope dilution and NAA) from different regions of the South California Bight ranged from 43 to 1,899 ppm, averaging 627 ppm, and grouped as follows: outer shelves, 370 ppm; inner shelves, 835 ppm; outer basin, 714 ppm; and inner basin 686 ppm. In general, the outer shelves have the lowest Ba concentrations of the 4 regions, as might be expected from their relative distance from the mainland, with its sources of Ba compounds, both natural and anthropogenic. Highest individual Ba concentrations were found in the sediment of deep basins. Contents of the mainland and channel island intertidal sediments averaged 879 and 388 ppm, respectively. At present, it is uncertain whether the high Ba content in the intertidal sediments along the mainland is of natural or anthropogenic origin. FT & AM.
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behavior/juvenile/mating/shelter utilization/population limitation/protective behavior/population size/habitat utilization/Mollusca/Cephalopoda/cephalopod/Octopus bimaculatus/octopuses/Santa Catalina Island/marine biology/ecology/malacology.

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In this study, patterns of rockfish (genus Sebastes) recruitment variation are shown to be similar to patterns of variation in physical parameter values which describe the rockfishes' environment. The focus is on the large amplitude recruitment fluctuations that remain apparent years and even decades later in the data obtained from commercial fishery samples.
Sebastes/recruitment/ocean currents/fish catch statistics/long-term records/environmental effects/INE/California Current/demersal fisheries/ASFA.

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DIV. MAR. SCI., UNESCO, PL. DE FONTENOY, 75700 PARIS, FR. BA. S. similis in the southern California [USA] eddy was observed regarding reproduction, daily and ontogenetic vertical migrations, growth and longevity. The period of highest spawning activity occurs between late Dec. and early April, but small pulses of spawning are occasionally observed in late spring and summer. The

release of eggs takes place close to shore above the continental slope and then the eggs sink to 200 m or deeper. Nauplius larvae ascend and protozoeal and zoeal larvae stay mostly above 100 m. The daily vertical migration becomes evident after the 2nd protozoeal stage. Adults are abundant between 50 and 200 m at night and 250 and 600 m in the daytime. The spawning activity of S. similis becomes highest when the vertical thickness of the optimum temperature zone (10.degree.-15.degree. C) is the greatest. The local population off the southern California coast may be joined by the subarctic population. Multiple spawnings occur possibly from females of the southern California population. The lifespan of S. similis is 2.0-2.5 yr for females and about 1.5 yr for males. Sexual maturity is reached at about 1 yr in both sexes. Females reproduce in 2 successive spawning seasons and males seem to accomplish multiple fertilizations. Growth trends are similar to those reported for S. similis off Oregon [USA]. Growth rates are described using growth curves fitted by the von Bertalanffy and logistic equations.
REPRODUCTION VERTICAL MIGRATION GROWTH RATES LONGEVITY SPAWNING ACTIVITY POPULATIONS FERTILIZATION LOGISTIC EQUATION TEMPERATURE ZONE/Biosis.

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Performer: Naval Postgraduate School, Monterey, CA
Master's thesis.
CTD and ADCP data from the Coastal Transition Zone (CTZ) pilot cruise off Point Arena, California, during June 1987, were combined to make optimal estimates of the current velocity field. The region was characterized by upwelling over the shelf, a single strong offshore geostrophic jet to the north, and meandering equatorward flow which advected upwelled water from the coastal region up to 150 km offshore. Geostrophic velocity profiles referenced to 500 dbar were adjusted to the ADCP-measured velocity in the 190-274 m layer. Comparison of the unadjusted and adjusted profile sets showed generally good agreement below 200 m but marked differences in several of the profiles above 200 m. Sections of geostrophic and ADCP velocity indicated that the flow in the region was highly geostrophic, but ageostrophic flow components were also present, particularly in the high velocity regions. Volume transport was computed for a portion of the survey area using the two velocity data sets and the Ekman transport, computed from the observed wind data. Transport in the chosen subregion was not balanced due to 1) rapid temporal changes in the meandering upwelling jet, and 2) the influence of high frequency variability which impacted both the CTD and the ADCP data. Keywords: Cold filaments; Ocean currents; California current; Filament mapping; ADCP; Military theses. (kt).

California/Data bases/Estimates/Filaments/High frequency/High velocity/Low temperature/Mapping/Meteorological data/Optimization/Profiles/Regions/Surveys/Theses/Transitions/Tra nsport/Upwelli ng/Variations/Velocity/Volume/Water/Wind/Coastal regions/Geostrophic currents/Geostrophic wind/Ocean currents/Cold filaments/Air water interactions/A ship mounted acoustic doppler current profiler/Conductivity temperature depth profiler/NTIS.

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food webs/particulate organic matter/predation/detritus/fecal pellets/reef fish/INE, USA, California, Santa Catalina I./biogeochem ical cycle/Oceanic Abstracts.

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The effect of giant kelp, Macrocystis pyrifera , on the population
dynamics of two temperate reef fishes, striped surfperch (Embiotoca
lateralis) and black surfperch (E. jacksoni), was examined. Based
on an understanding of how particular reef resources influence
abundances of the surfperch and of the effect of giant kelp on

those resources, we anticipated that Macrocystis would adversely affect populations of striped surfperch but would enhance those of black surfperch. The natural establishment of giant kelp at sites at Santa Cruz Island, California, resulted in the predicted dynamical responses of surfperch. Abundances of striped surfperch declined rapidly when and where dense forests of giant kelp appeared, but showed little change where Macrocystis was continuously absent over the 8 y period of study. Abundances of adult black surfperch, which increased following the appearance of giant kelp, were lagged by > 1 y because the dynamical response involved enhanced local recruitment. No change in abundance of black surfperch populations was evident at areas without giant kelp. environmental effects/Macrocystis pyrifera/Embiotoca lateralis/Embiotoca jacksoni/USA/California/Santa Cruz Island/INE/California/Santa Cruz Island/population dynamics/effects on/ASFA.

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DEP. BIOL. SCI., MAR. SCI. INST., UNIV. CALIF., SANTA BARBARA, CALIF. 93106, USA. BA.
The frequency of occurrence of tympanic cranial spines in the kelp rockfish (S. atrovirens), an eastern Pacific scorpaenid, was examined over much of the species' geographic range. Tympanic spines occur significantly more often in individuals from the southern part of the range. S. atrovirens seem to fall roughly into 2 groups: central and southern California [USA] though there is clinal variation within each group. The occurrence of tympanic spines is probably determined genetically, and the difference is tympanic spine occurrence between the northern and southern parts of S. atrovirens' range may be due to low gene flow between northern and southern populations. This restricted gene flow may be due to the actions of the California Current and the southern California eddy. Recruitment of S. atrovirens in central California would come primarily from local eddies of the California Current in central California, while recruitment in southern California would come primarily from southern California larvae entrained in the southern California eddy.
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Boundaries/California/Coastal regions/Convergence/Seasonal variations/Filaments/Inshore areas/Low temperature/Meteorological data/Offshore/Stresses/Theses/Transients/Variations/Climatology/Eddies Fluid mechanics/Air water interactions/Mathematical models/Ocean currents/Ocean models/Wind shear/Primitive equations/California current/NTIS.

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in terms of interannual variation in carcass deposition. During this ENSO, 56% of the seabirds and 48% of the marine mammals washed ashore. Patterns of intra-annual variation were species specific and related to animal migration patterns, reproduction, and seasonal changes in weather.
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center of the Santa Barbara Basin. The study reports a large
decrease in the flux of diatoms between the periods 1954-1972 and
1973-1986, by a factor of five, and sustained reductions from 1973
to 1978 by a factor of ten below the pre-1972 period. Planktonic
foraminifera flux shows a consistent trend of decrease with lowest
from 1981 to 1984. On the whole, the 1954-1972 period is
considerably cooler than the 1973-1986 period, over te entire North
Pacific. The decrease in biological production in this coastal
system is accompanied by an overall intensification of the Aleutian
Low in the North Pacific over the past 14 years, providing for a
weakening of the California Current, and an overall reduction of
mixing and upwelling. The possibility that the low coastal
production could provide positive feedback to global warming
through reduction of CO sub(2)-uptake, and its relation to the
greenhouse effect is considered. On a shorter time-scale, the
effect of El Nino phenomena are clearly seen in the sediments of
this basin, as decreases in total diatom flux and increases in the
relative abundance of certain warm-water diatoms.
climatic changes/atmospheric chemistry/sediment
composition/diatoms/Foraminifera/Bacillariophyceae/INE/USA/Califo
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E. pacifica was observed with respect to reproduction, growth and
development of cohorts, and successions in population structure and
biomass during 1953-56. The S California [USA] eddy and its
upwelling regime serve as a reproduction refuge for a warm-
temperate population of this euphausiid. Three size classes spawn
there during a year-the largest in April-June, an intermediate in
June-Feb., and small, newly mature females usually in Aug.-Jan.
There were year-to-year differences. The largest densities of
larvae were observed about a month after egg peaks (1 survey later)
or appeared coincident with them. In 1953 there was strong spring
recruitment, abruptly subsiding with an early decline in upwelling-
the index of environmental enrichment used. During 1954 only 1
substantial cohort was recorded, in June at the height of a poor
upwelling season. In 1955 repeated spawning occurred during the
long upwelling season, but recruitment after July was poor. The
year of most intense upwelling, 1956, yielded 3 strong cohorts-the
last, July-Oct., being exceptionally strong. Smallest larvae were
usually in 12-16.degree. C waters. Ripe females were concentrated
at high densities at these same temperatures during Aug.-March but
were distributed over a broader range at 10.5-19.degree. C during
April-July. Growth was estimated to be about 3 mm body
length/month, slowing during Sept.-Jan. or after about 17 mm.
Females appeared to grow slower in breeding seasons. Maturity can
be at 11 mm, but reproduction is not general until 15-16 mm. Here,
maximum size was 21 mm after about 7 mo. for early-year recruits
and a year for summer recruits. Survival rates appeared higher in

the latter. Growth rates were similar to those reported for E. pacifica off Oregon and higher than in the subarctic Pacific. Survivorship was lowest for furcilia larvae, increased in juvenile and young adult phases, then decreased after reproduction became regular. Slowed growth and increased survivorship at life interphases appeared to cause regular frequency and biomass maxima at lengths of 7, 10-12 and 15 mm. Sex ratio favored females. Males apparently accomplished multiple fertilizations.
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Performer: Naval Postgraduate School, Monterey, CA
Master's thesis
Ocean currents and density were measured off Point Sur, California in February 1989 using Pegasus (an acoustically tracked velocity profiler), ADCP (a ship-mounted acoustic doppler current profiler), and CTD (conductivity, temperature, depth profiler). Absolute velocities are compared with geostrophy and various flow regimes are analyzed with respect to prominent features and historical and other recent data. Geostrophic cross-sections based on various levels of no motion (LNM) are compared. Temperature, salinity, and density fields are examined and correlated to velocity features. The California Current is a weak southeastward flow starting about 60 kilometers from the coast. The Davidson Inshore Current is a strong surface-intensified core of warm, fresh water centered 30 kilometers offshore, and located in the top 100 meters. A subsurface maximum of westward flow exists in a well-defined jet

100 meters deep about 30 kilometers off Point Sur. There is a trench jet located along the bottom between the continental slope and a seamount 33 kilometers from the coast, which could either be topographically steered out of Monterey Canyon or recirculated from further offshore. Word processing, Script, GML, Text processing, Ocean currents, California, Davidson inshore current, Geostrophic currents, Thesis. (jg). California/Continental slopes/Currents/Depth/Flow/Geostrophic currents/Inshore areas/Processing/Profiles/Salinity/Starting/Text processing/Tracking/Velocity/Density/Ocean currents/Point Sur Transect/Theses/Point Sur California/A ship mounted acoustic doppler current profiler/Conductivity temperature depth profiler/NTIS.

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Dep. Fish., Humboldt State Univ., Arcata, CA 95521, USA.
On 15 August 1985, a zebraperch (Hermosilla azurea) was collected in northern California in the Klamath River Estuary (41 degree 31.5'N., 124 degree 05.7'W.) during a U.S. Fish and Wildlife Service beach seining operation. The specimen (HSU 86-27) measured 270 mm SL, but only the head was saved. Two additional specimens were collected in the Klamath River Estuary during USFWS beach seining operations on 10 August 1987, and on 22 September 1988 (HSU 88-2, 238 mm SL). The collections reported here extend the known range approximately 560 km northward. new records/geographical distribution/distribution records/Hermosill a azurea/INE, USA, California, Klamath Estuary/Oceanic Abstracts.

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Jet Propul. Lab., California Inst. Technol., Pasadena, CA 91109, USA. This note presents images of three dynamically different regions in the ocean to demonstrate the variety of mesoscale variabilities detected by the SEASAT synthetic-aperture radar (SAR). South of the Grand Banks of Newfoundland, a cold eddy is observed to form as the result of the southward intrusion of Labrador Sea water, perhaps having led to the birth of a Gulf Stream extension ring. Off the northern coast of California, features resulting from the offshore intrusions of cold upwelling water are observed. Two topographically generated eddies are detected near Misteriosa Bank on the Cayman Ridge in the northwestern Caribbean. Comparisons are made with concurrent NOAA-5 infrared images whenever the eddies have thermal signatures. microwave imagery/mesoscale eddies/ANW, Canada, Newfoundland/INE, USA, California/ASW, Cayman Ridge/SEASAT/OceanAbstracts.

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The patterns of community development occurring within a subtidal habitat dominated by the giant kelp, M. pyrifera is reported and discussed. Three types of colonizing macrophytes were distinguished including rapid growing ephemerals, and rapid and slow-growing perennials. The study occurred in a giant kelp forest at Coches Prietos Cove on the south side of Santa Cruz Island. Marine algae, giant kelp, Santa Cruz Island.

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OCEANOGRAPHY/OCEANOGRAPHY.

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* PROTOZOA ** PHYLUM SARCOMASTIGOPHORA *** SUBPHYLUM MASTIGOPHORA **** PHYTOMASTIGOPHOREA ***** DINOFLAGELLIDA ****** GYMNODINIUM BEII *** SUBPHYLUM SARCODINA **** SUPERCLASS RHIZOPODA ***** CLASS GRANULORETICULOSEA ****** FORAMINIFERIDA ******* ORBULINA UNIVERSA. ASSOCIATIONS/MUTUALISM/ORBULINA UNIVERSA/NEW SPECIES, NORTHERN PACIFIC/PACIFIC OCEAN/NORTHERN PACIFIC/CALIFORNIA CURRENT/NEW SPECIES FOR DINOFLAGELLATE MUTUAL/NEW SPECIES FROM FORAMINIFERAN MUTUAL HOST/Zoological Index.

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fossil flora/pines/evolution/prehistory/SRD.

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 Publication Number 6; 87 pp, maps.
fspub/algae/marine biology/SRD.

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feral pigs/ecology/SRD.

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Blooms of chain-forming marine diatoms were observed in the process of aggregating into centimeter-sized flocs of marine snow in surface waters of the Santa Barbara Channel, California. These aggregates were composed of a rich assemblage of living, actively photosynthesizing diatoms dominated by the setose genus Chaetoceros and by chain-forming Nitzschia spp Flocculation of one bloom occurred in as little as 24 h, and bloom flocculation apparently was not triggered by nitrogen-limitation. Marine snow of diatom origin was also abundant during spring, summer and early autumn throughout the Southern California Bight, suggesting that diatom flocculation is a seasonally significant source of marine snow. Resting spores rarely occurred within either newly formed or aged diatom flocs. The mean in situ settling velocity (+ or - S.D.) of newly formed flocs was 117 + or - 56 m/d, two orders of magnitude faster than unaggregated Chaetoceros. Rapid, episodic export of surface-derived primary production to the ocean bottom via mass flocculation and settlement of diatom blooms can occur prior to consumption by pelagic grazers and significantly effects marine food webs, oceanic flux processes, and diatom biology. Keywords: Algae, Reprints. (AW). Autumn/California/Flux Rate/Mass/Ocean bottom/Oceans/Reprints/Sources/South Direction/Spores/Summer/Surface waters/Algae/Flocculation/Marine biology/Chaetoceros/Nitzschia/Diatoms/Blooming/NTIS.

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Dep. Neurobiol., Harvard Med. Sch., 220 Longwood Ave., Boston, MA 02115, USA. Kinetics and local spatial patterns of bioluminescence in the mesopelagic copepod Gaussia princeps , collected by net off the coast of southern California, USA, were investigated from 1986 to 1989. Luminescence elicited by single electrical stimuli began as a localized secretion from any of 16 widely distributed sites on the body. Appendage or body movements swept the particulate luminescent exudate away from the cuticle. Three types of single flashes were identified in response to single electrical stimuli, including a fast flash of ca. 2 s duration, a long flash of 7 s duration, and a 17 s slow flash. In addition, in 20% of the tests a fourth, two-component flash consisting of a fast or long component followed by a slow component was elicited. bioluminescence/electric stimuli/mechanical stimuli/flash kinetics/ Gaussia princeps/INE, USA, California/marine crustaceans/secretory products/kinetics/Oceanic Abstracts.

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aircraft) show a strong decrease of the drag coefficient with increasing stability under stable conditions. Vertical profile data obtained from the aircraft show that a strong low level coastal jet is typical of the CODE areas, with a sharp inversion at the jet maximum. The turbulence structure of the jet flow was investigated with special vertical profile patterns. In CODE-2, the diurnal variation of the wind jet and short and long wave radiation were also measured.
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Keywords: Theses, Slow moving ocean currents. (KR). Acoustic ranges/Acoustic velocity/Acoustics/Boundaries/California/Depth/East Direction/Hydrography/Images/Low temperature/Low velocity/Models/Profiles/Satellite photography/Scenarios/Sonar/Surface temperature/Tactical analysis/Theses/Variations/Velocity/Water/Filaments/Ocean currents/Passive sonar/Sound transmission/NTIS.

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Science Application International Corp., 89 Water St., Woods Hole, MA 02543, USA. Four species are added to the genus Pettiboneia . Two of these species were originally assigned to the genus Protodorvillea. Pettiboneia pugettensis is distinguished by notopodia starting on setiger 3 rather than 2. P. dibranchiata was described as having two dorsal branchiae on each parapodium, but in fact has only a single branchia and a long, ciliated notopodium bearing a thin internal acicula. One of the new species comes from an Alaskan fjord and is the only species of the genus possessing palps that are shorter than the antennae. The second comes from the U.S. Atlantic continental slope and rise. This species is readily recognized by the presence of bidentate geniculate setae in anterior setigers that change gradually into furcate setae in

middle and posterior segments. The genus now contains nine species. The geographic and bathymetric distribution of Pettiboneia now ranges from subarctic Alaskan localities to South America, California, Spain, Australia, and the Gulf of Mexico; and intertidal to continental lower slope and rise.
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Marine algae, marine fauna, Santa Cruz Island.

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There are some indications that in large measure the density anomaly field of the California Current System (CCS) follows

temperature, salinity playing a significantly lesser role. These indications have been used as justification for ignoring salinity variations in dynamic models. An extensive data base of simultaneous temperature-salinity observations taken in the CCS is used to calculate and assess the saline contribution to specific volume anomaly, dynamic height, and density variance. The results show that the distribution of salinity can be important in defining the large scale circulation of the CCS, and that the local variability can be quite significant. Salinity; California current; Variance; Density; Anomaly; Thesis; Sea water. (jg).
Anomalies/Circulation/Data bases/Density/Distribution/Dynamics/Height/Models/Sea water/Specific volume/Variations/California/Ocean currents/Salinity/Theses/Ocean temperature/NTIS.

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The importance of Cabo Pulmo-Los Frailes reef lies in its geographical position (23 degree 25'N, 109 degree 25'W), which makes it a singular reef. This research is part of the project "Associated fauna of the coral Pocillopora elegans from Cabo Pulmo-Los Frailes, B.C.S., Mexico," one of the preliminary works needed in order to propose the reef as a reserve zone. From the three surveys carried on between 1988 and 1989, the author collected a total of 422 specimens, distributed in 20 families, 42 genera and 89 species. Those of greater abundance were the sabellarid Idanthyrus pennatus with 158 specimens (37%), the eunicid Eunice antennata with 31 specimens (7%), and the syllid Trypanosyllis (Tripanedenta) taeniaformis with 22 (5%). Only 7 out of the 20 families found had been previously reported for the area. The need to make further research in the area is evident. coral reefs/zoobenthos/new records/geographical distribution/nature conservation/refuges/Polychaeta/ISE, Mexico, Baja California, Cabo Pulmo-Los Frailes Reef/Oceanic Abstracts.

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One qualitative characteristic of all experiments is that the cyclonic eddies (same sense as background rotation of turntable) are substantially stronger than their anticyclenic counterparts. One quantitative observable of the experiments has been the Strouhal number. The preliminary results show a strong dependence of this parameter on the cylinder aspect ratio but only a small effect (if any) on the systems rotation (e.g. the Ekman number, other parameters being fixed). Qualitative similarities between these laboratory experiments and the assymetric eddy shedding from such ocean islands as Guadalope off the coast of Baja California are noted.
ISE, Mexico, Baja California/current rings/cylinders/islands/Strouhal number/Ekman number/OceanAbstracts.

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Marine Algae.

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* PISCES ** SUPERCLASS GNATHOSTOMATA *** CLASS TELEOSTOMI **** DIVISION TELEOSTEI ***** SUPERORDER ACANTHOPTERYGII ****** PERCIFORMES ******* SUBORDER SCOMBROIDEI ******** XIPHIIDAE ********* XIPHIAS GLADIUS.
BIOMETRICS/MEASUREMENTS/RELATIVE MEASUREMENTS/GONAD INDICES, NORTHERN PACIFIC/REPRODUCTION/REPRODUCTIVE SYSTEM/OVARY/CONDITION INDICES, NORTHERN PACIFIC/REPRODUCTIVE CONDITION/FEMALE GONAD INDICES, NORTHERN PACIFIC/ECOLOGY/POPULATION STUDY/POPULATION STRUCTURE/POPULATION SEX RATIO/NORTHERN PACIFIC/PACIFIC OCEAN/SOUTHERN CALIFORNIA BIGHT/POPULATION SEX RATIO & GONAD INDICES/Zoological Index.

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See also PB90-162306. PC A08/MF A01.
Northern fur seal (Callorhinus ursinus) research in Alaska was conducted on the Pribilof Islands during 1987 and 1988 and on Bogoslof Island in 1988. Research on northern fur seals was also conducted on San Miguel Island and nearby Castle Rock off the California coast during 1987 and 1988. The total number of pups born on St. Paul Island in 1987 was 2.36% higher than 1986 but the

increase was not statistically significant based on shearing sampling estimation and dead pup counts, which were conducted on all rookeries. An analysis of trends in pup production indicates that numbers of pups born on St. George Island have declined at 6% (SD = 0.4%) per year during 1973-88 while numbers of pups born on St. Paul Island decreased at 6.8% (SD = 1.1%) per year during 1975-83 and has shown no trend since 1984.
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Cooperation among state, federal, and private conservation organizations is essential to help preserve coastal biodiversity. The Nature Conservancy's Natural Heritage Program, a state-by-state rare species and natural community inventory, has been adopted throughout most of the United States and was initially funded, in part, privately, but will ultimately be incorporated into and funded by state governments. The first step is to state clearly as a mission throughout state and federal natural resource agencies that biodiversity preservation is of top priority. Then, by working cooperatively with private, nonprofit land trusts and conservation organizations, research, habitat acquisition, and management can be accomplished through pooled talents and resources much more efficiently. Two coastal examples of endangered species are given.
ecosystem management/government policy/rare species/nature conservation/USA/INE, USA, California/species diversity/coastal zone/Oceanic Abstracts.

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The concentrations of super(222)Rn and super(226)Ra in the water column and in the sediments of Santa Barbara and San Nicolas basins have been measured semi-annually over the last four years. Approximately one-third of excess radon profiles obtained in the water column in these basins can be adequately fit with a one-dimensional eddy diffusion-decay model. Exponential profiles in the center of San Nicolas Basin yield a vertical eddy diffusivity of 26 plus or minus 16 cm super(2)/s and 3.4 plus or minus 10 cm super(2)/s for Santa Barbara Basin. The application of a two-dimensional eddy diffusion-decay model to profiles obtained in the center and on the margins of San Nicolas Basin produces a better fit than is found using a one-dimensional vertical eddy diffusivity. The two-dimensional model for San Nicolas Basin predicts a vertical eddy diffusivity of 17 cm super(2)/s and horizontal eddy diffusivity of 10 super(5) cm super(2)/s. These values are in reasonable agreement with those predicted from the vertical buoyancy gradient and the horizontal length scale.
water column/sediments/radon isotopes/radioactive tracers/mixing/ INE, USA, California, Santa Barbara Basin/INE, USA, California, San Nicolas Basin/turbulent diffusion/OceanAbstracts.

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* PISCES ** SUPERCLASS GNATHOSTOMATA *** CLASS TELEOSTOMI **** DIVISION TELEOSTEI ***** SUPERORDER CLUPEOMORPHA ****** CLUPEIFORMES ******* SUBORDER CLUPEOIDEI ******** ENGRAULIDAE ********* ENGRAULIS MORDAX.
TECHNIQUES/MATHEMATICAL TECHNIQUES/MATHEMATICAL MODEL/LARVAL DRIFT SIMULATION IN CALIFORNIA CURRENT, NORTHERN PACIFIC/ENVIRONMENTAL FACTORS/PHYSICAL ENVIRONMENT/WATER/CURRENTS, LARVAL DISTRIBUTION RELATIONSHIP, DRIFT MODEL, NORTHERN PACIFIC/REPRODUCTION/REPRODUCTIVE BEHAVIOUR/BREEDING PLACE/SPAWNING SITE EFFECT ON LARVAL DISTRIBUTION, DRIFT MODEL, PACIFIC/SPAWNING/TIME & LOCATION EFFECTS ON SUBSEQUENT LARVAL DISTRIBUTION/DRIFT SIMULATION MODEL, NORTHERN PACIFIC/HABITAT/ DISTRIBUTION WITHIN HABITAT/HORIZONTAL DISTRIBUTION/LARVAL DRIFT MODEL, SPAWNING & CURRENT FACTORS, NORTHERN PACIFIC/PACIFIC OCEAN/NOR THERN PACIFIC/CALIFORNIA CURRENT/LARVAL DRIFT MODEL, SPAWNING & HYDROLOGICAL FACTORS/Zoological Index.

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long-term changes/ocean circulation/upwelling/thermal fronts/ISE/ California Gulf/oceanography/ASFA.

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California/soils/genesis/surveys/Quaternary/Cenozoic/San Clemente Island/United States/sediments/sedimentary petrology/Haploxeralfs/Palexeralfs/Rhodoxeralfs/Xerorthents/parent materials/GEOREF.

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Prepared in cooperation with Woods Hole Oceanographic Institution, Report Number WHOI-89-27. PC A10/MF A02 Contract: N0001486K0325.
Vertical profiles of suspended particulate trace metals were measured in the Sargasso Sea near Bermuda and in the California Current, northwest Pacific. Using a new in situ pump, sufficiently large samples of particulate matter (order 10mg) were collected to allow measurement of a suite of trace metals as well as major component elements, using several different leaching techniques on separate subsamples. Concentrations of particulate Copper, Zinc, Cobalt, Cadmium, Nickel, and Lead near Bermuda were determined to be substantially lower than estimates based on previously published work. Concentrations of the more abundant elements Aluminum, Fe, and Mn were similar to previous estimates. Vertical profiles of Mn, Co, Pb, Zn, Cu, and Ni (mol/l) at Bermuda displayed similar features: a relative depletion in surface waters, a relative maximum in the upper thermocline, and relatively constant deep water concentrations. The similarity in the vertical variations of dissolved/particulate fractionation for these metals may be caused by interaction of dissolved metals with authigenic Mn phases; the fractionation is anti-correlated with other major particle components (organic carbon, calcium carbonate, opal, and aluminosilicate). The vertical profile of particulate Cd displayed a different form: enrichment at the surface and decreasing concentrations through the thermocline to constant deep water values. Theses. (aw).
Aluminum/Bermuda/Cadmium/Calcium compounds/California/Carbon/Carbonates/Cobalt/Concentration Composition/Constants/Copper/Deep water/Depletion/Dissolving/Enrichment/Fractionation/Interactions/ Leaching/Nicke l/Ocean currents/Organic materials/Particles/Profiles/Sampling/Surface waters/Surfaces/Thermoclines/Theses/Vertical orientation/Zinc/Iron/Lead Metal/Manganese/Geochemistry/Metals/Particulates/Sargasso Sea/North Pacific Ocean/Trace elements/NTIS.

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For a ten-day period beginning 15 Jul 1987, tethered balloon measurements were made of turbulence, aerosol, cloud particles, and meteorology at San Nicolas Island, CA, USA, during the "FIRE" marine strato-cumulus Intensive Field Operation (IFO). The primary interest of the Naval Research Laboratory during this experiment was to obtain a data set which could be used for testing the predictions of the Navy Oceanic Vertical Aerosol Model (NOVAM) which describes the atmosphere's optical/infrared properties in terms of easily obtained meteorological data. Two new instruments, flown aboard the balloon, were a saturation hygrometer, which measures 95% < RH < 150% with an accuracy of 0.05 near 100% RH, and

a forward scatter meter which gives in situ measurements of liquid water content at more than 10 Hz. As a result of this experiment a unique and greatly improved look at the microphysics of the clear and cloud topped boundary layer can be taken. In this report the quality of the data obtained is discussed and some preliminary results are given. Algorithms for the instrumentation flown aboard the balloon are given and profiles of some of the measurements are shown.
meteorology/measuring devices/weather forecasting/clouds/atmospheri c turbulence/earth atmosphere/models/marine environment/INE, USA, California, San Nicolas I/Oceanic Abstracts.

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upwelling/wind stress/seasonal distribution/zooplankton/nearshore dynamics/undercurrents/countercurrents/INE, California Current/ISE, California Current/OceanAbstracts.

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mating behavior/reproductive behavior/brooding
behavior/Mollusca/Cephalopoda/Octopus bimaculatus/Santa Catalina
Island/marine biology/ecology/malacology.

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Prepared in cooperation with Occidental Coll., Los Angeles, CA. Moore Lab. of Zoology, Chambers Group, Inc., Santa Ana, CA., Sea Landing Sportfishing, Santa Barbara, CA., and California State Dept. of Fish and Game, Sacramento. PC A03/MF A01.
The authors investigated various life history aspects of 19 rockfish species from the southern California Bight. The aspects included depth distribution, age-length relationships (of 7

species), length-weight relationships, size at first maturity, spawning season, and fecundity. Growth rates of female S. elongatus, S. hopkinsi, S. ovalis, S. saxicola, and S. semicinctus were higher than male conspecifics. Multiple spawning per season was found in 12 species. Generally, most species spawned between late winter and early summer, though there was some spawning within the genus throughout the year. Spawning season duration ranged from 2 (S. flavidus) to 10 months (S. paucispinis). Spawning seasons tended to start earlier in the year and be of longer duration in the southern California Bight, compared to published data on central California conspecifics. Males matured at a smaller length in 7 of the 17 species studied. Maximum fecundities ranged from 18,000 (S. dalli) to about 2,680,000 (S. levis).
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********* ENGRAULIS MORDAX.
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DISPLACED BY EDDY, CALIFORNIA (MARINE)/ECOL OGY/POPULATION
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An inverse model to infer the near-surface velocity from the heat equation was applied to a series of six infrared satellite images from northern California. The inversion used a two-dimensional nondiffusive heat equation with a simple representation of surface heat fluxes and vertical entrainment. The along-isotherm component of the velocity was in the null space of this problem. An overdetermined problem was defined by adding weighted constraints on the energy, divergence and curl of the velocity and representative solutions were chosen from the family of solutions corresponding to a designated misfit level for the heat equation. A series of solutions with an average energy of 250 sq. km (d to the -2 power) and a divergence of 0.36/d compared well with simultaneous Doppler acoustic log (DAL) measurements in regions with strong temperature gradients. The decorrelation time for the solutions was about one day. Horizontal advection accounted for about 40% of the variance of the temporal temperature derivative. The strongest region of divergence, the leading edge of a cold eddy near the coast, was consistent with average divergence calculations from DAL surveys for the same region. The velocity solutions from these inversions supported the theory that the apparent cold filaments in the images were actually meanders of the California Current. Reprints. (aw).
Advection/Artificial satellites/California/Correlation techniques/Eddies Fluid mechanics/Eddy currents/Entrainment/Equations/Filaments/Heat/Horizontal orientation/Inversion/Leading edges/Low temperature/North Direction/Reprints/Solutions General/Time/Velocity/Vertical orientation/Heat flux/Infrared images/Ocean currents/Ocean surface/Temperature gradients/Northern Region California/NTIS.

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Young-of-the-year pelagic juvenile rockfish (genus Sebastes) were collected during annual surveys in the spring and early summer, 1983-88, off the central California coast. Growth rates and back-calculated birthdate distributions of five species (shortbelly rockfish S. jordani , bocaccio S. paucispinis , chilipepper S. goodei , widow rockfish S. entomelas , and yellowtail rockfish S. flavidus) were estimated from daily otolith increments. Interspecific variation in growth rates was evident, with bocaccio exhibiting the fastest growth (0.56-0.97 mm/day) and yellowtail rockfish growing slowest (0.19-0.46 mm/day). Growth rates of all species varied among years. Comparisons of annual growth

performance, measured by predicting standard length at a selected standard age, revealed strong positive interannual covariation among the five species studied; in general, growth was relatively good in 1987 and was poor in 1985. Back-calculated birthdate distributions also revealed strong positive interannual covariation among these species; most distributions were unimodal.
Sebastes/growth/INE, USA, California/otolith reading/fishery biology/recruitment/fishery management/birthdate distribution/Oceanic Abstracts.

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The California Current system is driven primarily by the wind stress patterns over the North Pacific Ocean. The California Current system variability is controlled primarily by interactions between the subtropical high pressure cell over the North Pacific Ocean and the atmospheric thermal low located over California/Nevada. The wind field produces southward oceanic flow in the spring and summer in response to southward-directed wind stress. Associated Ekman transport results in a circulation away from the coast in the near-surface layers, with concomitant upwelling of cold, salty water from below. In the late fall and early winter, northerly winds weaken and winds are at times from the southwest, producing a northward flow along the coast, called a Davidson Current. Offshore, the mean flow continues southward. In the Southern California Bight, a cyclonic eddy is often found, which includes a countercurrent along the coast and a split in flow at Point Conception, where one branch flows southwest joining with the California Current to form the western part of the eddy, and one branch flows northward along the coast as a narrow countercurrent.
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SST fields derived from AVHRR imagery are compared with subsurface
temperature and surface dynamic height fields. The in-situ data
collection was part of the Coastal Transition Zone (CTZ) cold
filament experiments of 1987 and 1988. The results of the 1987
cruise show a subsurface maximum in the correlation coefficient
between AVHRR SST and in-situ temperature at depth for all three
phases of the cruise which is attributed to the temporal offset
between the satellite image and the data collection. The results of
the 1988 cruise show maximum correlations at the surface with
significant correlations at the 95% level of confidence to about
130-150 m depth, with positive correlations to 310-350 m depth.
Comparing the results of the 1987 and 1988 cruises shows that the
offshore filament was much stronger both horizontally and
vertically for the latter cruise. Keywords: Infrared imagery; In-
situ temperature field; Surface dynamic height field; Theses.(jhd).
Scientific satellites/California/Coastal
regions/Coefficients/Sounding/Correlation/Data
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Bioluminescence in the midshipman fish, Porichthys notatus from the Santa Barbara coastal region, was quantified from onset through the first two years of life. Maximum light emission was 2.5 x 10 super(9) photons/s upon leaving the nest and reached 2.0 x 10 super(10) photons/s within the first year. These intensities may be sufficient for counterillumination in moon or starlight over most of the depth range of the fish. The bioluminescence of juveniles recently detached from the nest was depleted by multiple topical applications of a dilute noradrenalin solution. A luciferin-free diet also exhausted luminescence in 10-18 months. Bioluminescence was restored within 24 h after feeding depleted fish with dried specimens of the bioluminescent marine ostracod Vargula hilgendorfii and light emission capacity was correlated with the amount consumed. Juvenile P. notatus from the Santa Barbara coastal region require exogenous luciferin to remain luminescent.
Porichthys notatus/juveniles/bioluminescence/INE, USA, California, Santa Barbara/diets/luciferin/luminous organisms/Oceanic Abstracts.

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The distributions and abundances of rocky intertidal macroinvertebrates and macrophytes occurring at stations on Anacapa Island are reported and the potential impact of human traffic on community organization is analyzed. . Marine botany, Marine Invertebrates, Intertidal community, human impacts, visitors, Anacapa Island.

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The distributions and abundances of invertebrate species on subtidal rocky reefs at Santa Catalina Island, California, were examined. The importance of predation by Octopus bimaculatus and three other major invertebrate predators, competitive interactions, and habitat utilization were evaluated through a combination of field observations and experiments. O. bimaculatus consumed more than 50 prey species from three phyla. It exhibited a clear preference hierarchy, with crabs being the most preferred grey group and subtidal snails the least preferred prey group. Octopuses were opportunistic in their choice of prey in the field, their diet being determined by both preference and availability. In spite of their relatively low preference ranking, snails constituted the major component in octopus diets. Analysis of snail shells in the field indicated that octopus predation was a major mortality source. Field experiments and comparison of prey densities at one site during high and low octopus density years suggest that octopuses at natural densities can significantly reduce prey abundances. However, no significant correlations between predator abundances and their prey abundances on 15 subtidal rocky reefs near Santa Catalina were detected. Analysis of the abundance patterns of the. prey species on these reefs suggest some cases in which competition may have influenced the distributions or abundances of the competing species. However, in general neither

abundance relationships nor the pattern of co-occurrences between species provide evidence of competition. No relationships between the number of co-occurring species at a site and habitat structure, predator abundance, or total prey abundance were detected. The abundances of many species, particularly rare species, were positively correlated with the number of species at a site. At sites where the most abundant species, the sessile gastropod Serpulorbis squamigerus, was common, evenness was lower, but there were no fewer co-occurring species there.^ Predation, habitat utilization, and competition are likely to be important processes in this community, but do not appear to be the major factors influencing local patterns of species abundances. Stochastic events and factors influencing early life-stages of species in this community are possibly more influential in determining general patterns of species abundances.
predation/community structure/subtidal rocky reefs/prey preferences Cephalopoda/cephalopods/Octopus bimaculatus/Serpulorbis squamigerus/ Santa Catalina Island/marine biology/marine ecology.

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history/chapel/SRD.

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fspub/marine biologh/ecology/foraging/SRD.

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marine biology/SRD.

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Oceanogr. Oxford : Pergamon Press. 1984. 1984;13(1):p.5-49
Foreign Includes references. Article.
California/Pacific Ocean/AGRICOLA.

610. Howe BM, Mercer JA, Spindel RC, Worcester PF. Accurate positioning for moving ship tomography. OCEANS '89: THE GLOBAL OCEAN. NAVIGATION, REMOTE SENSING, UNDERWATER VEHICLES/EXPLORATION. 1989;3:pp.880-886.
The goal of Moving Ship Tomography (MST) is to synoptically measure the sound speed field c(x,y,z) over a large (Mm) region of the ocean. In the present version, a ship lowers a hydrophone array to listen to moored acoustic sources several hundred kilometers away. The acoustic travel times between the sources and the receiving hydrophone array, at many different ship stations, are then inverted to obtain the sound speed field. One challenging problem in MST is to accurately track position of the receiving hydrophone array. Two complementary systems are used. One is ship-mounted and consists of a very-short-baseline (VSBL) acoustic tracking system, roll and pitch sensors, the ship's gyro, and a GPS receiver. The other is a Floating Acoustic-Satellite Tracking (FAST) range consisting of two spar buoys, each with a GPS receiver, acoustic pinger, and RF link to the ship. The advantage of the ship-mounted system is its seaworthiness. Two advantages of the FAST range are the long baselines possible when the buoys are deployed far apart, and the independence from the ship and its motion. The FAST range can be deployed and recovered in seas up to sea state 4 and used to calibrate the VSBL system. Results from tests off San Clemente Island and on Lake Washington are presented.
positioning systems/ship motion/hydrophones/acoustic arrays/acoustic tracking systems/satellites/sea state/pingers/INE/USA/California/San Clemente Island/USA/Washington/Washington L./acoustic tomography/ASFA.

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Calif. Inst. Technol., Seismol. Lab., Pasadena, Calif., United-States American Geophysical Union; 1978 fall annual meeting, San Francisco, Calif., Dec. 4-8, 1978 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).
California/seismology/earthquakes/magnitude/Santa Barbara County/United States/Southern California/Santa Barbara/Santa Barbara Channel/1978/seismic moment/accelerograms/GEOREF.

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NPS/Physical oceanography/oceanography.

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fspub/anthropology/archaeology/chumash/Santa Cruz Island.

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birds/SRD.

615. (Performer: Oregon State Univ., Corvallis. Coll. of Oceanography. Funder: Department of Energy, Washington, DC.) California Basin Study (CaBS): DOE West Coast Basin Program. Progress report 7, 15 Nov 1988-14 Nov 1989. ; 1989. Report No.: DOEER603407. 7p.
Sponsored by Department of Energy, Washington, DC. Portions of this document are illegible in microfiche products. PC A02/MF A01 Contract: FG0585ER60340. The overall objective of our research, within the structure of the DOE CaBS program, is to understand the transport pathways and mass balances of some metabolically-active and inactive chemical species in the basin region of the Southern California Bight, with particular reference to the role of macrozooplankton. We have concentrated on C and N pathways and fluxes to date, and will continue to investigate these further (seasonal aspects, and temperature and food-type effects on zooplankton-mediated flux, for example); however, we want also to begin to measure directly the effects of zooplankton on pathways and fluxes of selected trace metals and transuranic compounds. During this report period we have concentrated on analyzing data and writing manuscripts for publication, based on the eight cruises in which we have participated to date. California/Carbon Cycle/Carriers/Data Analysis/Evaluation/Investigations/Mass Transfer/Nitrogen Cycle/Oceanography/Productivity/Progress Report/Trace Amounts/West Coast/Alpha Bearing Wastes/Food/Hazardous Materials/Metals/Plankton/Seasonal Variations/Temperature Effects/Transportation Systems/EDB/580000/EDB/053000/Trace metals/Radionuclides/NTIS.

616. West TL. Functional morphology of the proboscis of Mitra catalinae Dall 1920 (Mollusca: Gastropoda: Mitridae), and the evolution of the mitrid epiproboscis. BULL. MAR. SCI 1991;VOL. 48, NO. 3:pp. 702-718 Dep. Biol., East Carolina Univ., Greenville, NC 27858-4353, USA. Several features of the proboscis morphology of Mitra catalinae are unique among the known species of mitrid gastropods. These features include a bilayered ring of comparatively large (7 mu m high x 11 mu m wide) squamous cells located midway along the length of the peristomial rim, a pair of concentrically arranged cone-shaped buccal lips projecting into the peristomial rim, a muscular esophagus lacking a well-developed secretory epithelium, and small pyriform epiproboscis consisting of longitudinal and transverse muscle fibers. It is proposed that the epiproboscis and the buccal lips regulate the movement of coelomic fluid and buoyant material (e.g. eggs) from the sipunculan prey into the snail's alimentary tract by acting a pump or as a valve. A hydrostatic mechanism appears to effect protraction of the epiproboscis. Comparison of the morphologies and functions of mitrid epiproboscides suggest that the epiproboscis developed from the musculature of the buccal mass, and the epiproboscis sheaths were derived from the walls of the buccal cavity.
Mitra catalinae/animal morphology/functional morphology/evolution/marine mollusks/INE, USA, California/epiproboscis/Oceanic Abstracts.

617. Lasker R, Lasker R, Sherman Ke). Factors Contributing to Variable Recruitment of the Northern Anchovy (Engraulis mordax) in the California Current: Contrasting Years, 1975 Through 1978. 2. ICES Symposium on the Early Life History of FishTHE EARLY LIFE HISTORY OF FISH: RECENT STUDIES 1981:pp. 375-388 NOAA, NMFS, Southwest Fish. Cent., La Jolla, CA 92038, USA. Studies on the distribution of first-feeding larval anchovy and their food were made to test the hypothesis that the upper mixed layer of the ocean must be in a stable (non-turbulent) state for survival of enough larval anchovy to insure the production of a good year-class.

Turbulent conditions destroy food aggregations and dilute potential food organisms to below feeding threshold concentrations of first-feeding larval anchovies. Surveys during the anchovy spawning season of 1975, 1976, and 1978 provided data supporting this hypothesis. Food of first-feeding larval anchovies became limiting when storms (1978) or drastic upwelling (1975) occurred which diluted food aggregations. A complicating factor was that nutritionally inadequate larval fish food could be occasionally overwhelmingly dominant in the larva's environment (1975). The drought year (1976) was characterized by stable conditions in the Southern California Bight and produced one of the best of the last 16 anchovy year-classes; 1975 produced one of the worst. Partial success of the anchovy year-class in 1978 is predicted based on the onset of stable conditions and food aggregations in the latter part of the spawning season.
recruitment/environmental factors/fish larvae/feeding/Engraulis mordax/California Current/upwelling/stock assessment/OceanAbstracts.

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PHYSICAL OCEANOGRAPHY//OCEANOGRAPHY//CURRENTS//WATER MASSES.

619. Littler MM, Editor. The annual and seasonal ecology of Southern California subtidal, rocky intertidal and tidepool biotas. Washington, D. C.: Bureau of Land Management, U.S. Department of the Interior; 1978. Reports the results of field and laboratory research directed at furthering our understanding of the annual and seasonal dynamics of southern California rocky intertidal and subtidal macrophyte and macroinvertebrate populations. Twelve rocky intertidal study sites were assessed in the southern California Bight including 7 sites on the Southern California Islands: Cuyler Harbor, San Miguel Island; Willows Anchorage, Santa Cruz Island; Dutch Harbor, San Nicholas Island; South Point, Santa Rosa Island; Cave Canyon, Santa Barbara Island; Fisherman Cove, Santa Catalina Island; and Wilson Cove, San Clemente Island. Additionally the distribution and composition of subtidal communities on Tanner and Cortez Banks were described along with the effects of catastrophic events such as storms and excessive rainfall on selected rocky intertidal sites. Analysis of community recovery following experimental removal was performed at each of the 12 rocky intertidal stations and a the 4 subtidal sites. The comparative growth rate of selected macorphytes in oil-stressed communities were also reported. . Marine Botany, Marine invertebrates, rocky intertidal, subtidal communities, Channel Islands, Tanner and Cortez Banks, Oil-stress.

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ECOLOGY/ECOLOGICAL ENERGETICS/BIOMASS/PLANKTON, SPATIAL & TEMPORAL PATTERNS, CALIFORNIA (MARINE)/LIFE HABIT/AQUATIC HABIT/PLANKTON/BIO MASS & DISTRIBUTION, SPATIAL & TEMPORAL PATTERNS, CALIFORNIA (MARINE)/ HABITAT/DISTRIBUTION WITHIN HABITAT/PACIFIC OCEAN/NORTHERN PACIFIC/ SOUTHERN CALIFORNIA BIGHT/PLANKTON BIOMASS & DISTRIBUTION, SPATIAL & TEMPORAL PATTERNS/Zoological Index.

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amphibians/Santa Cruz Island/SRD.

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marine biology/SRD.

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fspub/birds/biogeography/SRD.

628. Bernal PA, Chelton DB. Biological variability of low frequency and grand scale in the California current, 1949 1978 [Ecosystem, fisheries, management]. Variabilidad biologica de baja frecuencia y gran escala en la corriente de California, 1949 1978. F A O Fish Rep Food Agric Ogan U N. Rome : The Organization. 1983. 1983(291):p.713-729
Variabilidad biologica de baja frecuencia y gran escala en la corriente de California, 1949-1978. FAO Includes references. Article. California/AGRICOLA.

629. McIntyre MC. A sea floor positioning system. OCEANS '89: THE GLOBAL OCEAN. VOLUME 5: DIVING SAFETY AND PHYSIOLOGY, OCEAN ENGINEERING/TECHNOLOGY.; OCEANS '89 1989;:1717.
A conclusion of the NRC Panel on Crustal Movement Measurements was to "recommend development of a capability to measure, to a 10 cm accuracy, motions of points on the ocean floor up to several hundred km offshore with respect to reference points on land". The sea floor positioning system described attempts to meet this recommendation. The underwater portion is acoustic and may be tied into a global reference frame via GPS receivers at the air/water interface. This approach uses acoustic travel time difference measurements within a network of newly developed precision transponders mounted on benchmarks set into the seafloor. The transponders are interrogated from a deeply towed vehicle or from the bottom of a sea surface buoy housing GPS receivers and antennae, depending on the type of positioning system required; relative or absolute. In a Mar 1988 sea trip, the sound speed field in the 2000 m deep Santa Cruz Basin was determined to be spatially homogeneous and temporally stable to 0.0078 m/s. Subsequent short baseline ranging experiments demonstrated an accuracy and resolution of 1 cm over 100 m paths in differing sound speed

regimes. Preliminary analysis of ranging data in a sea floor transponder network with 1 km spacing indicate subdecimeter accuracy levels.
marine geodesy/acoustic transponders/positioning systems/satellite communication/INE/Santa Cruz Basin/oceanographic equipment/accuracy/GPS/ASFA.

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California/seismology/earthquakes/mechanism/Santa Barbara County/United States/Southern California/Santa Barbara/Santa Barbara
Channel/1978/focus/foreshocks/main shock/aftershocks/faults/rupture/GEOREF.

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NPS/Physical oceanography/oceanography/currents.

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The exploratory behaviour of island and mainland subspecies of the Scrub Jay Aphelocoma coerulescens was studied in the wild, and found to differ. When a novel stimulus was presented to the jays during an experiment, the Island Jay A. c. insularis of Santa Cruz Island gave more attention to it than did the California Jay A. c. californica of the adjacent mainland. The Island Jay spent more time exploring the novelty and approached much closer to it. The Island Jay also seemed to respond more frequently to the novelty. When exploring, the Island Jay spent a greater percentage of time on the ground than did the California Jay. Greater exploratory behaviour may be adaptive in environments such as oceanic islands, where food shortages are sometimes extreme and where predation is reduced, because such behaviour helps an individual locate and exploit food sources it might otherwise pass over or miss.
novelty/Aphelocoma coerulescens/exploratory behaviour/USA/California/CSA Life Sciences Collection.

635. (Performer: Oregon State Univ., Corvallis. Coll. of Oceanography. Funder: Department of Energy, Washington, DC.) Role of zooplankton in the cycling and remineralization of chemical materials in the Southern California Bight. Progress report 5, June 15-November 14, 1988. ; 1988. Report No.: DOEER603405. 5p.

Sponsored by Department of Energy, Washington, DC. Portions of this document are illegible in microfiche products. PC A02/MF A01

Contract: FG0585ER60340. The overall objective of our research is to understand the transport pathways and mass balances of selected metabolically active and inactive chemical species in the Santa Monica/San Pedro Basins. One focus of our study is to examine the role of zooplankton and micronekton in the cycling and remineralization of chemical materials in the Southern California Bight, with particular reference to C, N and certain radionuclides and trace metals. A second focus is to examine these same radionuclides and trace metals in other important reservoirs. Knowledge of the rates and routes of transfer of these nuclides and metals through these reservoirs should lead to a cogent model for these elements in SM/SP Basins. Our zooplankton C and N data, should lead ultimately to a model of C and N cycling in the upper water column. Our sediment core data will lead to the construction of mass balances and budgets in the SM/SP Basins. 4 refs.
California/Carbon Cycle/Mathematical Models/Metals/Mineral Cycling/Nitrogen Cycle/Oceanography/Progress Report/Radioisotopes/Trace Amounts/Transport/Transportation Systems/Water Reservoirs/West Coast/Hazardous Materials/Mass Transfer/Plankton/EDB/580000/Trace metals/NTIS.

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Physical and numerical models were used to investigate the design of proposed breakwater configurations for wave protection in the Fisherman's Wharf area, San Francisco Bay, California. A 1:75 scale (undistorted) physical model was used to determine wave condition in the harbor for locally generated short-period wind waves and swell conditions entering through the Golden Gate. A hybrid-finite element numerical model, capable of calculating forced harbor oscillations for harbors of arbitrary shape and variable depth, then was used to calculate harbor resonance at Fisherman's Wharf. In addition, a ship surge analysis was conducted for the historic vessels moored along or near Hyde Street Pier. An optimum plan of improvement was developed in the physical model considering wave protection afforded the harbor and entrance, ease of navigation, and economics. Numerical model test results and ship motion analysis indicated that the improvement plan would result in decreased wave amplification in the inner basins of the harbor and reduced ship response along the Hyde Street Pier.
INE, USA, California, San Francisco Bay, Fisherman's Wharf/coastal engineering/models/breakwaters/wave action/ship motion/harbor oscillations/coast defenses/Oceanic Abstracts.

637. Owen RW, Lasker R, Sherman Ke). Microscale Plankton Patchiness in the Larval Anchovy Environment. 2. ICES Symposium on the Early Life History of FishTHE EARLY LIFE HISTORY OF FISH: RECENT STUDIES 1981:pp. 364-368 NOAA, NMFS, Southwest Fisheries Cent., La Jolla, CA 92038, USA. Spatial sampling of larval fish food at 20 cm intervals was conducted in the Southern California Bight during periods of maximal and minimal spawning by northern anchovy. Microscale variation of food and non-food organism concentrations consistently exceeded sampling and counting error for one or more organism taxons at all but 1 of 14 sites. Sampling casts were made vertically in the mixed layer and pycnocline, and horizontally in the pycnocline. Both motile and non-motile taxons displayed small-scale patchiness. Microscale variation of their concentrations was greatest in the pycnocline on the vertical axis.
ichthyoplankton/fish larvae/ecological distribution/Engraulis mordax/food organisms/Southern California

Bight/patchiness/OceanAbstracts.

638. KAMYKOWSKI D. SOME PHYSICAL AND CHEMICAL ASPECTS OF THE PHYTOPLANKTON ECOLOGY OF LA JOLLA BAY. DISSERTATION 1973
PHYSICAL OCEANOGRAPHY//OCEANOGRAPHY//ECOLOGY//CHEMICAL OCEANOGRAPHY.

639. Littler MM, Editor. The distribution, abundance and community structure of rocky intertidal and tidepool biotas in the Southern California Bight. Washington, D. C.: Bureau of Land Management, U.S. Department of the Interior; 1979.
This volume includes the results of research at 22 rocky intertidal sites in the Southern California. Of these a total of 15 sites were located on the Southern California Islands including rocky intertidal study sites at: Cuyler Harbor and Crook Point, San Miguel Island; Prisoners Harbor and Willows Anchorage, Santa Cruz Island; Northwest and South Frenchy's Cove and Cat Rock, Anacapa; Dutch Harbor and West Point, San Nicholas Island; South Point, Santa Rosa Island; Cave Canyon, Santa Barbara Island; Fisherman Cove and Catalina Harbor, Santa Catalina Island; and Wilson Cove and Northwest Coast, San Clemente Island. The distributions and abundances of the macrophyte and macroinvertebrate populations occurring at each of the intertidal sites is reported along with analyses of community diversity. Experimental analyses of community recovery following mechanical clearances were performed along with aerial surveys of the major communities. occurring on the Southern California Islands. Seasonal and annual dynamics of the biota at 12 of the 22 sites were reported based in part on previous research, while the distributions and abundances of the rocky intertidal populations of macroorganisms wre described for the first time for 10 of the sites. .
Marine Algae and Marine invertebrates, Rocky INtertidal .

640. BEERS JR. ORGANISMS AND THE FOOD WEB. LECTURE NOTES CSTL ESTUAR. STUD. 15 1986:84-175
ECOLOGY/ECOLOGICAL ENERGETICS/TROPHIC STRUCTURE/PELAGIC ZONE, CALIFORNIA (MARINE)/COMMUNITY/COMMUNITY STRUCTURE/HABITAT/MARINE HABITAT/PELAGIC ZONE/COMMUNITY STRUCTURE & TROPHIC STRUCTURE, CALIFORNIA (MARINE)/PACIFIC OCEAN/NORTHERN PACIFIC/SOUTHERN CALIFORNIA BIGHT/PELAGIC COMMUNITY STRUCTURE & TROPHIC STRUCTURE/Zoological Index.

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Address: Univ. Calif. at San Diego, La Jolla, CA Conference: Site-specific effects of soil and rock on ground motion and the implications for earthquake-resistant design. Santa Fe, NM, July 25-27, 1983. earthquakes/geologic hazards/USGS/ground motion/aseismic design/effects/Santa Barbara Island earthquake, 1981/strong motion/spectral analysis/Los Angeles County/Ventura County/Santa Barbara County/Santa Barbara Island/engineering geology/environmental geology.

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fspub/biogeography/SRD.

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heterotrophic bacterioplankton/water pollution/productivity/dissolved organic matter/particulate/organic matter/trophic relationship/biogeochemistry/ecological energetics/microbiology/Hickey/physical oceanography/Geesey/Hardy/phytoplankton/zooplankton/Pieper Algae/spermatophtes/Bray: Murray/MINERALS MANAGEMENT SERVICE.

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fspub/Santa Cruz Island/Fry's Harbor/marine biology/fish/ecology/behavior/SRD.

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fspub/Channel Islands/island fox/population ecology/SRD.

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The zoogeography of cephalopods in the northeastern Pacific is discussed in both qualitative and quantitative terms. Distribution patterns are derived and compared to water mass distributions and to patterns defined for other taxa of plankton and micronekton. Several distributional types show closest agreement with patterns discerned in small pelagic fishes. Shannon diversity is highest in Central Pacific and California Current Waters, lowest in Transition

Zone and Subarctic Waters. Central Pacific Waters are dominated by Enoploteuthidae and Subarctic Waters by Gonatidae, and California Current and Transition Zone faunas are intermediate in species composition. The dominant taxa in each are considered to represent the same functional group.
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The spatial association of zooplankton nutritional state with particulate food abundance was tested along the central California coast in March 1986. Suspension-feeding copepods (Metridia pacifica, Calanus pacificus californicus, Rhincalanus nasutus , Eucalanus californicus) and suspended particulate matter were sampled at stations with median nearest neighbor distance of 19.6 km. In this field condition of relatively small horizontal gradients in food supply, copepod gut fluorescence, triacylglycerols and wax esters showed little or no association with spatial variations in particulate nitrogen, particulate carbon or chlorophyll a. In contrast, strong diel variation in gut fluorescence was observed including post-sunset increases in ingestion. For the conditions observed during this study, diel variation in feeding behavior explained more of the variance in copepod ingestion than did horizontal variations in food supply.
lipids/Copepoda/California Current/measuring methods/California/measuring techniques/CSA Life Sciences Collection.

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Sponsored by National Park Service, San Francisco, CA. Western Region. PC A05/MF A01.
The populations of four endangered and rare plant taxa were monitored during 1985-1989 on Santa Barbara Island, Channel Islands National Park, California. Data collected included the number and location of sites supporting each taxon, numbers of plants at each site, numbers of mature and immature plants at each site, and the physical features of the habitat supporting these taxa. The populations underwent dynamic changes in numbers of individuals during the study period, with a net loss of individuals in the Astragalus traskiae population, and population increases for Eriogonum giganteum, and Platystemon californicus. The data from this five-year study indicate the need to continue to monitor each of these taxa to determine natural population fluctuations.
Sites/Taxonomy/Populations/Losses/Monitoring/Conservation/Plants Botany/Santa Barbara Island/Endangered species/Habitats/Astragalus traskiae/Dudleya traskiae/Eriogonum giganteum/NTIS.

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Cent. Coast. Stud., Scripps Inst. Oceanogr., La Jolla, CA 92093, USA. Powerplant cooling systems that entrain large volumes of seawater in multiple discharge jets can produce changes in the local field of flow. A case history of observed flow modification is provided by dye studies and records of currents around the diffusers of the San Onofre Nuclear Generating Station (SONGS), which entrain a volume of flow on the order of 1000 m super(3)/s. Field observations of dilutions and velocities in the discharge plume agree well with the results of hydraulic modelling of the diffuser system. Synoptic observations and long-term statistical distributions of current speeds and directions show systematic patterns of altered flow around the diffusers that are more complex than the flow in the model because of interactions with flow modification by local beds of giant kelp.
power plants/environmental impact/coastal currents/cooling systems/ thermal plumes/entrainment/jets/dye dispersion/hydraulic models/ke lps/INE, USA, California, San Onofre/Oceanic Abstracts.

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NOAA, NMFS, Southwest Fish. Cent., La Jolla, CA 92038, USA. One of the goals of pelagic fish stock investigations is to predict how large year-classes will be at the time of recruitment to the adult population. While the primary approach to this problem for the northern anchovy (Engraulis mordax) is the estimation of larval mortality rates on the basis of abundance estimates from egg and larval surveys, other methods are being sought for corroborative purposes, or to reduce time and costs. The approach described in this report is estimation by histological methods of the proportion of larvae in the sea showing symptoms of starvation. If based on adequate sampling, such a proportion could be an indicator of ultimate year-class success. Of the 318 larvae examined, from the Southern California Bight 26 were classified as severely or moderately emaciated on the basis of such anomalies. Another 11 were classified incipient emaciation; these are not included in the emaciated or starving contingent. The proportion of emaciated larvae in the present survey could be considered a net daily

mortality from starvation of 8%, which is 40% of the average daily mortality mentioned above. If starvation contributes this substantially to total mortality, the proportion observed to be starving may relate reasonably well to eventual recruitment.
starvation/fish larvae/morphological anomalies/Engraulis mordax/ histology/recruitment/mortality/population studies/Southern California Bight/OceanAbstracts.

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This paper contains the results of the 1975-76 baseline program sponsored by the Bureau of Land Management and emphasizes the species composition and the distributions and abundacnes of the rokcy intertidal biota at 10 sites in Southern California including 6 sites on the Channel Islands.
Marine Algae, Intertidal Invertebrates, Rocky Intertidal.

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* MAMMALIA ** CARNIVORA *** PINNIPEDIA **** OTARIIDAE ***** CALLORHINUS URSINUS. FEEDING/CARNIVOROUS FEEDING/PREDATION/PREY/ESTIMATED ANNUAL FOOD CONSUMPTION, CALIFORNIA (MARINE)/DIGESTION & NUTRITION/NUTRITION/DIE T/QUANTITY OF FOOD CONSUMED/PACIFIC OCEAN/NORTHERN PACIFIC/CALIFORN IA CURRENT/ESTIMATED ANNUAL FOOD CONSUMPTION/Zoological Index.

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The authors investigated various life history aspects of 19 rockfish species from the southern California Bight. The aspects included depth distribution, age-length relationships (of 7 species), length-weight relationships, size at first maturity, spawning season, and fecundity. Growth rates of female Sebastes elongatus, S. hopkinsi, S. ovalis, S. saxicola , and S. semicinctus were higher than male conspecifics. Multiple spawning per season was found in 12 species. Generally, most species spawned between late winter and early summer, though there was some spawning within the genus throughout the year. (Prepared in cooperation with Occidental Coll., Los Angeles, CA. Moore Lab. of Zoology, Chambers Group, Inc., Santa Ana, CA., and California State Dept. of Fish and Game, Sacramento.). Sebastes/habitat selection/ecological distribution/length-weight relationships/growth/fecundity/INE/USA/California/California Bight/life history/ASFA.

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fspub/sand crabs/emerita/Santa Cruz Island.

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Also available from Supt. of Docs. Portions of this document are not fully legible. Prepared in cooperation with Santa Barbara, CA. PC A04/MF A01. The purpose of the present study was to define the geohydrology of the Foothill basin, with emphasis on the effects of pumping on the groundwater flow system. As part of the study, a groundwater flow model was developed for the Foothill basin in order to evaluate water-level response to groundwater pumpage. The report describes the results of the geohydrologic study and the model developed for the Foothill basin. Data collected from water-quality and water-level observation wells are included and evaluated in the report, along with estimates of historical pumpage and estimates of transmissivity and storage coefficient. Santa Ynez Mountains/Geological surveys/Water flow/Geological maps/Base maps/Water storage/Subsurface drainage/Aquifers/Hydraulics/Water wells/Site surveys/Ground water recharge/Hydrogeology/Ground water/Watersheds/Water quality/Mathematical models/Foothill Basin/Santa Barbara County California/NTIS.

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Image processing techniques are discussed that correct distortions in GLORIA II side scan sonar imagery including water column offset, slant-range distortion, multiple returns, aspect ratio, speckle noise, striping, and cross-track power drop-off. The software operates within NASA's ELAS image processing system and is applied to the original 12-bit GLORIA II data. Procedures are discussed for generating large scale mosaics and three-dimensional overlays with sea floor bathymetry. The results are shown in 4 sonographs acquired off the southern coast of California.
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Report of temporal and spatial variations exhibited by the macroinvertebrate and macrophyte populations located at 12 rocky intertidal sites including 7 on the Southern California Islands. Includes detailed descriptions of the methodologies employed. Based largely on the results of the 1975-76 baseline studies program sponsored by the Bureau of land Management.
Marine Algae, Marine Intertidal invertebrates, Rocky intertidal, methods.

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* PISCES ** SUPERCLASS GNATHOSTOMATA *** CLASS TELEOSTOMI **** DIVISION TELEOSTEI ***** SUPERORDER PARACANTHOPTERYGII ****** GADIFORMES ******* SUBORDER GADOIDEI ******** MERLUCCIIDAE ********* MERLUCCIUS PRODUCTUS ***** SUPERORDER ACANTHOPTERYGII ****** SCORPAENIFORMES ******* SUBORDER SCORPAENOIDEI ******** SCORPAENIDAE ********* SEBASTES PAUCISPINIS.
FEEDING/CARNIVOROUS FEEDING/PREDATION/PREY/FOOD COMPOSITION, LARVAE, COMPARATIVE STUDY, CALIFORNIA (MARINE)/DIGESTION & NUTRITION/ NUTRITION/DIET/COMPOSITION ANALYSIS, COMPARATIVE STUDY, LARVAE, CALIFORNIA (MARINE)/PACIFIC OCEAN/NORTHERN PACIFIC/CALIFORNIA CURRENT/LARVAL DIET, COMPARATIVE STUDY/Zoological Index.

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In the present study, we assess the biomass of the mesozooplankton (defined here as the zooplankton fraction passing through a 505 mu m mesh net but retained in a 202 mu m mesh net) in comparison with that of the historically sampled macrozooplankton. Efforts to close budgets of material and energy in the California Current system may require consideration of the contributions of the mesozooplankton to standing stocks and metabolic transformations. Further, given the selective nature of predation by planktivorous fish in this region, the mesozooplankton may be disproportionately significant as prey items to particular size classes of pelagic predators.
biomass/size distribution/California Current/plankton surveys/INE/ California Current/zooplankton/ASFA.

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California/paleontology/foraminifera/ecology/benthonic taxa/United States/Southern California/continental borderland/marine environment/habitat/biochemistry/communities/patterns/GEOREF.

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See also report for 1985, PB89-103410. PC A08/MF A01.
Northern fur seal (Callorhinus ursinus) research in 1986 was

conducted on the Pribilof Islands, Alaska, and on San Miguel Island and nearby Castle Rock in southern California. Estimates made of the number of pups born on St. Paul Island in 1986 (167,656 + or - 16,272) were not significantly different from the estimated total number born in 1985 (182,258 + or - 18,887). The estimated fractions of sheared animals determined from photographs and actual field counts (shearing-sampling method) taken during 1986 are not significantly different from each other. Microprocessor time-depth recorders (MTDR) and radio transmitters attached to six subadult male northern fur seals indicate that entanglement of these animals in small pieces of trawl netting evidently increases the amount of time that they spend foraging at sea in addition to influencing the duration and depth of dives. Observations suggest that pups become entangled in debris in the water rather than becoming entangled in debris on shore.
Mortality/Nets/Populations/Tables Data/Marine biology/Abundance/Feeding habits/Seals Mammals/Biological surveys/Animal ecology/Environment management/Callorhinus ursinus/Coastal ecology/NTIS.

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The authors analyze the near-inertial/diurnal motions in the trajectories of surface mixed layer drifters in the California Current System between 19N and 36N. The observed near-inertial or diurnal oscillations are very intermittent in time and have a time scale of about 10 inertial periods. Using a simple slab model of wind-driven inertial currents, we show that their temporal variations are related to the fluctuations in the local wind stress field. Three events of strong (20 cm/s) near-inertial/diurnal motions are studied in detail. Two events at the diurnal frequency occur on the continental shelf. For the first, the observed subinertial oscillations are interpreted as continental shelf waves generated by the diurnal tide currents and the local winds. For the second, observations are consistent with wind-driven internal waves. A third event of near-inertial oscillations appears for most of the drifters in the wake of a tropical storm. The vorticity of the background mesoscale circulation shifts the frequency of the wind-generated oscillations by as much as plus or minus 0.05 cpd.
mixed layer/ISE, California Current/drifters/INE, California Current/water currents/inertial currents/tidal motion/wind stress/ocean circulation/internal waves/Oceanic Abstracts.

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primary production/shipboard measurements/coastal waters/satellite

data/chlorophyll measurements/radar imagery/California Coast/ Southern California Bight/Nimbus-7/OceanAbstracts.

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Reports on the impacts of low volume sewage outfall on the distribuitons an abundances of the macorinvertebrate and macrophyte populations inhabiting the rocky intertidal shoreline at Wilson Cove, San Clemente Island. SEWAGE, Marine ALGAE, MARINE INVERTEBRATES, ROCKY INTERTIDAL, SAN CLEMENTE ISLAND.

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LIFE CYCLE & DEVELOPMENT/LIFE CYCLE/DEVELOPMENTAL STAGES/LARVA/MORP HOGENESIS, SEASONAL VARIATION IN DEVELOPMENTAL PATHWAYS, CALIFORNIA/DE VELOPMENT/ONTOGENESIS/LARVAL MORPHOGENESIS/SEASONAL VARIATION IN DEVELOPMENTAL PATHWAYS, CALIFORNIA (MARINE)/GROWTH/GROWTH RATE/EVOLU TION/VARIATION/GEOGRAPHICAL VARIATION/LARVAL MORPHOLOGY, CALIFORNIA (MARINE)/SEASONAL RACES/TEMPORAL VARIATION IN LARVAL MORPHOGENESIS, CALIFORNIA (MARINE)/PACIFIC OCEAN/NORTHERN PACIFIC/SOUTHERN CALIFORNIA BIGHT/LARVAL MORPHOGENESIS, SEASONAL VARIATION IN DEVELOPMENTAL PATHWAYS/Zoological Index.

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The ridgeback prawn fishery is a small, newly developed fishery in the Santa Barbara Channel area. In 1979, 356,000 lb were landed. Landings have declined each year since 1979 to 141,000 lbs in 1982. Ex-vessel prices range from $0.85-2.25 per pound depending on market conditions. Most fishing occurs on day trips from Santa Barbara Harbor. Until recently, almost nothing was known about the ridgeback prawn Sicyonia ingentis . Our natural history investigations demonstrate repeated spawning activity by individual prawns throughout a long spawning season (June-September). No intervening molt or mating is required to produce a fertile spawn. Most females progress synchronously through a single molt cycle beginning in mid-May and ending in mid-November.
sexual reproduction/life history/fishery industry/shellfish fisheries/Sicyonia ingentis/ridgeback prawn/Santa Barbara Channel/marine biology/fisheries/resource management.

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fspub/fish/marine biology/ecology/surfperch/SRD.

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Micrarionta rufocincta and othe Helminthoglyptidae (Gastropoda:
Pulmonata). Bull. Southern Calif. Acad. Sci. 1987;86(3):145-152
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of northern fur seals (Callorhinus ursinus) and California sea
lions (Zalophus californianus) from San Miguel Island, California,
were studied during the 1985 summer breeding season. A radio
transmitter was attached to 25 postpartum females of each species
and used to determine their locations at sea and the frequency and
duration of their feeding trips. Northern fur seals usually foraged
in the oceanic zone where the mean water depth was 933 m (n = 12).
California sea lions principally were found in the neritic zone,
where water depth averaged 323 m (n = 9). Most fur seals (92%) were
found northwest of San Miguel Island, whereas the sea lions were
commonly found to the northwest (55%) or in areas south (22%) of
the island. Although both species evidently foraged at similar
distances from the island, foraging trips of fur seals (x@u-= 180.6
h) were over twice as long as those of sea lions (x@u- = 73.4 h).
Fur seals were ashore less time (x@u- = 39.6 h) than were sea lions
(x@u- = 50.1 h) between foraging trips. Analysis of scats revealed
that fur seals and sea lions ate similar prey.
females/USA/California/San Miguel Island/feeding

behaviour/Callorhinus ursinus/Zalophus
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excrete ammonium, a potentially important nutrient for benthic
algae. Ammonium excretion rates of eleven macroinvertebrate and
five fish taxa were determined from a total of 324 in situ
incubations conducted between October 1984 and August 1985 at 14 to
17 m depths off Santa Catalina Island, California. Total ammonium
excretion ranged from over 100 mu mol/h by the kelp bass Paralabrax
clathratus to less than 0.1 mu mol/h by the gastropod Conus
californicus . Weight-specific ammonium excretion generally ranged
from 0.5 to 4 mu mol/g h in invertebrates and from 3 to 7 mu mol/g
h in fishes.
excretion/macrofauna/Pisces/USA/California/reefs/ammonium/CSA Life
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PB90-146572. Sponsored by National Oceanic and Atmospheric
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To make scientific information about marine issues more accessible,
a computerized research database was developed that catalogs
studies conducted around the California Channel Islands and the
Santa Barbara Channel. The Channel Islands Research Annotated
Bibliography contains references from journals, books, master's
theses and doctoral dissertations, and government and industry
reports produced from 1978 to 1989. Included are scientific studies
from a wide range of disciplines, such as biology, chemistry,
geology, and oceanography. Although the database began as a
resource on marine studies, it has since been expanded to include
terrestrial studies. Citations in the report are arranged
alphabetically by author. Volume I contains citations from A
Through M.
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Channel/Oceanography/Chemistry/Ecology/Botany/Taxonomy/Bibliograp
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Appl. Ocean Phys. and Eng., Woods Hole Oceanogr. Inst., Woods Hole, MA, USA. We have studied cross isopycnal (diapycnal) and lateral mixing and stirring below the sill of Santa Monica Basin by releasing two tracers, sulfur hexafluoride and perfluorodecalin, as close as possible to an isopycnal surface and measuring their subsequent dispersion. The target for the release was a potential temperature surface at about 790 m depth, roughly 100 m above the bottom and 50 m below the sill. Three surveys, performed immediately after, about 7 weeks after, and about 6 months after the release, showed that the time scales for lateral stirring and mixing in the basin were between 2 and 5 months. The diapycnal diffusivity for the whole period was found to be 0.29 plus or minus 0.06 cm super(2)/s near the injection surface, where the buoyancy frequency was about 1.1 cph. This estimate may include some mixing in the turbulent boundary layer near the walls of the basin. Our best estimate for the diapycnal diffusivity in the basin interior is 0.25 plus or minus 0.08 cm super(2)/s.
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See also Volume 1, PB90-146564. Sponsored by National Oceanic and Atmospheric Administration, Rockville, MD. PC A14/MF A02.
To make scientific information about marine issues more accessible, a computerized research data base, was developed that catalogs studies conducted around the California Channel Island and the Santa Barbara Channel. The bibliography contains references from journals, books, master's theses and doctoral dissertations, and government and industry reports produced from 1978 to 1989. Included are scientific studies from a wide range of disciplines, such as biology, chemistry, geology, and oceanography. Although the database began as a resource on marine studies, it has since been expanded to include terrestrial studies. Citations in the report are arranged alphabetically by author. Volume II contains citations from N through Z and the Index.
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to propagate across a typical scale of the mean shear field. Due to this the fluctuating field may locally behave like a negative eddy viscosity at certain places.
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The spatial variance spectra of the near-surface pigment concentrations (from the coastal zone color scanner) and the sea surface temperature (from the advanced very high resolution radiometer) are analyzed. Most of the images originate from the California Current area, and a few from the North and Baltic Seas.
Plankton/Advanced very high resolution radiometer/Chlorophylls/Coastal zone color scanner/Remote sensing/Pigments/Satellite imagery/Sea surface temperature/Spectrum analysis/Temperature distribution/Translations/Foreign technology/NTIS.

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eastern boundary currents, e.g., California Current, since it flows rapidly poleward against the prevailing equatorward wind. The first large-scale study of the Leeuwin Current was conducted between North West Cape (22 degree S) and the southwestern corner of Australia (35 degree S) from Sept 1986 to Aug 1987. As part of this Leeuwin Current Interdisciplinary Experiment (LUCIE), current meters were deployed along the shelf-edge (from 22 degree to 35 degree S) and across the shelf and upper slope (at 29.5 degree and 34 degree S), and CTD surveys were made out from the shelf at several latitudes. Except for about one month (Jan) the flow between the surface and about 250 m was strongly poleward within 100 km of the shelf-edge, with a poleward transport of about 5 Sv (Sv identical with 10 super(6) m super(3)/s). The 325-day mean currents at the shelf-edge were poleward at about 10 cm/s, opposing a mean equatorward wind stress of 0.3 dyn/cm super(2). The monthly mean current over the upper slope exceeded 50 cm/s poleward at times and had a 325-day mean of 30 cm/s; an equatorward undercurrent existed below about 300 m and had a 325-day mean of 10 cm/s at 450 m. ISW, Leeuwin Current/eastern boundary currents/Ekman transport/ocean circulation/wind stress/current observations/current direction/OCEANIC ABSTRACTS.

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Northern anchovy larvae, Engraulis mordax , were collected on five cruises covering the Southern California Bight; one cruise in April 1984, four cruises in January, February and May 1986. There was a significant difference in each of the size-specific lipid components between the stations for four of the five cruises. This indicates that all the ocean habitats within a cruise were not equal in promoting growth (and presumably survival) in the anchovy larvae. Canonical correlation analyses revealed a significant relationship in most cases between the larval fish parameters and the physical and biological data collected from each occupied station. Cholesterol and triacylglycerol were the most important larval components, and the short-term energy storage component in the copepod Calanus pacificus was the most important station component.
body conditions/Teleostei/Engraulis mordax/Copepoda/Calanus pacificus/lipids/cholesterol/nutritional requirements/length-weight relationships/INE/Southern California Bight/fish larvae/ASFA.

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of Particulates and Sediments (CaBS): Technical Progress Report, November 15, 1988-May 14, 1989. ; 1989. Report No.: DOEER603387. 3p.
Portions of this document are illegible in microfiche products. PC A02/MF A01 Contract: FG0585ER60338.
The principal objective of the current on-going project is to understand the processes involved in the cycling of organic carbon in the southern California Bight. This involves the evaluation of the relative flux of planktonic carbon to the seafloor versus the import of terrestrial carbon components and the determination of the rate of decomposition of sedimenting organic matter in the water column. These goals were achieved by the chemical characterization of sedimenting particles (from traps) as well as in the near surface sediments. The organic matter in the marine regime comprises contribution from land plants, marine productivity (plankton and bacteria) as well as anthropogenic sources. At UCLA, we have been focusing on the chemical characterization of selected classes of organic carbon compounds derived from these various sources to understand the vertical flux and the chemical composition of the particulate organic matter which are controlled by complex transport, transformation, degradation and remineralization processes.
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Offshore exploration/Offshore drilling/Oil and gas operations/Offshore wells/Drilling vessels/Offshore production/Drilling platforms/Outer continental shelves/Offshore leases/OCS lease sales/San Pedro Bay/Beta Field/USGS estimates/Santa Ynez and Santa Clara units/Santa Barbara Channel/engineering/petroleum/marine technology.

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We studied the vertical distribution of microbes and meiofauna in natural hydrocarbon seep sediments to determine if there was a relationship between profiles of benthic trophic structure and the unique biogeochemical conditions present at the seep. Three stations in the Santa Barbara Channel represented a gradient of natural petroleum seepage, from very active, to moderate, to none. Seasonal differences were examined by sampling in the three major oceanographic seasons, upwelling (April), mixed (July), and Davidson (December). Densities of microbes and meiofauna were highest in July, and decreased in winter. All population sizes decreased with increasing depth in the sediment. Harpacticoids and

Chl a were practically restricted to the surface sediments. Harpacticoids and Chl a were more dense (number per unit volume or strata of sediment) and abundant (number per unit area of sediment or sum of the strata) at the comparison site than at the seep sites.
vertical distribution/sediments/USA/California/Santa Barbara Channel/USA/California/Santa Barbara Channel/meiobenthos/marine microorganisms/oil seepages/INE/Santa Barbara Channel/microorganisms/hydrocarbon seep/hydrocarbon seeps/ASFA.

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Allozyme data, combined with traditional morphological and anatomical data, were used to evaluate the genetic status of the island endemic, Cercocarpus traskiae (Catalina mahogany). Comprising only seven adult plants and close to 70 seedlings, C. traskiae is confined to Wild Boar Gully on the southwest side of Santa Catalina Island in Los Angeles County, California. Given the evidence for hybridization described herein, the authors make two suggestions to enhance the long-term preservation of C. traskiae . First, it may be desirable to eliminate the single C. betuloides var. blancheae individual in Wild Boar Gully. Second, they suggest that established cuttings of true C. traskiae be transplanted to areas on Santa Catalina where the probability of hybridization is minimal. hybridization/genetic variance/conservation/Cercocarpus traskiae/USA/ California/Santa Catalina Island/endemic species/CSA

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Fish. Res. Inst., Univ. Washington, Seattle, WA 98195, USA.
Infections with the parasite "tag" Nanophyetus salmincola indicated that in 1986 and 1987, steelhead trout (Oncorhynchus mykiss) from the U.S. Northwest (Washington to northern California, including Idaho) were relatively abundant in the central North Pacific Ocean as far west as 165 degree E, about 5,000-5,500 km from their area of origin. Infection prevalence (the frequency of the presence of infection) was estimated annually for specimens stratified by 5 degree -longitude areas. East-west and north-south trends in prevalence occurred in 1986 but not in 1987. Correlation analysis indicated no between-year correlation in the relative magnitude occurred in 1986 but not in 1987. Correlation analysis indicated no between-year correlation in the relative magnitude of prevalaece in areas sampled in both 1986 and 1987 (r = 0.017). Confidence intervals (90%) for overall annual prevalence in the central North Pacific Ocean steelhead population were 29.9-61.3% (point estimate = 45.4%) for 1986 and 43.3-63.0% (point estimate = 53.2%) for 1987.
endoparasites/stock identification/Nanophyetus salmincola/Oncorhynch us mykiss/IN, Central Pacific/kidneys/OCEANIC ABSTRACTS.

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Sinking rates were determined for fecal pellets produced by gelatinous zooplankton (salps, Salpa fusiformis and Pegea socia : pteropods, Corolla spectabilis ; and doliolids, Dolioletta gegenbaurii) feeding in surface waters of the California Current. Pellets from the salps and pteropods sank at rates up to 2,700 and 1,800 m/d, respectively; such speeds exceed any yet recorded for zooplankton fecal pellets. Fecal pellets of salps were rich in organic material, with C:N ratios from 5.4 to 6.2, close to values for living plankton. The relation between volume and sinking rate indicates that salp and pteropod pellets are slightly less dense than those of pelagic Crustacea.
Feces/Sinking/Zooplankton/Tunacata/Salpa/Pegea/Opisthobranchia/ Gastropoda/Corolla/Thaliacea/Dolioletta/California Current/S/fusiformis/P/socia/C/spectabilis/D/gegenbaurii/OceanAbs tracts.

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HABIT/PLANKTON/DISTRIBUTION IN WARM CORE EDDY SYSTEM, CALIFORNIA (MARINE)/HABITAT/DISTRIBUTION WITHIN HABITAT/ PLANKTON IN WARM CORE EDDY SYSTEM, CALIFORNIA (MARINE)/PACIFIC OCEAN/ NORTHERN PACIFIC/CALIFORNIA/PLANKTON DISTRIBUTION IN WARM CORE EDDY SYSTEM/Zoological Index.

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More than 11 years have passed since Exxon acquired its federal offshore leases in the Santa Barbara channel. Under normal planning assumptions, the company anticipated beginning production from these leases more than 5 years ago. Numerous delays from federal, state, and local regulatory obstacles, however, have prevented the first barrel from being delivered. So far, it is estimated that these 5 years of delay have cost the nation over $500 million in payments for alternative foreign crude, and each additional day of delay costs another $350,000. The company now has over $380 million invested in the Santa Ynez unit, and almost $600 million in the Santa Barbara channel. The reasons for these delays including the problems associated with offshore storage and treating and water discharge and air emissions are examined.
oil production/gas production/oil exploration/gas exploration/leases/Santa Barbara Channel/petroleum/water quality/air quality/pollution/resource management.

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ships/physical
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MANAGEMENT SERVICE JUNE 1983 (EPA: JUNE 17, 1983) 641 PAGES 1983
Other-US USDA EMPLOYEES REQUEST DOCUMENTS FROM NATIONAL
AGRICULTURAL LIBRARY OTHERS ORDER FROM INFORMATION RESOURCES PRESS,
1700 NORTH MOORE STREET, SUITE 70 0, ARLINGTON, VA 22209.
Monograph ENV.
PURSALE OF OIL AND GAS DEVELOPMENT LEASES ON 11.6 MILLION ACRES OF
OUTER CONTINENTAL SHELF LANDS IN THE PACIFIC OCEAN OFF SOUTHERN
CALIFORNIA IS PROPOSED. LEASE AREAS ARE LOCATED IN THE SANTA
BARBARA CHANNEL, INNER BASIN, AND OUTER BASIN AND BANKS AREAS.
DEVELOPMENT OF THE LEASED AREAS UNDER THE PREFERRED SCHEME WOULD
INVOLVE 44 TO 154 EXPLORATORY WELLS BETWEEN 1984 AND 1988, 55 TO
186 DELINEATION WELLS BETWEEN 1985 AND 1989, 215 TO 950 DEVELOPMENT
WELLS BETWEEN 1989 AND 1994 OR 1998, 7 TO 27 PLATFORMS BETWEEN 1989
AND 1991 OR 1995, 75 TO 423 MILES OF PIPELINE BETWEEN 1989 AND 1991
OR 1995, AND 6 TO 30 SUBSEA COMPLETIONS BETWEEN 1992 AND 1995 OR

1997. OIL AND GAS PRODUCTION WOULD BEGIN IN 1989 AND CONTINUE THROUGH 2008. ALL HIGH AND LOW DEVELOPMENT ESTIMATES WERE PRODUCED ACCORDING TO EXTREMES IN THE ESTIMATES OF AVAILABLE RESOURCES IN THE AREA. ESTIMATES FOR TOTAL HYDROCARBON RESOURCES RANGE FROM 320 MILLION TO 1.55 TRILLION BARRELS OF OIL AND 640 TRILLION TO 3,680 TRILLION CUBIC FEET OF GAS. POSDEVELOPMENT OF OIL AND GAS RESOURCES WITHIN THE LEASE AREAS WOULD ENHANCE THE NATION'S ABILITY TO PROVIDE FOR ITS OWN HYDROCARBON NEEDS, REDUCING DEPENDENCE ON FOREIGN SOURCES OF OIL AND GAS. DEVELOPMENT ACTIVITIES WOULD ALSO EMPLOY SIGNIFICANT NUMBERS OF PERSONS IN THE SOUTHERN CALIFORNIA AREA. NEGWATER QUALITY IN THE VICINITY OF EXPLORATORY AND DEVELOPMENT ACTIVITIES WOULD BE DEGRADED, AND SOME SPILLING OF OIL WOULD BE EXPECTED. SHORT-TERM CONCENTRATIONS OF NITROGEN DIOXIDE COULD EXACERBATE VIOLATIONS OF STATE AIR QUALITY STANDARDS. PIPELINE CONSTRUCTION COULD DEGRADE INTERTIDAL AREAS AT EL SEGUNDO AND OCEANSIDE, AND PURPLE CORAL AND OTHER REEF RESOURCES ON TANNER AND CORTES BANKS COULD BE DAMAGED. EXPANSION OF HARBOR FACILITIES NEEDED TO ACCOMMODATE INCREASED VESSEL ACTIVITY WOULD CAUSE SIGNIFICANT LAND USE CHANGES. SIGNIFICANT ALTERATION OF MILITARY OPERATIONS WOULD BE REQUIRED DUE TO DEVELOPMENT STRUCTURES AND ACTIVITIES. LEGOUTER CONTINENTAL SHELF LANDS ACT OF 1953 (43 U.S.C. 1331 ET SEQ.).
CALIFORNIA/PACIFIC OCEAN/SANTA BARBARA CHANNEL/AIR QUALITY STANDARDS VIOLATIONS/CONTINENTAL SHELVES/EMPLOYMENT/FISHERIES/HISTORIC SITES SURVEYS/IMPACT ASSESSMENT METHODOLOGY/LEASING/MILITARY OPERATIONS JOINT/NATURAL GAS/OIL PRODUCTION/OIL SPILLS/PIPELINES/REEFS/OUTER CONTINENTAL SHELF LANDS ACT OF 1953 PROJECT AUTHORIZATION/AGRICOLA.

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Anchovy (Engraulis mordax) larvae were reared in the laboratory under a variety of food regimes and the triacylglycerol, cholesterol, and polar lipid contents of individual larvae were measured. A comparison with field-caught larvae showed that a "standard" laboratory rearing produced larvae of much too great a lipid content. Larvae could be reared in the laboratory to be similar to the field animals, but this required a very low food concentration. When groups of larvae were starved the triacylglycerol component was most labile and decreased first. All ocean habitats were not equal in promoting growth (and presumably survival) in the anchovy larvae. Canonical correlation analyses showed a significant relationship in most cases between the larval fish parameters and station data. Cholesterol was the component in the larvae that was most important for the relationship. The most important parameter was the short-term energy storage component in the copepod Calanus pacificus (triacylglycerol).
lipids/bioenergetics/Engraulis mordax/biochemical composition/diets/INE/USA/California Bight/fish larvae/dietary effects/ASFA.

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the Calfornia Current region, 1951 through 1966. CalCOFI Atlas 13 1971:ii-xvi NPS/Physical oceanography/oceanography/currents/water masses.

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Funder: Minerals Management Service, Los Angeles, CA. Pacific OCS Region.) Santa Barbara Channel Circulation Model and Field Study. Volume 2. ; 1987. Report No.: OCSMMS870090. 224p.
See also Volume 1, PB89-213540. Prepared in cooperation with Science Applications International Corp., Bellevue, WA. Sponsored by Minerals Management Service, Los Angeles, CA. Pacific OCS Region. PC A10/MF A01 Contract: DI1412000129123.
The research program consists of two major elements: (1) a Pilot Program in the spring of 1983 to verify that the length and time scales of the observational and modelling components were representative of the circulation in the Channel and to gain experience in synthesizing the results of the two efforts, and (2) a Main Program spanning 1984 to provide a complete physical oceanographic description of the Channel both spatially and temporally. The model represented monthly and seasonal mean circulation well and the basin wide features were in agreement with the observations. The observational data and computational data have been synthesized to provide a comprehensive view of the physical oceanography of the Channel during 1984.
Mathematical models/Boundary layer flow/Turbulence/Stresses/Equations of motion/Periodic variations/Spatial distribution/Circulation/Santa Barbara Channel/Southern Region California/NTIS.

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Dep. Zool., NJ-15, Univ. Washington, Seattle, WA 98195, USA. An Aug 1987 benthic survey of otter-free and otter-occupied areas along the outer coast of Washington State's Olympic Peninsula confirms that this area has been as profoundly influenced by sea otters (Enhydra lutris) as other rocky, nearshore communities studied in California, Canada, and Alaska, Prey density, size and biomass were negatively correlated with sea otter abundance, suggesting that re-introduction of sea otters to this area in 1969-1970 has profoundly affected invertebrate prey abundance and distribution, particularly that of the red sea urchin, Strongylocentrotus franciscanus . Red urchin distribution appears to influence algal groups differently and in a manner consistent with current otter/urchin/kelp theory. Foliose red algal abundance was negatively related to urchin numbers and coralline crusts were positively correlated. Aerial photographs of Macrocystis integrifolia cover at Cape Alava suggest

in increase since the introduction of sea otters. Range expansion to the north may lead to possible conflicts with an increasing sea urchin fishery and Native American set net activity.
population dynamics/abundance/food availability/prey/benthos/prey selection/population density/Enhydra lutris/Strongylocentrotus franciscanus/Macrocystis integrifolia/INE, USA, Washington, Olympic Peninsula/food chains/community composition/introduced species/kelp s/aerial photographs/Corallinaceae/OCEANIC ABSTRACTS.

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WHOLE ANIMAL PHYSIOLOGY/CYCLICAL FUNCTIONS/DIURNAL FUNCTIONS/PLANKTO N LUMINESCENCE, DISTRIBUTION & COLOUR, CALIFORNIA (MARINE)/LUMINESCENC E/PLANKTON, DAILY VARIATION IN DISTRIBUTION & COLOUR, CALIFORNIA (MARINE)/ECOLOGY/LIFE HABIT/AQUATIC HABIT/PLANKTON/LUMINESCENCE, DAILY VARIATION IN DISTRIBUTION & COLOUR/HABITAT/DISTRIBUTION WITHIN HABITAT/PLANKTON LUMINESCENCE, CALIFORNIA (MARINE)/BEHAVIOUR/ACTIVIT Y PATTERNS/CYCLICAL ACTIVITY/DIEL ACTIVITY PATTERN/PACIFIC OCEAN/NO RTHERN PACIFIC/CALIFORNIA CURRENT/PLANKTON LUMINESCENCE, DAILY VARIATION IN DISTRIBUTION & COLOUR/Zoological Index.

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oceanography/ocean floors/continental borderland/mineral resources/submarine canyons/marine geology/Los Angeles Basin/Cortez Bank/San Pedro Basin/California Channel Islands/San Diego Trough/Santa Monica Basin/Santa Barbara Basin/San Miguel Gap/Santa Cruz Basin/marine geology/oceanography.

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entomology/insects/Santa Barbara Island/Peromyscus/Santa Rosa Island/Santa Cruz Island/Antrozous/bats/SRD.

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Peromyscus/deermice/mammals/SRD.

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moths/entomology/insects/San Clemente Island/SRD.

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Other-US Literature review. Includes references. Article.
California/Marine Areas/AGRICOLA.

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Pacific Ocean/geochemistry/organic materials/Caribbean Sea/sediments/extraction/glycolic acid/lactic acid/oxalic acid/succinic acid/pyruvic acid/Santa Barbara Basin/Deep Sea Drilling Project/Leg 15/Site 147/amino acids/GEOREF.

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NPS/Physical oceanography/oceanography/currents/water masses.

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fspub/geology/Santa Cruz Island.

845. Dunkle MB. Contributions from the Los Angeles County Museum - Channel Islands Biological Survey; No. 28. Three new plants from San Clemente Island. Bull. Southern Calif. Acad. Sci. 1943;42(1 (Jan-Apr)):31-33 SCIR.
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This represents a preliminary study of ectoparasitic acarines from Santa Catalina. Host, date, and locality data for all records are presented. parasites/Acarina/surveys/medical importance/USA/California/Santa Catalina Island/Vertebrata/CSA Life Sciences Collection.

847. Blumberg AF, Cover DE, Gunn JT, Hamilton P, Herring HJ (Performer: Dynalysis of Princeton, NJ. Performer: Science Applications International Corp., Bellevue, WA.
Funder: Minerals Management Service, Los Angeles, CA. Pacific OCS Region.) Santa Barbara Channel Circulation Model and Field Study. Appendix A: Pilot Program. ; 1987. Report No.: OCSMMS870091. 163p.
See also PB89-213557. Prepared in cooperation with Science Applications International Corp., Bellevue, WA. Sponsored by Minerals Management Service, Los Angeles, CA. Pacific OCS Region.
PC A08/MF A01 Contract: DI1412000129123. Results from the Pilot Program are analyzed and the conditions in the Santa Barbara Channel during the spring of 1983 are described. Based on these findings, a set of plans and recommendations for the Main Program is presented. The oceanographic and meteorological characteristics that existed in the Channel during May and June of 1983 are described in terms of the water mass field, wind field, currents, tides and a single noteworthy synoptic event. The results are used to infer the typical spatial and temporal scales, flushing rate, wind patterns, current structure, volume transport, and tidal behavior. The report concludes with recommendations for the methods of comparing and synthesizing observational and computational results. Sensitivity studies for tidal modelling, meteorological effects and boundary forcing are proposed.
Oceanographic surveys/Water masses/Ocean currents/Wind Meteorology/Tides/Flushing/Environmental transport/Meteorological data/Oceanographic data/Circulation/Santa Barbara Channel/Southern Region California/NTIS.

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Monterey Bay Aquarium, 886 Cannery Row, Monterey, CA 93940-1085, USA. In January 1986, a sea-urchin mediated deforestation began in Carmel Bay, California, USA, near the center of the California sea otter's range. The deforestation occurred on an offshore rocky reef

where depths range from 17 to > 30 m. Both purple (Strongylocentrotus purpuratus) and red (S. franciscanus) sea urchins were abundant and probably belonged to a cohort that settled in 1984. By October 1986, nearly all non-crustose algae had been removed, as were most sessile invertebrates. Populations of red sea urchins at the deforested site remained fairly stable, but purple sea urchins declined to zero by July 1989. Algal spores were available during the deforestation, but recruitment of seaweeds did not occur until after sea urchin abundance had declined. grazing/Strongylocentrotus/kelps/recruitment/sessile species/food availability/natural mortality/ecological balance/INE, USA, California, Carmel Bay/Strongylocentrotus purpuratus/Strongylocentrot us franciscanus/abundance/deforestation of reefs/Oceanic Abstracts.

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* PISCES ** SUPERCLASS GNATHOSTOMATA *** CLASS TELEOSTOMI **** DIVISION TELEOSTEI ***** SUPERORDER CLUPEOMORPHA ****** CLUPEIFORMES ******* SUBORDER CLUPEOIDEI ******** ENGRAULIDAE ********* ENGRAULIS MORDAX.
TECHNIQUES/ECOLOGICAL TECHNIQUES/POPULATION DENSITY MEASUREMENT/SPAW NING BIOMASS, CALIFORNIA (MARINE)/REPRODUCTION/REPRODUCTIVE BEHAVIOUR/SPAWNING/EGG PRODUCTION ESTIMATES, CALIFORNIA (MARINE)/ECO LOGY/ECOLOGICAL ENERGETICS/BIOMASS/SPAWNING, CALIFORNIA (MARINE)/PO PULATION STUDY/POPULATION CENSUSES/PACIFIC OCEAN/NORTHERN PACIFIC/S OUTHERN CALIFORNIA BIGHT/SPAWNING BIOMASS, POPULATION CENSUS/Zoological Index.

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The USA plans a leasing program extending into 1985 and averaging five offshore sales a year with emphasis on the Gulf of Mexico and Alaska. The announcement of the tentative schedule carries a warning that the Department of the Interior expects timely development of any leases sold. The program will attempt to involve all offshore areas of the country in petroleum development. The new law also imposes many environmental safeguards which previously were imposed by regulations and lease terms. The draft schedule proposes this timing for sales: (a) 1980, four sales - two in the Gulf of Mexico and one each in the Gulf of Alaska and the adjoining Kodiak area. (b) 1981, five sales - one each in the South Atlantic, Cook Inlet, Gulf of Mexico, Mid-Atlantic, and off northern and central California. (c) 1982, five sales - two in the Gulf of Mexico and one each in the Santa Barbara Channel, North Atlantic, and Norton basin. (d) 1983, five sales - two in the Gulf of Mexico and one each off southern California, in the Beaufort Sea, and the Mid-Atlantic. (e) 1984, six sales - two in the Gulf of Mexico and one each in the Blake Plateau, Cook Inlet, North Atlantic, and off northern and central California. (f) 1985, one sale in the Navarin basin off western Alaska. leases/oil and gas exploration/drilling/Gulf of Mexico/Alaska/Santa Barbara Channel/petroleum.

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amphibians/Santa Catalina Island/SRD.

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amphibians/slender salamanders\Santa Catalina Island/Santa Rosa Island/Santa Cruz Island/Anacapa Island/San Miguel Island/SRD.

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Santa Cruz Islandnd/Santa Catalina Island/Santa Barbara Island/Santa Rosa Island/Anacapa Island/San Nicolas Island/SRD.

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San Nicolas Island/marine mammals/SRD.

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Other-US Literature review. Includes references. Article.
California/Marine Areas/AGRICOLA.

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Increment widths and back-calculated growth rates for northern anchovy, Engraulis mordax , did not differ during the years 1980-84. This evidence of stable larval growth rates does not support the theory that it is the variation in larval growth rates that directly affects the magnitude of recruitment. Furthermore, since growth rates remained stable, even though zooplankton volumes in 1983 were well below the long-term mean, it follows that surviving post-feeding larval anchovies may not be food limited. The size of juvenile northern anchovy was reduced during the 1982-83 El Nino "phenomenon" in the California Current. Mean lengths of anchovy juveniles collected in the fall were greatest in 1980, least in 1982, and intermediate in 1981, 1982, and 1984.
Pacific Ocean/California Current/El Nino/Engraulis mordax/INE/ California Current/ISE/California Current/growth/ASFA.

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SCIR.
fspub/molluscs/Santa Cruz Island/marine biology/El Nino/intertidal/.

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fspub/chumash/archaeology/anthropology/SRD.

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866. Gunn JT, Hamilton P, Herring HJ, Kantha LH, Lagerloef

GSE (Performer: Dynalysis of Princeton, NJ. Performer: Science Applications International Corp., Bellevue, WA. Funder: Minerals Management Service, Los Angeles, CA. Pacific OCS Region.) Santa Barbara Channel Circulation Model and Field Study. Appendix C: Observational Data. C.1: Hydrography. ; 1987. Report No.: OCSMMS870093. 125p.
See also PB89-213573. Prepared in cooperation with Science Applications International Corp., Bellevue, WA. Sponsored by Minerals Management Service, Los Angeles, CA. Pacific OCS Region. PC A06/MF A01 Contract: DI1412000129123. The research program consists of a Main Program spanning 1984 to provide a complete physical oceanographic description of the Channel both spatially and temporally. Four comprehensive and one abbreviated hydrographic surveys were carried out during the Main Program of the Field Study. The Appendix contains hydrographic data products from the results of each of these surveys. Vertical sections of temperature, salinity and sigma-t are presented first. These are followed by maps of surface temperature and temperature and salinity contours on various surfaces of constant sigma-t. Finally, contours of dynamic heights relative to various levels of no motion are shown. Oceanographic surveys/Ocean temperature/Salinity/Conductivity/Ocean waves/Height/Oceanographic charts/Circulation/Oceanographic data/Santa Barbara Channel/Southern Region California/NTIS.

867. Bowlby MR, Widder EA, Case JF. Disparate forms of bioluminescence from the amphipods Cyphocaris faurei, Scina crassicornis and S. borealis. MAR. BIOL 1991;VOL. 108, NO. 2:pp. 247-253
Dep. Neurobiol., Harvard Med. Sch., 220 Longwood Ave., Boston, MA 02115, USA. Bioluminescence from the gammarid amphipod Cyphocaris faurei and the hyperiid amphipods Scina crassicornis and Scina borealis was measured with a photomultiplier coupled to an integrating sphere, and with a video camera. C. faurei and S. crassicornis were collected in Jul 1986 and 1987 off Oahu, Hawaii; S. crassicornis was also collected in May 1987 in the northern Sargasso Sea, and in Oct 1988 north of Hawaii, and S. borealis was obtained in Sep 1989 off the southern California coast. Emission spectra were obtained with an optical multichannel analyzer. Bioluminescence of C. faurei appeared as a secretion through integumentary pores on the telson and uropods, and as a glow from a single location on the cephalothorax. The emission spectrum was bimodal or unimodal, with distinct blue-green and orange peaks. bioluminescence/spectral composition/mechanical stimuli/Amphipoda/Cyphocaris faurei/Scina crassicornis/Scina borealis/ASW, Sargasso Sea/ISE, USA, Hawaii, Oahu/INE, USA, California/marine crustaceans/Oceanic Abstracts.

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fspub/insects/entomology/Santa Cruz Island/moths/SRD.

880. Perkins EM, Brown DA, Jenkins KD. Contaminants in white croakers Genyonemus lineatus (Ayres, 1855) from the southern California bight. III. Histopathology Fish, toxicity, marine areas. Physiological mechanisms of marine pollutant toxicity / edited by W.B. Vernberg. . et al. New York : Academic Press, 1982. ill. ; 1981. p. p.215-231.
Other-US Literature review. Includes references. Article.
California/Marine Areas/AGRICOLA.

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We examined data on size-fractionated zooplankton biomasses from the California Current in summer to 1) verify that euphausiid and smaller zooplankton biomasses varied in similar ways geographically and interannually, and 2) test for increase in euphausiid biomass after 1966, concurrent with initiation of a fishery on Pacific whiting (Merluccius productus) (a major predator of euphausiids), and distinct from general, interannual changes. We accomplished purpose 1, but were unable to detect a significant effect attributable to the Pacific whiting fishery.
zooplankton/Euphausiacea/geographical variations/biomass/fisheries/Merluccius productus/distribution/INE/California Current/Pacific Ocean/ California Current/annual variations/effects on/ASFA.

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The authors evaluated population characteristics of feral sheep (Ovis aries) on Santa Cruz Island from 1979 to 1981. Santa Cruz Island supported an estimated 21,240 feral sheep on 22,000 ha; mean densities were as high as 2.1 sheep/ha. Sheep attained adult weight by 2.5 years. Physical condition varied seasonally according to reproductive chronology, with no evidence of emaciation. A young age structure suggested an increasing population, and female-biased sex ratios probably resulted from higher mortality of reproductively active males. Lambing occurred during a 1-month period that coincided with the onset of the growing season; lamb survival was close to 100%. The authors concluded that feral sheep were maintaining a healthy population despite habitat degradation due to long-term overgrazing, and recommended that feral sheep be removed from the island. That recommendation was carried out.
population structure/sheep/USA/California/Santa Cruz Island/feral populations/wildlife management/demography/CSA Life Sciences Collection.

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Funder: Minerals Management Service, Los Angeles, CA. Pacific OCS Region.) Santa Barbara Channel Circulation Model and Field Study. Appendix C: Observational Data. C.2: Current Meter Data. ; 1987.
Report No.: OCSMMS870094. 221p. See also PB89-213581. Portions of this document are not fully legible. Prepared in cooperation with Science Applications International Corp., Bellevue, WA. Sponsored by Minerals Management Service, Los Angeles, CA. Pacific OCS Region. PC A10/MF A01 Contract: DI1412000129123.
The research program consists of a Main Program spanning 1984 to provide a complete physical oceanographic description of the Channel both spatially and temporally. Surface and subsurface current meter moorings were deployed for two periods during the Main Program Field Study. The first Phase began with Cruise SB-4 from January 17 through 24, 1984 and ended on July 11, 1984. Phase 2 began with Cruise SB-7 from July 30 through August 3, 1984 and ended with Cruise SB-8 from January 2 through January 7, 1985. The first section contains time series data which consists of 35-hour low-pass filtered velocity components and temperature and salinity. Stick plots of current vectors are also shown at 12 hourly intervals.
Moorings/Flowmeters/Time series analysis/Sites/Flow rate/Oceanogrphic charts/Ocean temperature/Salinity/Circulation/Ocean currents/Santa Barbara Channel/Southern Region California/NTIS.

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Texas Agric. Ext. Serv., Sea Grant Coll. Program, Rm. 326, Courthouse, Bay City, TX 77414-1178, USA.
Crawfish are fished for bait or food over their entire range. Over

300 spp. of crawfish have been identified in the US, but the majority of commercial production is attributed to the red swamp crawfish (Procambarus clarkii) and secondarily to the white crawfish (P. acutus). Crawfish culture historically has been confined to south Louisiana. Culture of crawfish for food elsewhere in Louisiana increased markedly in the 1970's and early 1980's in response to demand for an increased and consistent supply. Louisiana continues to produce at least 95% of the total U.S. supply of crawfish. Texas, Mississippi, Alabama, Florida, Oklahoma, Oregon, California, Virginia, Missouri, North Carolina, and South Carolina are relatively minor producers of crawfish. A moderately strong, although poorly documented, demand for crawfish as bait and food also exists in Texas. In response to that demand, small scale, commercial production of crawfish was initiated in 1973 in Orange County. According to a recent survey of producers 5,000 acres of crawfish ponds are estimated to be in production in Texas. Crawfish can be farmed in either rice-field ponds in which crawfish/rice polyculture is practiced or in open ponds used exclusively for crawfish. Outlined in this paper are production methods, marketing, water use, management and trade associations.
crayfish culture/pond culture/rice field aquaculture/polyculture/procambarus/USA, Texas/aquaculture development/aquaculture economics/aquaculture techniques/human food/bait/marketing/water use/Oceanic Abstracts.

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Johns Hopkins Univ., Chesapeake Bay Inst., Baltimore, MD 21218. The feeding behavior of relatively undisturbed natural populations of tintinnids was studied in a series of experiments which utilized water samples collected in Southern California coastal waters. Dilute suspensions of corn starch were presented to the tintinnids and the rates of ingestion of this visual tracer determined after 5 to 20 min incubations followed by fixation in Lugol's iodine fixative. Tintinnids ingested particles of diameters up to j43% of their lorica oral diameter and at rates proportional to their oral diameters. Grazing rates observed in these experiments ranged up to j10 ll/tintinnid/hr and generally agreed well with the rates observed in experiments utilizing laboratory cultures of tintinnids. No significant diel periodicity in feeding rates was observed in the one study extending over a 24-hr period. AM. Protozoa/Ciliata/Feeding/California Coast/Southern California Bight/grazing rates/tintinnids/OceanAbstracts.

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fishery management are discussed within the framework of three problems of increasing complexity. The first is the use of egg or larval surveys to estimate spawning biomass and the associated questions about modelling aggregation. The second is management of krill in the Antarctic and the relationship between catch per unit effort and stock abundance. The importance of behavioral models in fishery management is discussed. The third topic is the management of multiple pelagic species in California coastal waters and the need for the development of community ecology models for the California Current.
ichthyoplankton surveys/spawning populations/multispecies fisheries/Sardinops sagax/Euphausia superba/statistical models/biomass/biological sampling/food webs/catch/effort/population number/graphics/INE/USA/ California/INE/California Current/PS/Antarctic Ocean/fishery management/ASFA.

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USA/California/plants/vesicular-arbuscular mycorrhizas/roots/colonization/Camissionia cheiranthifolia/Coreopsis gigantea/Distichlis spicata/Dudleya greenei/Eriogonum grande/Lavatera assurgentiflora/islands/USA/California/Channel Islands Natl. Park/CSA Life Sciences Collection.

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GSE (Performer: Dynalysis of Princeton, NJ. Performer: Science Applications International Corp., Bellevue, WA. Funder: Minerals Management Service, Los Angeles, CA. Pacific OCS Region.) Santa Barbara Channel Circulation Model and Field Study. Appendix C: Observational Data. C.4: Wave Spectra. ; 1987. Report No.: OCSMMS870096. 122p. See also PB89-213706. Prepared in cooperation with Science Applications International Corp., Bellevue, WA. Sponsored by Minerals Management Service, Los Angeles, CA. Pacific OCS Region. PC A06/MF A01 Contract: DI1412000129123. As part of the Santa Barbara Channel Circulation Model and Field Study, the surface wave field was measured using a Datawell Waverider buoy with a SeaData internal recorder. The report presents the data collected during the Main Program. The data presented are plots of the wave spectra for a 48-hour period. The spectra were calculated from each 8.5-minute sample period (512 data points) by taking ensemble averages of eight 64-point FFT's and applying overlapping Hanning windows. Time increases upward in these plots. All wave height data is in meters and all times are GMT.
Measurement/Buoys/Power spectra/Periodic variations/Height/Time series analysis/Circulation/Ocean waves/Santa Barbara Channel/Southern Region California/NTIS.

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California State Coastal Conserv., 1330 Broadway, Suite 1100, Oakland, CA 94612, USA.
San Francisco Bay is the largest coastal water body in California. Many large, enclosed water bodies in other countries are likely to experience at least some of the Bay's problems. The management of the Bay's coastal resources may be relevant for other nations now facing similar problems. In particular, the California State Coastal Conservancy's experience as a non-regulatory problem-solving agency may be pertinent to situations which either have similar complex regulatory systems as the Bay Area, or which face problems not amenable to regulatory solution.
INE, USA, California, San Francisco Bay/coastal zone management/coast al waters/land use/wetlands/California State Coastal Conservancy/Oceanic Abstracts.

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Johns Hopkins Univ., Chesapeake Bay Inst., Baltimore, MD 21218.
Amphorella quadrilineata, Tintinnopsis cf. beroidea, T. cf. acuminata, Eutintinnus pectinis, and Helicostomella subulata were isolated from Southern California coastal waters and maintained in laboratory cultures which were used to investigate several aspects of feeding dynamics and population growth rates. Both E. pectinis and H. subulata displayed ingestion and growth rates which increased with increasing food concentration until a maximum rate was obtained which then remained essentially constant as food levels increased further. Maximum hourly ingestion was equivalent to approximately 10 to 20% of the body wt of the tintinnids. T cf. acuminata showed no such maximum ingestion rate, as ingestion rates increased throughout the entire range of food concentrations used. The dependence of growth rate of T cf. acuminata on food concentration also differed from the other species, being characterized by a broad region of maximum growth at intermediate

food levels with reduced growth at both lower and higher food concentrations. Maximum observed growth rates represented doubling times of j12 hr for both E. pectinis and T. cf. acuminata and 24 hr for H. subulata. The data suggested gross growth efficiencies exceeding 50% over much of the range of food concentrations used. No strong evidence supporting the existence of feeding thresholds or "switching" behavior was collected during these experiments, although apparently selective feeding was observed in one experiment with E. pectinis. AM.
Growth rates/California Coast/Amphorella/Tintinnopsis/Eutintinnus/ Helicostomella/Feeding/Protozoa/Ciliata/grazing/Southern California Bight/A/quadrilineata/T/cf/acuminata/ T/cf/beroidea/E/pectinis/H/subulata/tintinnids/OceanAbstracts.

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Post-spill survey of the algal populaitons at selected rocky intertidal stations followong the 1969 Santa Barbara OIL Spills. Included are species lists obtained by grabs and divers from sites near 7 of the Southern California Islands. Marine Algae, Oil spill.

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ECOLOGY/COMMUNITY/COMMUNITY STRUCTURE/LARVAE, DISTRIBUTION & SEASONAL PATTERNS, CALIFORNIA CURRENT/SPECIES DIVERSITY/LARVAE, CALIFORNIA CURRENT/POPULATION STUDY/POPULATION DYNAMICS/SEASONAL ABUNDANCE/ZOOGEOGRAPHY/DISTRIBUTION PATTERNS/PACIFIC OCEAN/EASTERN PACIFIC/CALIFORNIA CURRENT/LARVAL DISTRIBUTION & SEASONAL PATTERNS/Zoological Index.

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930. Gunn JT, Hamilton P, Herring HJ, Kantha LH, Lagerloef GSE (Performer: Dynalysis of Princeton, NJ. Performer: Science Applications International Corp., Bellevue, WA. Funder: Minerals Management Service, Los Angeles, CA. Pacific OCS Region.) Santa Barbara Channel Circulation Model and Field Study. Appendix D: Computational Data. D.1: Daily Horizontal Sections: Winter. ; 1987. Report No.: OCSMMS870097. 138p. See also PB89-213607. Prepared in cooperation with Science Applications International Corp., Bellevue, WA. Sponsored by Minerals Management Service, Los Angeles, CA. Pacific OCS Region. PC A07/MF A01 Contract: DI1412000129123. The report includes prognostic calculations of the physical oceanographic conditions in the Santa Barbara Channel which have been performed for two periods; January 27, 1984 through June 30, 1984 and August 6, 1984 through December 31, 1984. Lateral boundary conditions were derived from current meter data on the boundaries and surface forcing from wind stations and meteorological buoys in the Channel. Archived results include daily averaged distributions of the calculated oceanographic properties for 15 levels on the computational grid. Horizontal sections of selected properties are displayed for the winter season. Mathematical models/Boundary layer flow/Wind Meteorology/Air water interactions/Winter/Circulation/Ocean currents/Santa Barbara Channel/Southern Region California/NTIS.

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San Francisco Bay Conserv. and Dev. Comm., 30 Van Ness Ave., Rm. 2011, San Francisco, CA 94201, USA.
This paper will discuss how the San Francisco Bay Conservation and Development Commission has responded to the public need to get to the shoreline and view the water as part of its regulatory program for the San Francisco Bay Area. The Commission's authority will be discussed as well as the way the Commission uses its Design Review Board and design guidelines to assure that public access areas are well designed and integrated into project development.
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Macrocystis pyrifera and Eisenia arborea. Appendix includes records of species obtained from the study site based upon their northern or southern affinities .
MARINE ALGAE, KELPS, ANACAPA ISLAND.

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previously productive areas using scallop spat caught at sea, have been promoted. A study was conducted to determine what parameters were useful in planning activities of extensive cultivation based on culture of A. circularis in Bahia Magdalena. The following aspects were considered: 1) spawning season; 2) selection of sites to obtain scallop spat; and 3) determination of the efficiency of three types of spat collectors. The results of this study show that in Bahia Magdalena, the best season to collect scallop spat is in winter time; the best sites of collection are Santa Elena and San Vicente; and the most efficient spat collector was onion bags filled with plastic mesh.
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ECOLOGY/POPULATION STUDY/POPULATION DYNAMICS/SEASONAL ABUNDANCE/CAL IFORNIA BIGHT/PACIFIC OCEAN/EASTERN PACIFIC/CALIFORNIA CURRENT/SEAS ONAL DISTRIBUTION & ABUNDANCE/Zoological Index.

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INE/California Current/INE/USA/California/Point Reyes/ocean circulation/current observations/barotropic mode/baroclinic mode/continental rise/wind-driven currents/Ekman pumping/gravity waves/ocean currents/dynamical oceanography/ASFA.

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PERCIFORMES ******* SUBORDER SCOMBROIDEI ******** SCOMBRIDAE
********* SCOMBER JAPONICUS.
BIOMETRICS/MEASUREMENTS/RELATIVE MEASUREMENTS/CALIFORNIA BIGHT/ECOL
OGY/ECOLOGICAL ENERGETICS/BIOMASS/SPAWNING ESTIMATES, CALIFORNIA
CURRENT/POPULATION STUDY/POPULATION DYNAMICS/POPULATION CHANGES/INC
REASING NUMBERS, CALIFORNIA CURRENT/PACIFIC OCEAN/NORTHERN
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California Cooperative Oceanic Fisheries Investigations data
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seasonal variation in dynamic height and the overall standard
deviation of dynamic height define three domains: oceanic, coastal,
and an intervening transition zone. The transition zone is a broad
band centered approximately 200-300 km offshore and parallel to the
coast in which the seasonal range of dynamic height is a relative
minimum and the standard deviation is a maximum. The transition
zone is coincident with the core of flow of the California Current.
A strong interaction between the core of the California Current and
the mesoscale eddy field is evident. dynamic height/mesoscale
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loci/Empidonax difficilis/evolution/genetic variability/CSA Life Sciences Collection.

988. Gunn JT, Hamilton P, Herring HJ, Kantha LH, Lagerloef GSE (Performer: Dynalysis of Princeton, NJ. Performer: Science Applications International Corp., Bellevue, WA.
Funder: Minerals Management Service, Los Angeles, CA. Pacific OCS Region.) Santa Barbara Channel Circulation Model and Field Study. Appendix D: Computational Data. D.4: Daily Horizontal Sections: Fall. ; 1987. Report No.: OCSMMS870100. 192p. See also PB89-213631. Prepared in cooperation with Science Applications International Corp., Bellevue, WA. Sponsored by Minerals Management Service, Los Angeles, CA. Pacific OCS Region. PC A09/MF A01 Contract: DI1412000129123. The research progam consists of a Main Program spanning 1984 to provide a complete physical oceanographic description of the Channel both spatially and temporally. The report includes prognostic calculations of the physical oceanographic conditions in the Santa Barbara Channel have been performed for two periods; January 27, 1984 through June 30, 1984 and August 6, 1984 through December 31, 1984. Lateral boundary

conditions were derived from current meter data on the boundaries and surface forcing from wind stations and meteorological buoys in the Channel. Archived results include daily averaged distributions of the calculated oceanographic properties for 15 levels on the computational grid. Horizontal sections of selected properties are displayed for the fall season. Mathematical models/Boundary layer flow/Wind Meteorology/Air water interactions/Autumn/Circulation/Ocean currents/Santa Barbara Channel/Southern Region California/NTIS.

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ECOLOGY/POPULATION STUDY/POPULATION DYNAMICS/SEASONAL ABUNDANCE/CAL IFORNIA CURRENT/PACIFIC OCEAN/NORTHERN PACIFIC/DISTRIBUTION & SEASONAL ABUNDANCE/Zoological Index.

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Funder: Minerals Management Service, Los Angeles, CA. Pacific OCS Region.) Santa Barbara Channel Circulation Model and Field Study. Appendix D: Computational Data. D.6: Time Series. ; 1987. Report No.: OCSMMS870102. 165p.
See also PB89-213656. Prepared in cooperation with Science Applications International Corp., Bellevue, WA. Sponsored by Minerals Management Service, Los Angeles, CA. Pacific OCS Region. PC A08/MF A01 Contract: DI1412000129123. The report includes prognostic calculations of the physical oceanographic conditions in the Santa Barbara Channel have been performed for two periods; January 27, 1984 through June 30, 1984 and August 6, 1984 through December 31, 1984. Lateral boundary conditions were derived from current meter data on the boundaries and surface forcing from wind stations and meteorological buoys in the Channel. The results of

these calculations have been archived in two forms. The most comprehensive archive is that of daily averaged fields of all computational data for 15 levels on the computational grid. As a secondary archive, six hourly averaged profiles of selected computational variables have been saved at twelve locations.
Profiles/Ocean currents/Measurement/Flowmeters/Boundaries/Mathematical models/Diurnal variations/Flow rate/Ocean temperature/Salinity/Circulation/Oceanographic data/Santa Barbara Channel/Southern Region California/NTIS.

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Quantitative methods are reviewed and compared for determining whether a marine mammal population is at an optimum sustainable population (OSP) level, a management goal specified by the U.S. Marine Mammal Protection Act. Methods of OSP determination fall into two general types: those that require an estimate of a population's maximum net productivity level (back-calculation method) and those that do not (dynamic response analysis). Back-calculation and dynamic response analyses are compared using data on the California gray whale (Eschrichtius robustus). Marine mammal monitoring programs should be designed to detect trends in both the abundance of a population and its condition relative to carrying capacity, because both quantities are involved in the definition of OSP. The value of using both abundance and condition indices in an assessment is illustrated with data on the northern fur seal (Callorhinus ursinus).
marine mammals/Eschrichtius robustus/nature conservation/population number/Callorhinus ursinus/abundance/body conditions/condition factor/models/optimum sustainable population/OCEANIC ABSTRACTS.

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Pacific Ocean East/California Coast/Coastal waters/Marine pollution/ Hydrocarbons/Chlorine compounds/Sea urchins/Embryos/Wastewaters/ Toxins/Toxicity/Eggs/Strongylocentrotus/Pollutant detection/Southern California Bight/chlorinated benzene/municipal wastewaters/ S/purpuratus/tolerance levels/toxicity levels/OceanAbstracts.

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1002. Anonymous. First natural gas production platform for Santa Barbara Channel. Ocean Ind. (Houston) 1981;16(6):68-69 natural gas/natural gas exploration/exploration management/production management/Santa Barbara Channel/continental shelf/offshore geology/petroleum.

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A caprellid amphipod, Aciconula acanthosoma , new species, is described from nearshore waters of Santa Catalina Island, California. Previously the genus Aciconula was monotypic, known only from the western Pacific species A. miranda . The new species was common and persistent during 15 years of sampling, and was found on 12 types of substrata and in the gut contents of eight species of fishes. It is distinguished from A. miranda primarily by the spination of the head and pereionites.
Aciconula acanthosoma/animal morphology/taxonomy/ecology/INE/USA/ California/Santa Catalina Island/new species/ASFA.

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archaeology/anthropology/Chumash.

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Island and represent the first records of schizomids from the southern Channel Islands.
Schizomus pentapeltis/new records/geographical distribution/USA/ California/Santa Catalina Island/Schizomidae/CSA Life Sciences Collection.

1012. Gunn JT, Hamilton P, Herring HJ, Kantha LH, Lagerloef GSE (Performer: Dynalysis of Princeton, NJ. Performer: Science Applications International Corp., Bellevue, WA.
Funder: Minerals Management Service, Los Angeles, CA. Pacific OCS Region.) Santa Barbara Channel Circulation Model and Field Study. Appendix D: Computational Data. D.7: Spectra. ; 1987. Report No.: OCSMMS870103. 88p.
See also PB89-213664. Prepared in cooperation with Science Applications International Corp., Bellevue, WA. Sponsored by Minerals Management Service, Los Angeles, CA. Pacific OCS Region. PC A05/MF A01 Contract: DI1412000129123. The report includes prognostic calculations of the physical oceanographic conditions in the Santa Barbara Channel have been performed for two periods; January 27, 1984 through June 30, 1984 and August 6, 1984 through December 31, 1984. Six hourly averaged profiles of selected computational variables have been saved at the twelve locations. From these profiles two depths, 30 m and 100 m, have been selected and rotary spectral correlations have been prepared between various pairs of current time series at these two depths. The left hand plot contains rotary auto spectra for each time series and the overall phasor correlation between them. The right hand plot contains the inner and outer coherence squared and phase for the pair of time series. In all cases the dot-dash curve represents the clockwise component and the solid line, the counter-clockwise component of the spectrum.
Profiles/Ocean currents/Correlation techniques/Depth/Time series analysis/Power spectra/Circulation/Oceanographic data/Santa Barbara Channel/Southern Region California/NTIS.

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algal blooms/shellfish/food poisoning/monitoring systems/public health/Dinoflagellata/INE, USA, California/Oceanic Abstracts.

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Ophiothrix/Strongylocentrotus/Embryos/Mortality rates/Measuring methods/Southern California Bight/hexavalent chromium/O/spiculata/S/ purpuratus/acute toxicity levels/tolerance levels/OceanAbstracts.

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1016. Anonymous. Jacobs Engineering Group to do environmental reports (for exploratory oil and gas drilling in Santa Barbara Channel). Sea Technol. (Arlington) 1981;22(11):53 petroleum pollution/petroleum exploration/environmental reports/oil drilling/gas drilling/Santa Barbara Channel/geology/petroleum.

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California/Santa Barbara channel/Santa Cruz Island/AGRICOLA.

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During the summer of 1984, nannoplankton dominated the phytoplankton assemblages of the coastal upwelling zone off San Quintin bay (30 degree 24'N, 116 degree 00'W), Baja California, Mexico. Upwelling was masked by the warming of surface and near-surface waters as a product of El Nino influence. Diatom and dinoflagellate abundances were between 1 and 2 orders of magnitude lower than those reported for the summers of 1977 and 1979. A 21-day time series shows that assimilation numbers of surface phytoplankton had a range of 2.0 to 5.4 mg C mg chlorophyll a super(-1)h super(-1). These values are lower than those reported for coastal waters of the California Current for 1969, 1970, 1977, and 1979 and are similar to values reported for 1983. In 1984, surface chlorophyll a concentrations and primary productivity were an order of magnitude lower than values reported for 1977 and 1979.
ISE/Mexico/Baja California/ISE/California Current/El Nino phenomena/phytoplankton/biomass/chlorophylls/coastal upwelling/climatology/ASFA.

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California/geochemistry/sediments/nitrogen/argon/pore water/Southern California/California Borderland/deep sea environment/marine environment/nitrification/denitrification/distribution/abundance/ GEOREF.

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1022. Stewart B, Yochem P. Radio-tagged harbor seal, Phoca vitulina richardsi , eaten by white shark, Carcharodon carcharias in the Southern California Bight. CALIF. FISH GAME 1985;71(2):113-115.
On 22 July 1983 a commercial fishing vessel caught a male white shark, Carcharodon carcharias in a gill net approximately 15 km south of Anacapa Island, California (lat. 34 degree 00'N., long, 119 degree 25'W), Sea World, Inc., San Diego, obtained the shark and packed it in ice until it was necropsied on 26 July. The shark weighed 948 kg and measured 4.7 m in total length (4.3 m fork length). The shark's stomach contained the remains of a juvenile elephant seal, Mirounga angustirostris , an adult harbor seal, Phoca vitulina richardsi , a radio-transmitter, and a red Dalton Roto tag. The seals were apparently consumed in large pieces. The head of each was severed cleanly from the torso through the neck, the harbor seal at the third cervical vertebra and the elephant seal behind the occipital condyles. The heads and other tissues were in very early stages of digestion and were likely consumed within several days of the shark's capture. The quantity of tissue and bones in the shark's stomach indicates that most, if not all, of each seal was eaten.
Pacific Ocean/California Bight/predation/food organisms/stomach content/Phoca vitulina richardsi/Carcharodon carcharias/tagging/INE/USA/ California/CSA Life Sciences Collection.

1023. Gunn JT, Hamilton P, Herring HJ, Kantha LH, Lagerloef GSE (Performer: Dynalysis of Princeton, NJ. Performer: Science Applications International Corp., Bellevue, WA.
Funder: Minerals Management Service, Los Angeles, CA. Pacific OCS Region.) Santa Barbara Channel Circulation Model and Field Study. Appendix D: Computational Data. D.8: Diagnostic Results. ; 1987. Report No.: OCSMMS870104. 23p. See also PB89-213672. Prepared in cooperation with Science Applications International Corp., Bellevue, WA. Sponsored by Minerals Management Service, Los Angeles, CA. Pacific OCS Region. PC A03/MF A01 Contract: DI1412000129123. The research program consists of two major elements: (1) a Pilot Program in the spring of 1983 to verify that the length and time scales of the observational and modelling components were representative of the circulation in the Channel and to gain experience in synthesizing the results of the two efforts, and (2) a Main Program spanning 1984 to provide a complete physical oceanographic description of the Channel both spatially and temporally. Results from the diagnostic simulation at the beginning of each prognostic simulation for the two phases are presented in the report. The simulations are for January 27 and August 5 for Phases 1 and 2 respectively. The model mass fields are initialized with observational hydrographic data from cruise SB4 for Phase 1 and SB7 for Phase 2. The mass field is then allowed to evolve prognostically for another 1/2 day to smooth out the noise in the circulation fields. The model computational grid and topography are shown in the report. During each phase, hydrographic initialization fields are presented first followed by the model forcing, and the dynamic and thermodynamic fields from the diagnostic run for the starting day of that phase. Mathematical models/Water masses/Wind pressure/Hydrography/Bathymetry/Submarine topography/Circulation/Oceanographic data/Santa Barbara

Channel/Southern Region California/NTIS.

1024. Lein AY, Galuzinskaya AK, Shaposhnikov GL. (The chemical composition of animals of active hydrothermal fields in the ocean.); Khimicheskij sostav zhivotnykh aktivnykh gidrotermal'nykh polej okeana. GEOKHIMIYA 1991;NO. 2:pp. 278-284 Inst. Geokhim. Anal. Khim. AN SSSR, Moscow, USSR.
All major species of animals inhabiting active hydrothermal fields at specific points on Juan de Fuca ridge (1560 m), in Gulf of California (2000 m) in the Pacific, and at 26 degree N in the Atlantic (3600 m) were sampled in 1986 and 1988 for their element composition. The hypothesis of constant chemical content of living matter regardless of the mode of synthesis is confirmed. The high content of sulphur is explained by haemosynthetic nature of organic matter resulting from bacterial processes of oxidation of hydrothermal H sub(2)S. The stable parts of exterior of animals (shells, tubes and carapace) contain chemical and isotope information and may be used for palaeoreconstruction in delineating new and old ore deposits.
marine invertebrates/biochemical composition/hydrogen sulfide/INE, Juan de Fuca Ridge/biosynthesis/biogeochemistry/hydrothermal springs/ISE, California Gulf/AN, North Atlantic/oxidation/chemosynthesis/Oceanic Abstracts.

1025. Oshida PS. A safe level of hexavalent chromium for a marine polychaete. ; 1977.
Pacific Ocean East/California Coast/Coastal waters/Polychaeta/ Chromium/Wastewaters/Effluents/Neanthes/Metal uptake/Industrial wastes/Toxicity/Measuring methods/Southern California Bight/hexavalent chromium/N/arenaceodentata/ municipal wastewaters/tolerance levels/OceanAbstracts.

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Sandy Subtidal, marine invertebrates, Anacapa Island .

1027. Anonymous. Quake watching from the seafloor. Offshore 1981;41(4):172 The article describes a device, known as the Seafloor Earthquake Measurement System (SEMS), that measures the response of the ocean floor to earthquakes and other disturbances. Four advanced prototypes of SEMS are being tested as part of a program to provide better data for the design and construction of safe, cost-effective production platforms in California's Santa Barbara Channel. ocean floor/earthquakes/seismographs/production platforms/Santa Barbara Channel/geology/seismology/petroleum.

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While a disproportionate quantity of photosynthetic and heterotrophic microbial activity can occur on marine snow in

surface waters, the significance of these macroscopic aggregates as sites for the transformation of matter in the euphotic zone appears to be highly variable. We investigated the hypothesis that this variability results from differences in aggregate origin by comparing the properties of marine snow at 13 stations in the Southern California Bight and California Current. Four types of marine snow were encountered including larvacean houses, diatom flocs, fecal aggregates and aggregates composed primarily of miscellaneous debris and detritus. More than 95% of the aggregates observed at any one station were of the same type.
ecological aggregations/biological production/coastal waters/INE/USA/ California/INE/California Current/suspended particulate matter/ASFA.

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petroleum/genesis/experimental studies/diagenesis/materials/organic materials/kerogen/alteration/sediments/marine environment/California/geochemistry/Gulf of California/simulation/samples/thermal alteration/temperature/analysis/data/maturation/Southern California/Tanner Basin/Santa Barbara Basin/Banderas Bay/Mexico/alkanes/n alkanes/hydrocarbons/source materials/Pacific Ocean/Northeast Pacific/GEOREF.

1031. Reid JLJ. Measurements of the California Counter Current off Baja California. Journal Geophy. Res. 1963;68:4819-4820
Oceanography/Physical Oceanography/currents.

1032. Walker PL, DeNiro MJ. Stable Nitrogen and Carbon Isotope ratios in Bone Collagen as Indices of Prehistoric Dietary Dependence on Marine and Terrestrial Resources in Southern California. Amer. Journ. of Physical Anthropology 1986;71:51-71
anthropology/archaeology/Chumash.

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Prey-species-diversity for seabirds such as brown pelicans (Peleca nus occidentalis californicus) is low in the Southern California Bight (SCB) Breeding success and winter populations of brown pelicans in crease or decrease with increases or decreases in the dominant prey, northern anchovy (Engraulis mordax). Availability of anchovies is usually related to their abundance, SCB seabirds could be affected b y intensive commercial fishing activities, as has been documented in other areas, such as Peru, South Africa, and northern California. In the SCB, negative effects of commercial anchovy fishing on brown peli can populations remain a potential threat rather than a reality, but fishing impact has been recently suggested by low pelican reproductive rates and breeding population declines at one breeding colony close to an intensive fishery in Mexico. The authors suggest that fishing restrictions at low levels of anchovy abundance will be more effectiv e than restrictions at high levels. Seabird populations would probabl y be least affected by fishing regulations that avoid prolonged low f ish abundance.
fisheries/Pacific Ocean/Southern California Bight/population levels/population dynamics/food availability/marine

birds/fisheries/quota regulations/Pelecanus occidentalis californicus/Engraulis mordax/abundance/INE/USA/Southern California Bight/interaction/CSA Life Sciences Collection.

1034. Gunn JT, Hamilton P, Herring HJ, Kantha LH, Lagerloef GSE (Performer: Dynalysis of Princeton, NJ. Performer: Science Applications International Corp., Bellevue, WA.
Funder: Minerals Management Service, Los Angeles, CA. Pacific OCS Region.) Santa Barbara Channel Circulation Model and Field Study. Appendix E: Observational-Computational Data Comparison. E.1: Horizontal Distributions. ; 1987. Report No.: OCSMMS870105. 193p. See also PB89-213680. Prepared in cooperation with Science Applications International Corp., Bellevue, WA. Sponsored by Minerals Management Service, Los Angeles, CA. Pacific OCS Region. PC A09/MF A01 Contract: DI1412000129123. The research program consists of a Main Program spanning 1984 to provide a complete physical oceanographic description of the Channel both spatially and temporally. Comparisons between horizontal distributions of observational and computational data are possible in several forms. Since the majority of moorings have current meters at or near the 30 meter depth, plots of these observed currents have been plotted for comparison with the model predictions for 30 meters. The second grouping of products are monthly and seasonal averages of the same quantities. Another comparison of horizontal distributions is provided by the hydrographic surveys which were performed during the calculation period. Following the hydrographic distributions are the distributions of transport, elevation, wind stress and heat flux at the surface and the predicted currents at corresponding depths. The reader is referred to the main body of the report for details concerning the compilation and synthesis of the results and for a general discussion of the calculation.
Ocean currents/Spatial distribution/Environmental transport/Wind pressure/Heat flux/Depth/Mathematical models/Circulation/Oceanographic data/Santa Barbara Channel/Southern Region California/NTIS.

1035. Baxa DV, Groff JM, Wishkovsky A, Hedrick RP. Susceptibility of nonictalurid fishes to experimental infection with Edwardsiella ictaluri. DIS. AQUAT. ORG 1990;VOL. 8, NO. 2:pp. 113-117
Dep. Med., Sch. Vet. Med., Univ. California, Davis, CA 95616, USA. Studies were conducted to determine the potential pathogenicity of Edwardsiella ictaluri to economically important nonictalurid fishes in California, USA. White sturgeon Acipenser transmontanus , striped bass Morone saxatilis , and chinook salmon Oncorhynchus tshawytscha were immersion-challenged in parallel with channel catfish Ictalurus punctatus . During a 14 d period, chinook salmon and channel catfish succumber to infections with E. ictaluri but the other species did not. An immersion exposure to 4.0 and 7.9 x 10 super(8) cfu/ml of E. ictaluri) for 30 s resulted in a 92 and 48% mortality among chinook salmon and rainbow trout O. mykiss , respectively. A Gram-negative septicemia occurred in infected fishes, and pure cultures of E. ictaluri were recovered from dead and surviving fish. There was a moderate to severe necrosis of the liver and kidney in both salmonids and channel catfish. Intracellular bacteria occurred within mononuclear inflammatory cells and hepatocytes. Results suggest that E. ictaluri is a potential pathogen of salmonid fishes.
fish diseases/bacterial diseases/Edwardsiella ictaluri/Acipenser transmontanus/Morone saxatilis/Oncorhynchus tshawytscha/Oncorhynchus mykiss/Salmo gairdneri/Ictalurus punctatus/pathology/antibodies/co mmercial species/susceptibility/OCEANIC ABSTRACTS.

1036. Young DR, Alexander GV. Metals in mussels from harbors and outfall areas. ; 1977.
Pacific Ocean East/California Coast/Coastal waters/Harbors/Outfalls/Wastewaters/Metals/Metal uptake/Mussels/Mytilus/Paints/ Contamination/Bioindicators/Copper/Zinc/Silver/Cadmium/Chromium/ Nickel/Lead/Tin/Measuring methods/Shipyards/Southern California Bight/M/edulis/trace metals/antifouling paints/ Newport Harbor/OceanAbstracts.

1037. Clements T. The Pleistocene history of the Channel Islands region, southern California. Essays in the Natural Sciences in honor of Captain Allan Hancock on the occasion of his birthday July 26, 1955. Los Angeles, CA: University of Southern California Press; 1955. p. 311-323.
Marine invertebrates, Sandy subtidal, geology, Anacapa Island, Santa Cruz Island, Santa Rosa Island, San Miguel Island, Santa Barbara Island.

1038. LASKER R. FACTORS CONTRIBUTING TO VARIABLE RECRUITMENT OF THE NORTHERN ANCHOVY (ENGRAULIS MORDAX) IN THE CALIFORNIA CURRENT: CONTRASTING YEARS, 1975 THROUGH 1978. RAPPORTS P.-V. REUN. CONS. PERM. INT. EXPLOR. MER 178 1981: 375-388, ILLUSTR.
* PISCES ** SUPERCLASS GNATHOSTOMATA *** CLASS TELEOSTOMI **** DIVISION TELEOSTEI ***** SUPERORDER CLUPEOMORPHA ****** CLUPEIFORMES ******* SUBORDER CLUPEOIDEI ******** ENGRAULIDAE ********* ENGRAULIS MORDAX.
ENVIRONMENTAL FACTORS/PHYSICAL ENVIRONMENT/LARVAL RECRUITMENT & ANNUAL VARIATION RELATIONSHIPS, CALIFORNIA (MARINE)/ECOLOGY/POPULATIO N STUDY/POPULATION DYNAMICS/LARVAL RECRUITMENT, ANNUAL VARIATION & INFLUENCING FACTORS, NORTH PACIFIC/CYCLES OF ABUNDANCE/ANNUAL VARIATION & INFLUENCING FACTORS, LARVAE, CALIFORNIA (MARINE)/PACIFIC OCEAN/NORTHERN PACIFIC/SOUTHERN CALIFORNIA BIGHT/LARVAL RECRUITMENT & ANNUAL ABUNDANCE, INFLUENCING FACTORS/Zoological Index.

1039. Anonymous. A second major oil discovery has been made in Santa Barbara Channel off California. Energy Miner. Resour.(Silver Spring) 1982;10(28):271
petroleum discoveries/Santa Barbara Channel/continental shelf/offshore geology/petroleum.

1040. Benson A, Risebrough R, Burlingame A, Moberg M. Southern California baseline study and analysis (1975/1976). Principal investigator work element reports. Report sections 3.3-3.6; book 9 of 10. 1978;III:379. crude oil/ecology/marine biology/water pollution/Southern California Bight/Eganhouse/chemical oceanography/hydrocarbons/intertidal zone/chemical analysis/aquatic plants/aquatic animals/abundance/distribution property/chromatographic analysis/gas chromatography/mass spectra/zooplankton/Pieper/invertebrates/Thompson/MINERALS MANAGEMENT SERVICE.

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Foreign Includes ref. Article.
California/Littoral Zone/Santa Barbara Channel/AGRICOLA.

1042. Sheres D, Kenyon KE. A double vortex along the

California Coast. J. GEOPHYS. RES. (C OCEANS)
1989;94(C4):4989-4997.
A double vortex was observed at the entrance to the Santa Barbara Channel, California, with sequential IR imagery from the NOAA 7 satellite during May 1984. While the wind blew strongly to the southeast, the double vortex moved westward with a velocity greater than that estimated for the mutual interaction of two idealized vortices. The effect of the double vortex on incoming Pacific swell is calculated by numerical integration of the ray equations. This calculation shows areas of focusing of the rays near the entrance to the channel, which suggests elevated wave energy there with reduced wave energy nearby. The pattern of wave refraction by mesoscale features, such as a double vortex, can help detect them and estimate their velocity distribution from remotely sensed surface wave imagery. The similarities and differences between refraction patterns produced by double vortices and by eddies is outlined. The double vortex and its generation by an episodic or tidal flow is investigated using Kashiwai's (1984) approach. An example of the related generation of a single vortex in the Alboran Sea by tidal flow in the Strait of Gibraltar is briefly discussed.
satellite sensing/infrared imagery/oceanic eddies/swell/wave energy/mesoscale features/INE/USA/California/Santa Barbara Channel/MED/ Alboran Sea/MED/Gibraltar Strait/nearshore dynamics/mathematical models/vortices/ASFA.

1043. Berry RW, Fischer PJ. Clay mineral distribution and ocean currents; southern California continental borderland. Geol. Soc. Am., Abstr. Programs. 1978;10(3):p.96
San Diego State Univ., Dep. Geol. Sci., San Diego, Calif., United-States; Calif. State Univ., Dep. Geosci., Northridge, Calif. The Geological Society of America, Cordilleran Section, 74th annual meeting, Tempe, Ariz., March 29-31, 1978 Analytic; Serial; Abstract B; Bibliography and Index of Geology (1969-present).
California/oceanography/sediments/composition/clay mineralogy/areal studies/Pacific Coast/Pacific Ocean/sedimentation/environment/marine environment/clastic sediments/clay/Los Angeles County/continental borderland/Southern California/distribution/currents/sorting/Point Dume/chlorite/illite/Santa Catalina Island/Coal Oil Point/GEOREF.

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Oceanography/Physical oceanography/currents.

1045. Walker PL. Cranial Injuries as Evidence of Violence in Prehistoric Southern California. American Journ. of Physical Anthropology 1989;80:313-323 anthropology/archaeology/Chumash.

1046. Gunn JT, Hamilton P, Herring HJ, Kantha LH, Lagerloef GSE (Performer: Dynalysis of Princeton, NJ. Performer: Science Applications International Corp., Bellevue, WA.
Funder: Minerals Management Service, Los Angeles, CA. Pacific OCS Region.) Santa Barbara Channel Circulation Model and Field Study. Appendix C: Observation Data. C.3: Drifter Data. ; 1987. Report No.: OCSMMS870095. 42p.
See also PB89-213599. Prepared in cooperation with Science Applications International Corp., Bellevue, WA. Sponsored by Minerals Management Service, Los Angeles, CA. Pacific OCS Region. PC A03/MF A01 Contract: DI1412000129123. The research program consists of a Main Program spanning 1984 to provide a complete physical oceanographic description of the Channel both spatially and temporally. Five hydrographic survey were completed on a 50 cast grid and three 10 day long drifter studies were performed.

Three drifter tracking experiments were carried out during the Main Program of the Field Study. The Appendix contains drifter trajectories from the three drifter tracking experiments. Oceanographic surveys/Windward drift/Trajectories/Tracking Position/Profiles/Air water interactions/Ocean waves/Circulation/Santa Barbara Channel/Southern Region California/NTIS.

1047. Tershy BR, Breese D, Meyer GM. Kleptoparasitism of adult and immature brown pelicans by Heermann's gulls. CONDOR 1990;VOL. 92, NO. 4:pp. 1076-1077 Sect. Neurobiol. and Behav., Seeley G. Mudd Hall, Cornell Univ., Ithaca, NY 14853, USA.
We studied kleptoparasitism by Heerman's Gulls (L. heermanni) on the piscivorous Brown Pelican (Pelecanus occidentalis) in the Gulf of California, Mexico to answer two questions: (1) did adult or immature Heermann's Gulls differ in their frequency of kleptoparasitic attempts?, and (2) did Heermann's Gulls attempt to kleptoparasitize immature or adult Brown Pelicans more often? The study area was a 20 x 45 km section of the Canal de Ballenas. kleptoparasitism/Larus heermanni/Pelecanus occidentalis/feeding behavior/agonistic behavior/ISE, California Gulf/Oceanic Abstracts.

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Pacific Ocean East/California Coast/Coastal waters/Outfalls/ Wastewaters/Metals/Metal uptake/Seafoods/Contamination/Pollutant detection/Invertebrata/Fish/Sampling methods/Bioindicators/Southern California Bight/trace metals/Palos Verdes shelf/municipal wastewater discharges/12 species/island control area/coastal control area/Los Angeles County/Joint Water Pollution Control Plant/JWPCP/ Orange County outfall system/OceanAbstracts.

1049. Cockerell TDA. San Miguel Island, California. Science Mo. 1938;46:180-187
General natural history account emphasizing terrestrial plants and vertebrates. Marine Invertebrates, sandy subtidal, San Miguel Island, terrestrial flora, fauna.

1050. BAILEY KM, STEVENS PR. THE LIFE HISTORY AND FISHERY OF PACIFIC WHITING, MERLUCCIUS PRODUCTUS. REPORT CALIF. COOP. OCEANIC FISH. INVEST. 23 1982:81-98
* PISCES ** SUPERCLASS GNATHOSTOMATA *** CLASS TELEOSTOMI **** DIVISION TELEOSTEI ***** SUPERORDER PARACANTHOPTERYGII ****** GADIFORMES ******* SUBORDER GADOIDEI ******** MERLUCCIIDAE ********* MERLUCCIUS PRODUCTUS.
LIFE CYCLE & DEVELOPMENT/CALIFORNIA (MARINE)/ECOLOGY/POPULATION STUDY/POPULATION DYNAMICS/SEASONAL ABUNDANCE/MORTALITY/ANNUAL RATES, CALIFORNIA (MARINE)/BEHAVIOUR/MIGRATION/MIGRATORY PATTERNS, CALIFORNIA (MARINE)/PACIFIC OCEAN/NORTHERN PACIFIC/CALIFORNIA CURRENT/LIFE HISTORY, ABUNDANCE & MIGRATORY PATTERNS/Zoological Index.

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1053. Berelson WM, Hammond DE, Fuller C. Radon-222 profiles in California borderland basins: Models of basin water mixing and the flux of radon from basin sediments. EOS, Trans., Am. Geophys. Union 1981;62(45):894.
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marine water/mixing/radon tracer/sediment/isotope/geochem/water mixing/Eganhouse/chemical oceanography/thompson/invertebrates/geological sediments/text/ecosystem/interrelationships/MINERALS MANAGEMENT SERVICE.

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text/chemical oceanography/Eganhouse/Venkatesan/MINERALS MANAGEMENT SERVICE.

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Foreign Includes ref. Article.
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1059. Pares-Sierra A, O'Brien JJ. The seasonal and interannual variability of the California Current system: A numerical model. J. GEOPHYS. RES. (C OCEANS) 1989;94(C3):3159-3180.
A reduced gravity model that incorporates the geometry of western North America has been used to study the dynamics of the California Current system. Three experiments were performed: first the model

was run using 19 years of wind stress from the Comprehensive Ocean-Atmosphere Data Set (local model); a second experiment (remote model) consisted of forcing the model through its southern boundary using the results of a similar reduced gravity equatorial model; in a third experiment, both forcings were used simultaneously (local plus remote model). The main objective of this work was to analyze the low-frequency variability on the California Current system in terms of its contributions from remote and local forcing. Away from the coast, the basic (steady) state of the model is determined by the predominantly negative wind curl through a Sverdrup balance. The general seasonal cycle is in agreement with what has been described by other authors. Most of the interannual variability in sea level height at the coast is due to disturbances of equatorial origin that propagate into the region in the form of coastally trapped Kelvin waves. For the annual frequency variability, both local and remotely forced variability contribute to the total variance.
current prediction/El Nino phenomena/ocean-atmosphere system/atmospheric forcing/sea level variations/trapped waves/Kelvin waves/equatorial oceanography/ocean circulation/IE/California Current/mathematical models/annual variations/seasonal variations/variability/wind stress/ASFA.

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California/paleontology/Mammalia/Sirenia/Pleistocene/Santa Barbara County/Santa Barbara Channel/San Miguel Island/Santa Rosa Island/Irvingtonian/Rancholabrean/Mammuthus/occurrence/biogeography/evolution/S anta Barbara Islands/Southern California/GEOREF.

1061. Reid JL,J. Physical oceanography of the region near Point Arguello. University of California 1962
Oceanography/Physical oceanography/currents.

1062. Walker PL. Porotic Hyperostosis in a Marine Dependent California Indian Population. Amer. Journ. of Physical Anthropology 1986;69:345-354 archaeology/anthropology/Chumash.

1063. Ward B, Carlucci A. Marine ammonia- and nitrite-oxidizing bacteria: Serological diversity determined by immunofluorescence in culture and in the environment. APPL. ENVIRON. MICROBIOL 1985;50(2):194-201.
Immunofluorescence assays for marine ammonium- and nitrite-oxidizing bacteria were used to assess the diversity of nitrifying bacteria isolated from marine environments. The antisera show relatively broad specificity, in that each reacts with several strains of the same physiological type as the strain to which the antiserum was prepared. The antisera do not, however, react with any strains of differing physiological type. Seventy percent of the 30 unidentified ammonium isolates tested reacted with one or both of the antisera produced to marine ammonium-oxidizing strains, and 8 of the 9 unidentified nitrite-oxidizing strains tested reacted with 1 or more of the 3 nitrite oxidizer antisera used. Ammonium- and nitrite-oxidizing bacteria were enumerated in samples taken in a depth profile (to 750 m) in the Southern California Bight by immunofluorescence assays for two ammonium oxidizers and two nitrite oxidizers. Average abundances of the two types of nitrifiers were 3.5 x 10 super(5) and 2.8 x 10 super(5) cells liter

super(-1), respectively. Nitrifiers constitute 0.1 to 0.8% of the total bacterial population in these samples. ammonium/nitrite/immunofluorescence/marine environment/ammonia/nitrites/immunity/serological studies/identification keys/bacteria/fluorescence/oxidation/identification/CSA Life Sciences Collection.

1064. Brink KH, Hickey BM, Mooers CNK, Simpson JJ (Performer: Dynalysis of Princeton, NJ. Performer: Science Applications International Corp., Bellevue, WA. Funder: Minerals Management Service, Los Angeles, CA. Pacific OCS Region.) Santa Barbara Channel Circulation Model and Field Study. Appendix F: Scientific Review. ; 1987. 15p.
See also PB89-213722. Prepared in cooperation with Science Applications International Corp., Bellevue, WA. Sponsored by Minerals Management Service, Los Angeles, CA. Pacific OCS Region. PC A03/MF A01 Contract: DI1412000129123. The research program consists of two major elements: (1) a Pilot Program in the spring of 1983 to verify that the length and time scales of the observational and modelling components were representative of the circulation in the Channel and to gain experience in synthesizing the results of the two efforts, and (2) a Main Program spanning 1984 to provide a complete physical oceanographic description of the Channel both spatially and temporally. An integral part of a research program is a scientific review by an independent panel. The comments contained in the report followed submission of the Draft Final Report and address both the Report itself and the Research Program as a whole. A portion of the reviews contained specific recommendations relating to the format and representation of the material in the Report. The major portion of the reviews are directed toward scientific issues which relate to or enlarge upon the finished product. Oceanographic surveys/Ocean waves/Seasonal variations/Periodic variations/Meteorological data/Reviews/Recommendations/Circulation/Oceanographic data/Santa Barbara Channel/Southern Region California/NTIS.

1065. Tershy BR, Breese D, Alvarez-Borrego S. Increase in cetacean and seabird numbers in the Canal de Ballenas during an El Nino-Southern Oscillation event. MAR. ECOL. PROG. SER 1991;VOL. 69, NO. 3:pp. 299-302 Sect. Neurobiol. and Behav., Seeley G. Mudd Hall, Cornell Univ., Ithaca, NY 14853-2702, USA.
El Nino-Southern Oscillation (ENSO) events cause a decline in upwelling-based primary productivity throughout the California Current system and southern Gulf of California. However, in the Canal de Ballenas, central Gulf of California, primary productivity is based on tidal mixing and appears unaffected by ENSO events. Between the ENSO year of 1983 and the anti-ENSO year of 1985 we censused 4 piscivores (Bryde's whale Balaenoptera edeni ; common dolphin Delphinus delphis ; blue-footed booby Sula nebouxii and brown booby S. leucogaster) and 3 planktivores (fin whale B. physalus ; black storm-petrel Oceanodroma melania ; and least storm-petrel O. microsoma). For all species the number of individuals sighted per hour declined by 77 to 94% over the 3 yr period. This suggests that during ENSO events the Canal de Ballenas may serve as a refugium of high productivity and prey abundance for these highly mobile marine animals. El Nino phenomena/Southern Oscillation/environmental effects/primary production/growth/plankton feeders/marine birds/marine mammals/ref uges/ISE, California Gulf, Canal de Ballenas/Oceanic Abstracts.

1066. Young DR, Heesen TC. Chlorinated benzenes in Palos Verdes flatfish. ; 1977.

Pacific Ocean East/California Coast/Coastal waters/Hydrocarbons/ Chlorine compounds/Pollutant analysis/Tissues/Wastewaters/ Metabolism/Pollutant detection/Bioindicators/Flatfish/PCB compounds/Outfalls/Benthic organisms/Gas chromatography/Southern California Bight/chlorinated benzenes/pollutant uptake/ Palos Verdes/OceanAbstracts.

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Geologic history and terrestrial ecology of the California Islands, mentions fossil molluscs, discusses Guadalupe Island, Mexico and compares it with the Channel Islands.

1068. ANDERSON DW, GRESS F, MAIS KF. BROWN PELICANS: INFLUENCE OF FOOD SUPPLY ON REPRODUCTION. OIKOS 39(1) 1982: 23-31, ILLUSTR.
* PISCES ** SUPERCLASS GNATHOSTOMATA *** CLASS TELEOSTOMI **** DIVISION TELEOSTEI ***** SUPERORDER CLUPEOMORPHA ****** CLUPEIFORMES ******* SUBORDER CLUPEOIDEI ******** ENGRAULIDAE ********* ENGRAULIS MORDAX.
FEEDING/CARNIVOROUS FEEDING/PREDATION/PREDATORS/PELECANUS OCCIDENTALIS CALIFORNICUS (AVES)/FLEDGEING SUCCESS, EFFECT OF PREY ABUNDANCE, NORTHERN PACIFIC/ECOLOGY/ECOLOGICAL ENERGETICS/BIOMASS/A BUNDANCE, EFFECT ON AVIAN PREDATOR FLEDGEING SUCCESS, NORTHERN PACIFIC/ POPULATION STUDY/POPULATION DYNAMICS/POPULATION SIZE/PACIFIC OCEAN/ NORTHERN PACIFIC/SOUTHERN CALIFORNIA BIGHT/DENSITY, EFFECT ON PREDATOR FLEDGEING SUCCESS/Zoological Index.

1069. Anonymous. Santa Barbara Channel strike due development. Oil Gas J. (Tulsa) 1982;80(27):54+1
oil field appraisal/oil development/production management/petroleum/Santa Barbara Channel/continental shelf/geology/petroleum.

1070. Bernal PA. Large-scale biological events in the California Current. Calif. Coop. Oceanic Fish. Invest. Rep. 1979;20:89-101.
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Pieper/Dawson/plankton/Text/MINERALS MANAGEMENT SERVICE.

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1073. Bernal PA, McGowan JA. Advection and upwelling in the California Current. IDOE Int. Symposium on Coastal Upwelling, Los Angeles, CA (USA), 4 Feb 1980. Coast. Estuar. Sci.: Coastal Upwelling 1981;(1):381-399. coastal upwelling/horizontal advection/Pieper/Dawson/Hardy/phytoplankton/TEXT/zooplankton/biom ass/Hickey/phy sical oceanography/MINERALS MANAGEMENT SERVICE.

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Variabilidad biologica de baja frecuencia y gran escala en la Curriente de California, 1949-1978. (Low-frequency, large-scale biological variability in the California Current, 1949-1978). Proceedings of the Expert Consultation to Examine Changes in Abundance and Species Composition of Neritic Fish Resources, San Jose (Costa Rica), 18-29 April 1983. A Preparatory Meeting for the FAO World Conference on Fisheries Management and Development 1983;:713-729.
fishery/oceanography/current observations/INE/California Current/ISE/California Current/Hickey/physical oceanography/MINERALS MANAGEMENT SERVICE.

1075. Pennings SC. Multiple factors promoting narrow host range in the sea hare, Aplysia californica. OECOLOGIA 1990;82(2):192-200.
Juvenile sea hares, Aplysia californica , utilize only the red algae Plocamium cartilagineum and Laurencia pacifica as host plants at Santa Catalina Island, CA. I tested three hypotheses which might account for this pattern of host choice: 1) A. californica specialize on the algae on which they grow best, 2) A. californica specialize on algae from which they acquire secondary compounds that protect them from predators, and 3) A. californica specialize on certain algae in order to lower their encounter rates with predators. The results suggested that host range in the Aplysia californica system is affected by more than one factor. The first hypothesis was supported. A. californica of three size classes grew well on Plocamium , but could not grow at all on most other species of algae. Larger A. californica were able to grow on species of algae that smaller ones could not. The second hypothesis was also supported. The third hypothesis was rejected. habitat selection/colonization/Aplysia californica/USA/California/Santa Catalina Island/host range/specialization/defensive mechanisms/Plocamium cartilagineum/Laurencia pacifica/INE/USA/California/Santa Catalina I./ASFA.

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Univ. Calif., Dep. Geol., Los Angeles, Calif., United-States The Geological Society of America, Cordilleran Section, 73rd annual meeting., Sacramento, Calif., April 5-7, 1977 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).
California/oceanography/continental shelf/sediments/clastic sediments/textures/Los Angeles County/grain size/Santa Catalina Island/Point Dume/Dume Canyon/submarine canyons/Borderland/trend surface analysis/Southern California/continental borderland/GEOREF.

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1079. Berner LD. Distributional atlas of Thaliacea in the California Current region. Calif. Coop. Oceanic Fish. Invest. Atlas No. 8 1967;:322. Pieper/Dawson/Zooplankton/Text/MINERALS MANAGEMENT SERVICE.

1080. Gunn JT, Hamilton P, Herring HJ, Kantha LH, Lagerloef

GSE (Performer: Dynalysis of Princeton, NJ. Performer: Science Applications International Corp., Bellevue, WA. Funder: Minerals Management Service, Los Angeles, CA. Pacific OCS Region.) Santa Barbara Channel Circulation Model and Field Study. Appendix E: Observational-Computational Data Comparison. E.2: Time Series and Spectra. ; 1987. Report No.: OCSMMS870106. 136p. See also PB89-213698. Prepared in cooperation with Science Applications International Corp., Bellevue, WA. Sponsored by Minerals Management Service, Los Angeles, CA. Pacific OCS Region. PC A07/MF A01 Contract: DI1412000129123. The research program consists of a Main Program spanning 1984 to provide a complete physical oceanographic description of the Channel both spatially and temporally. A set of current meter moorings was maintained in the interior of the Santa Barbara Channel during the Main Program partially for purposes of comparison with model results. The locations and depths of the moorings are included in the report. The prognostic calculations for equivalent periods are interpolated to the current meter locations. The first set of time series comparisons consists of pairs of plots displaying the same information in slightly different formats. The second plot shows the components of current velocity and the temperature and salinity, both observations and calculations, on the same axis, east and north are positive. The second group of data products are pairs of time and frequency correlations for the observational and computational currents. Ocean currents/Velocity measurement/Mathematical models/Time series analysis/Ocean temperature/Salinity/Autocorrelation/Circulation/Oceanographic data/Santa Barbara Channel/Southern Region California/NTIS.

1081. Munroe TA, Nizinski MS. Symphurus melasmatotheca and S. undecimplerus (Cynoglossidae, Pleuronectiformes), two new eastern Pacific tonguefishes with eleven caudal-fin rays. COPEIA 1990;NO. 4:pp. 985-996
NOAA/NMFS, Syst. Lab., Natl. Mus. Nat. Hist., Washington, DC 20560, USA. Two new species of eastern Pacific tonguefishes with an unusual count of 11 caudal-fin rays are described. Symphurus melasmatotheca (southern Gulf of California to northern Peru) is characterized by having 11 caudal-fin rays, a well-developed pupillary operculum, 90-98 dorsal-fin rays, 74-80 anal-fin rays, 49-52 total vertebrae, four hypurals, a 1-5-3 (less frequently, 1-4-3) pattern of interdigitation of dorsal pterygiophores and neural spines, and 82-98 longitudinal scale rows. S. melasmatotheca also has a unique pigmentation pattern. S. undecimplerus (Gulf of Tehuantepec to northern Peru) is distinguished from its congeners by a combination of 11 caudal-fin rays, a well-developed pupillary operculum, a 1-5-3 (less frequently 1-4-4 or 1-5-4) pattern of interdigitation of dorsal pterygiophores and neural spines, 97-105 dorsal-fin rays, 80-87 anal-fin rays, 52-56 total vertebrae, and 95-112 longitudinal scale rows. Differences in geographic and bathymetric distributions between species are also noted. new species/taxonomy/animal morphology/fin ray counts/vertebrae counts/meristic counts/geographical distribution/Symphurus melasmatotheca/Symphurus undecimplerus/IE, East Pacific/OCEANIC ABSTRACTS.

1082. Mearns AJ, Sherwood MJ. Changes in the prevalence of fin erosion off Los Angeles and Orange counties. ; 1977.
Pacific Ocean East/California Coast/Coastal waters/Diseases/Fish/ Wastewaters/Outfalls/Fins/Soles/microstomus/glyptocephalus/ Monitoring methods/Southern California Bight/fin erosion/bottom fish/Los Angeles County/Orange County/M/pacificus/G/zachirus/Palos Verdes shelf/Dover sole/rex sole/San Pedro Bay/fin erosion prevalence 1972-1977/OceanAbstracts.

1083. Cockerell TDA. Recollections of a naturalist, XII The California Islands. Bios 1939;10(2):99-106
A rambling account of endemism in the California Islands.
San Miguel Island, Santa Cruz Island.

1084. JENKINS KD, BROWN DA, OSHIDA PS, PERKINS EM. CYTOSOLIC METAL DISTRIBUTION AS AN INDICATOR OF TOXICITY IN SEA URCHINS FROM THE SOUTHERN CALIFORNIA BIGHT. MARINE POLLUT. BULL. 13(12) 1982: 413-421, ILLUSTR. * ECHINODERMATA ** ECHINOIDEA *** STRONGYLOCENTROTUS PURPURATUS. BIOCHEMISTRY/CHEMICAL COMPOSITION/POLLUTANT CONTENT/GONADAL CYTOSOLIC METALS, CALIFORNIA (MARINE)/REPRODUCTION/REPRODUCTIVE SYSTEM/GONAD/CYTOSOLIC METAL CONTENT, CALIFORNIA (MARINE)/PACIFIC OCEAN/NORTHERN PACIFIC/SOUTHERN CALIFORNIA BIGHT/CYTOSOLIC METAL CONTENT, GONAD/Zoological Index.

1085. Anonymous. Santa Barbara channel state tract tests sought. Oil Gas J (Tulsa) 1982;80(8):43
petroleum exploration/Santa Barbara Channel/continental shelf/offshore geology/petroleum.

1086. Bernstein RL, Breaker LL, Whritner R. California Current eddy formation: Ship, air and satellite results. Science 1977;195(4276):353-359. Coastal currents/Eddies/California Current/California Coast/Circulation/Pacific Ocean Northeast/Remote sensing/Satellite observations/Radiometers/Hickey/physical oceanography/TEXT/Bonnell/Dailey/marine mammals/MINERALS MANAGEMENT SERVICE.

1087. Berry FH, Perkins HC. Survey of the pelagic fishes of the California Current area. U.S. Natl. Mar. Fish. Serv. Fish. Bull. 1966;65:625-682. Northern anchovy/Engraulis mordax/Pacific hake/Merluccius
productus/sablefish/Anoplopoma fimbria/Dover sole/Microstomus pacificus/life
history/distribution/fish/Cross/NPS/Fishes/vertebrates/zoology TEXT Allen/MINERALS MANAGEMENT SERVICE.

1088. Berry RW, Fischer PJ. Clay mineral distribution and ocean currents; southern California continental borderland. Presented at: The Geological Society of America, Cordilleran Section, 74th Annual Meeting, Tempe, AZ (USA), March 29-31, 1978. Geol. Soc. Am., Abstr. Programs 1978;10(3):96.
California/sediments/clay mineralogy/Pacific Coast/Pacific Ocean/sedimentation/oceanography/composition/areal studie/environment/clastic sediments/marine environment/clay/Los Angeles County/continental borderland/Southern California/distribution/currents/United States/sorting/Point Dume/chlorite/sheet silicate/silicates/illite/Santa Catalina Island/Coal Oil Point/Hood/ecosystem/MINERALS MANAGEMENT SERVICE.

1089. PROPOSED 1982 OUTER CONTINENTAL SHELF OIL AND GAS LEASE SALE OFFSHORE SOUTHERN CALIFORNIA. LOS ANGELES, CALIFORNIA DEPARTMENT OF THE INTERIOR, BUREAU OF LAND MANAGEMENT NOVEMBER 1981 (EPA: NOVEMBER 20, 1981) 2 VOLUMES 1981 USDA EMPLOYEES REQUEST DOCUMENTS FROM NATIONAL AGRICULTURAL LIBRARY OTHERS ORDER FROM INFORMATION RESOURCES PRESS, 1700 NORTH MOORE STREET, SUITE 70 0, ARLINGTON, VA 22209.   ENV.
PURSALE OF OIL AND GAS LEASES ON 218 TRACTS CONTAINING 1.1 MILLION ACRES OF OUTER CONTINENTAL SHELF LANDS OFFSHORE OF SOUTHERN CALIFORNIA IS PROPOSED. THE TRACTS ARE BETWEEN 3 AND 84 GEOGRAPHIC MILES OFFSHORE AND IN WATER DEPTHS RANGING FROM 150 TO 4,900 FEET.

THE TRACTS LIE IN THREE SUBAREAS, NAMELY, THE SANTA BARBARA CHANNEL, INNER BANKS, AND OUTER BANKS. DEVELOPMENT OF THE LEASE TRACTS WOULD INVOLVE 19-179 EXPLORATORY WELLS, 35-199 DELINEATION WELLS, 40-339 PLATFORM WELLS, 3-12 PLATFORMS, 0-7 SUBSEA COMPLETIONS, 96 MILES OF OFFSHORE PIPELINE, AND 2 MILES OF ONSHORE PIPELINE. ESTIMATED COST OF DEVELOPING OIL AND GAS RESOURCES WITHIN THE TRACTS IS $2.1 BILLION. POSDEVELOPMENT OF THE RESOURCES WITHIN THE TRACTS WOULD RESULT IN THE PRODUCTION OF 230 MILLION BARRELS OF OIL AND 662 BILLION CUBIC FEET OF NATURAL GAS. OIL AND GAS PRODUCED BY THE TRACTS WOULD DECREASE THE NATION'S DEPENDENCY ON FOREIGN SOURCES OF OIL. DIRECT EMPLOYMENT LEVELS OVER THE 25-YEAR PRODUCTIVE LIFE OF THE TRACTS WOULD PEAK IN 1986 AT 400 JOBS, WHILE TOTAL DIRECT AND INDIRECT EMPLOYMENT WOULD ACCOUNT FOR NEARLY 4,526 ADDITIONAL JOBS AT THE PEAK OVERALL EMPLOYMENT YEAR OF 1992. INCOME FROM THE SALES WOULD INCREASE FEDERAL REVENUE. NEGDEVELOPMENT ACTIVITIES WOULD RESULT IN A STATISTICALLY ESTIMATED 1.1 SPILLS OF GREATER THAN 1,000 BARRELS AND 0.5 SPILLS GREATER THAN 10,000 BARRELS DURING THE LIFE OF THE LEASES. TRENCHING FOR PIPELINES AND OTHER ACTIVITIES ASSOCIATED WITH PIPELINE CONSTRUCTION AND OPERATION WOULD RESULT IN RELEASE OF 230 MILLION BARRELS OF FORMATION WATER, 220 MILLION BARRELS OF DRILL MUDS, AND 393.5 MILLION BARRELS OF CUTTINGS. ACTIVITIES AT OIL PLATFORMS AND DRILLING RIGS WOULD DEGRADE WATER QUALITY WITHIN 2,500 METERS OF THESE STRUCTURES. LARGE OIL SPILLS WOULD RESULT IN SEVERE WATER QUALITY DEGRADATION IN RESTRICTED BAYS, SUCH AS UPPER NEWPORT BAY, AND IN SEVERE DEGRADATION OF SENSITIVE INTERTIDAL AREAS. RELEASE OF SULFUR DIOXIDE, CARBON MONOXIDE, HYDROGEN SULFIDE, AND PARTICULATES WOULD RESULT IN SLIGHTLY INCREASED POLLUTANT LOADINGS IN AREAS WHERE FEDERAL AIR QUALITY STANDARDS ARE ALREADY BEING VIOLATED. DEVELOPMENT STRUCTURES AND POTENTIAL OIL SPILLS COULD DEGRADE CRITICAL FISHERY HABITAT. OIL CONTACT COULD CONSTITUTE A HAZARD FOR WHALES, PORPOISES, SEALS, DOLPHINS, AND SEABIRDS. SHIPPING TRAFFIC WOULD BECOME SOMEWHAT MORE CONGESTED, AND DEVELOPMENT ACTIVITIES COULD ENCROACH ON THE PACIFIC MISSILE TEST CENTER. PLACEMENT OF PERMANENT SOURCES OF MAGNETIC ANOMALITIES IN THE OCEAN FLOOR WOULD HAMPER THE SEARCH FOR CULTURAL RESOURCES IN SOME SHALLOW WATER AREAS. DEVELOPMENT STRUCTURES WOULD DEGRADE AESTHETICS SIGNIFICANTLY IN SOME SENSITIVE AREAS. LEGOUTER CONTINENTAL SHELF LANDS ACT OF 1953 (43 U.S.C. 1331). REFFOR THE ABSTRACT OF THE DRAFT ENVIRONMENTAL IMPACT STATEMENT SEE 81-0574D, VOLUME 5, NUMBER 8.
PACIFIC OCEAN/SANTA BARBARA CHANNEL/CONTINENTAL SHELVES/CRUDE OIL/CULTURAL RESOURCES/ENERGY SOURCES/EXPLORATION/FISHERIES/LEASING/NATURAL GAS/OFFSHORE ENERGY SOURCES/OIL PRODUCTION/OIL SPILLS/PIPELINES/WELLS/OUTER CONTINENTAL SHELF LANDS ACT OF 1953 PROGRAM AUTHORIZATION/AGRICOLA.

1090. Spies RB, Hardin DD, Toal JP. Organic enrichment or toxicity? A comparison of the effects of kelp and crude oil in sediments on the colonization and growth of benthic infauna. J. EXP. MAR. BIOL. ECOL 1988;124(3):261-282. The response of a benthic invertebrate community to two sources of sedimentary organic material was compared in a field experiment. The meiofauna and macrofauna colonizing and growing in sediment amended with varying concentrations (0, 0.1, 1 and 5%) and combinations of dry kelp debris and Isla Vista Seep petroleum were enumerated after 35 days at a subtidal site in the Santa Barbara Channel. Most groups of meiofauna responded similarly, having peak abundances at low nominal concentrations (0.1% on one or both constituents), although kelp had generally a greater stimulatory effect than did oil. The data presented here are largely consistent with a view that the response of the benthic populations to crude oil in sediments are similar to those expected from other sources of organic matter.

sediments/California/oil seepages/population dynamics/colonization/nutrient enrichment/macrofauna/meiofauna/kelp beds/USA/California/Invertebrata/organic matter/crude oil/kelp/INE/USA/California/Isla Vista Seep/oil/zoobenthos/marine invertebrates/ASFA.

1091. Hawkins JW, Hawkins DL. Petrology, geochemistry and evolution of mid Miocene volcanic rocks of San Clemente Island, So. Calif. Borderland. Geol. Soc. Am., Abstr. Programs. 1977;9(4):p.432 Scripps Inst. Oceanogr., Geol. Res. Div., La Jolla, Calif., United-States The Geological Society of America, Cordilleran Section, 73rd annual meeting., Sacramento, Calif., April 5-7, 1977 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present). California/petrology/igneous rocks/andesite rhyolite family/andesite/Los Angeles County/rhyolite/dacite/geochemistry/genesis/island arcs/evolution/mantle/mineral composition/fractionation/volcanism/middle Miocene/San Clemente Island/Southern California/continental borderland/GEOREF.

1092. Reid JL,J, Worvall CB, Coughran. Detailed measurements of a shallow salinity minimum in the thermoline. Journal Geophys. Res. 1964;69 Oceanography/Physical oceanography/currents.

1093. Rozaire CE. Archaeological Investigations on San Miguel Island, California. Los Angeles, CA: Los Angeles County Museum of Natural History; 1978. archaeology/anthropology/Chumash.

1094. Jessen PF, Ramp SR, Clark CA (Performer: Naval Postgraduate School, Monterey, CA). Hydrographic Data from the Pilot Study of the Coastal Transition Zone (CTZ) Program, 15-28 June 1987. Progress rept. Oct 86-Sep 87. ; 1989. Report No.: NPS6889004. 254p.
This data report presents hydrographic (CTD) data from a cruise off Point arena, CA during 15-28 June 1987. The study area was between 37 deg 40'N to 39 deg 20'N and 123 deg 30'W to 125 deg 30'W. The sampling plan criss-crossed a cold filament rooted near Point Arena, as observed using satellite AVHRR Sea Surface Temperature imagery. A total of 122 CTD casts to 500 m and 30 XBT drops to 750 m were made. The data are presented as individual vertical profiles, vertical sections, and property distributions on horizontal surfaces. The data were collected as part of the ONR Coastal Transition Zone (CTZ) program to study cold filaments, squirts, jets, and mesoscale eddies in the region. Keywords: Sea water temperature, Electrical conductivity, Oceanographic data, California current, Mesoscale eddies, Cold filaments. (EDC).
Bathythermograph data/California/Coastal regions/Density/Distribution/Eddies Fluid mechanics/Electrical conductivity/Filaments/Horizontal orientation/Low temperature/Ocean currents/Ocean surface/Pilot studies/Profiles/Radiometry/Satellite photography/Temperature/Transitions/Vertical orientation/Hydrography/Oceanographic data/Sea water/CTZ Coastal Transition Zone/Cold filaments/California Current/NTIS.

1095. Hillman RE. The implications to the taxonomy of Mytilus of histopathological observations of Mytilus edulis collected for the mussel watch program. 1990 Annu. Meet. of the National Shellfisheries AssociationJ. SHELLFISH RES 1989;VOL. 8, NO. 2:p. 452
Bettelle Memorial Inst., Duxbury Oper., Duxbury, MA 02332, USA.
Recent electrophoretic studies of populations of mussels purported to be Mytilus edulis indicated that M. edulis does not exist on the

west coast of the United States. Rather, populations of mussels in southern California were very similar to M. galloprovincialis , probably accidentally introduced into southern California; populations from Oregon and Alaska were similar to M. trossulus , indigenous to the Baltic Sea and parts of eastern Canada. In central and northern California, M. galloprovincialis and M. trossulus and their hybrids co-occur. Two types of histopathological observations of mussels collected for the Mussel Watch program indicate that at least the southern California mussels may indeed be a species of Mytilus other than edulis . The occurrence of Steinhausia mytilovum in mussels from Marina del Rey established a new geographic record for the microsporan species. Based on the histopathological differences, it is reasonable to assume the possibility that the southern California mussels are actually M. galloprovincialis , accidentally introduced to southern California, and that S. mytilovum was accidentally introduced with the mussels.
taxonomy/geographical distribution/histopathology/parasites/Mytilus galloprovincialis/Steinhausia mytilovum/INE, USA/OCEANIC ABSTRACTS.

1096. Mearns AJ. Abundance of bottom fish off Orange County. ; 1977. Pacific Ocean East/California Coast/Coastal waters/Abundance/ Population variations/Catch statistics/Fish catches/Monitoring methods/Trawling/Physical oceanography/Temperature variations/ Turbidity/Ecology/Seasonal variations/Southern California Bight/bottom fish/8-yr trawl survey/1969-1977 Orange County/recruitment periods/OceanAbstracts.

1097. Cockerell TDA. The marine invertebrate fauna of the California islands. Sixth Pacific Science Congress 1940
Mainly an account of fossil molluscan fauna.
San Miguel Island.

1098. GROSSMANN EL. STABLE ISOTOPES IN LIVE BENTHIC FORAMINIFERA FROM THE SOUTHERN CALIFORNIA BORDERLAND. DISSERTATION ABSTR. INT. (B) 43(6) 1982: 1769-1770.
* PROTOZOA ** PHYLUM SARCOMASTIGOPHORA *** SUBPHYLUM SARCODINA **** SUPERCLASS RHIZOPODA ***** CLASS GRANULORETICULOSEA ****** FORAMINIFERIDA. BIOCHEMISTRY/CHEMICAL COMPOSITION/STABLE C & O ISOTOPES, PALAEOENVIRONMENTAL INDICATORS, PACIFIC/ECOLOGY/ENVIRONMENTAL INDICATORS/PALAEOTEMPERATURE SCALE & C ISOTOPE FRACTIONATION ANALYSIS, PACIFIC/PACIFIC OCEAN/SOUTHERN CALIFORNIA BORDERLAND/STABLE ISOTOPE CONTENTS, PALAEOENVIRONMENTAL INDICATORS/Zoological Index.

1099. Anonymous. Santa Barbara Channel strike confirmed. Oil Gas J. (Tulsa) 1982;80(26):43
petroleum discoveries/Santa Barbara Channel/continental shelf/offshore/geology/petroleum.

1100. Silver MW(EW. The habitat of Salpa fusiformis (Chordata:tunicata) in the California Current as defined by stomach content studies and the effect of salp swarms on the food supply of the plankton community. [dissertation] ; 1971. Other-US Photocopy. Ann Arbor, Mich. : University Microfilms, 1972. Thesis (Ph.D.)--University of California, San Diego, 1971. Bibliography: leaves 129-133. Monograph; Bibliography.
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1101. Barth JA, Brink KH. Shipboard acoustic Doppler profiler velocity observations near Point Conception: Spring 1983. J. GEOPHYS. RES. (C OCEANS) 1987;92(C4):3925-3943.
During April 1983, shipboard Doppler acoustic log current profiles

were collected in an effort to characterize the flow field near points Conception and Arguello, California. Subsurface velocity maps derived from these profiles have been used to describe spatial flow structures both on and off the shelf and to investigate flow variability as a function of time and of wind stress. Persistent westward flow out of the northern half of the Santa Barbara Channel and eastward flow into its southern half were observed regardless of the direction of the local wind stress. Evidence for wind forcing of current fluctuations nearshore between the points and north of Point Arguello was found.
ocean currents/current observations/wind stress/coastal currents/INE/ USA/California/Point Conception/atmospheric forcing/current velocity/INE/USA/California/Point Arguello/dynamical oceanography/ASFA.

1102. Lowenstam HA, Fitch JE. First recovery of live monoplacophorans. Geol. Soc. Am., Abstr. Programs. 1977;9(7):p.1076 Calif. Inst. Technol., Div. Geol. and Planet. Sci., Pasadena, Calif., United-States The Geological Society of America, 90th annual meeting, Seattle, Wash., Nov. 7-9, 1977 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).
California/paleontology/Mollusca/Monoplacophora/Holocene/ecology/shorelines/Santa Rosa Cortes Ridge/taxonomy/morphology/evolution/SEM data/modern/GEOREF.

1103. Reid JL, Roden GI, Wyllie JG. Studies of the California Current System. CalCOFI 1958;Progress Report 1:28-56
Oceanography/Physical oceanography/currents/winds/water masses.

1104. King C. Evolution of Chumash Society: A Comparative Study of Artifacts Used for Social System Maintenance in the Santa Barbara Channel Region Before A.D. 1804. New York: Garland; 1990.
anthropology/archaeology/Chumash/Channel Islands.

1105. Lang MA, Hamilton RW (Performer: University of Southern California, Los Angeles. Sea Grant Program. Funder: National Sea Grant Coll. Program, Rockville, MD. Funder: American Academy of Underwater Sciences, Costa Mesa, CA.) Proceedings of the American Academy of Underwater Sciences Dive Computer Workshop. Held in Santa Catalina Island, California on September 26-28, 1988. ; 1989. Report No.: USCSGTR0189. 225p. Sponsored by National Sea Grant Coll. Program, Rockville, MD., and American Academy of Underwater Sciences, Costa Mesa, CA. PC A10/MF A01 Grants: NA85AADSG140, NA86AADSG119.
The proceedings reports are grouped in the following sessions: Introductory session; Manufacturer's session; International dive computer experiences;; Dive computer utilization; Dive computer utilization and simulation; Dive computers, tables and no-stop diving; Computer display of some DC profiles; Individual experiences and personal perspectives; and General discussion and concluding remarks.
Decompression injuries/Barotrauma/Decompression sickness/Computer systems hardware/Computer systems programs/Diving/Computers/Meetings/Underwater physiology/Data bases/Human tolerances/Computer applications/NTIS.

1106. Shane SH, McSweeney D, Hammond PS, Mizroch SA, Donovan GP(. Using photo-identification to study pilot whale social organization (SC/A88/P20). Symp. and Workshop on Individual Recognition and the Estimation of Cetacean Population ParametersINDIVIDUAL RECOGNITION OF CETACEANS: USE OF PHOTO-IDENTIFICATION AND OTHER TECHNIQUES TO ESTIMATE POPULATION

PARAMETERS. INCORPORATING THE PROCEEDINGS OF THE SYMPOSIUM AND WORKSHOP ON INDIVIDUAL RECOGNITION AND THE ESTIMATION OF CETACEAN POPULATION PARAME 1990:pp. 259-263
West Coast Whale Res. Found., U.S., P.O. Box 1768, Santa Cruz, CA 95061, USA International Whaling Comm., Cambridge (UK).
Photo-identification of uniquely-marked individuals was the primary research tool used in studies of pilot whale (Globicephala macrorhynchus) social organization at Santa Catalina Island, California (1983-8) and the Big Island of Hawaii (1985-8). Pilot whales showed fairly high site fidelity, especially in Hawaii. Pod cohesiveness over time was marked in Hawaii but less evident at Catalina. Pods in both study areas were composed primarily of presumed adult females with juveniles and calves. Presumed adult males were rare, and when seen, did not associate with the same pod all the time. Pair-wise association analyses at Catalina showed some degree of social affiliation between some individuals. Thirty-four to 45% of pilot whales in the 2 study areas were identifiable which compares favorably with bottlenose dolphins (44%) but is lower than humpback whales (92%) and Risso's dolphins (67-95%). Despite some problems, photo-identification is a promising technique for studying pilot whale social organization.
social behavior/photography/identification/Globicephala/OCEANIC ABSTRACTS.

1107. Mearns AJ. Coastal gradients in sportfish catches. ; 1977. Pacific Ocean East/California Coast/Coastal waters/Fish catches/ Sport fishing/Wastewaters/Outfalls/Marine pollution/Overfishing/ Fishing zones/Catch statistics/Species diversity/Southern California Bight/municipal wastewater outfalls/coastal trends/commercial party boat landings 1973/fishing statistics/fish landings/OceanAbstracts.

1108. Cushman JA, I. McCulloch. A report on some arenaceaous Foraminifera. Allan Hancock Pacific Expeditions 1939;6(1):1-113
Includes sandy subtidal and sand beach species from the northern Channel Islands. Sandy subtidal, sand beach, Foraminifera, Santa Barbara
Island, Santa Rosa Island, San Miguel Island, Anacapa Island.

1109. THOMPSON BE. FOOD RESOURCE UTILIZATION AND PARTITIONING IN MACROBENTHIC COMMUNITIES OF THE SOUTHERN CALIFORNIA BORDERLAND. DISSERTATION ABSTR. INT. (B) 43(6) 1982: 1711.
FEEDING/PARTICULATE FEEDING/DEPOSIT FEEDING/SEDIMENTARY RESOURCE UTILIZATION & PARTITIONING, BENTHON, NORTHERN PACIFIC/FEEDING BEHAVIOUR/FOOD PREFERENCES/DIGESTION & NUTRITION/NUTRITION/FOOD UTILIZATION/ECOLOGY/COMMUNITY/ECOLOGICAL NICHE/SEDIMENTARY FOOD UTILIZATION & PARTITIONING, BENTHON, NORTHERN PACIFIC/COMPETITION/INT ERSPECIFIC COMPETITION/LIFE HABIT/AQUATIC HABIT/BENTHON/SEDIMENTARY FOOD UTILIZATION & PARTITIONING, CALIFORNIA (MARINE)/PACIFIC OCEAN/NO RTHERN PACIFIC/SOUTHERN CALIFORNIA BORDERLAND/SEDIMENTARY FOOD UTILIZATION & PARTITIONING, BENTHON/Zoological Index.

1110. Anonymous. Shell to resume deep pay probe off California. Oil Gas J. 1982;82(7):38
Shell California Production Inc. has unveiled plans to resume exploratory drilling in Molino Gas Field in state waters of the Santa Barbara Channel off California. Plans call for a program of three deep wells to probe Eocene Matilija gas prospects and Miocene Monterey oil as a secondary target just west of a site at which Phillips Petroleum Co. plans to develop a significant new pay discovery. Shell plans to move in the JFP Three jack up, rated to 25,000 ft in 300 ft of water, to drill the wells, the company said

in a draft supplemental environmental impact report (EIR) submitted to the California State Lands Commission. The program will resume a wild-cat drilling program Shell aborted early last year. offshore operations/oil fields/drilling/Santa Barbara Channel/Molino field/petroleum.

1111. Yeaton RI,1. An ecological analysis of chaparral and pine forest bird communities on Santa Cruz Island and mainland California. ; 1972. 117 leaves. Other-US Photocopy. Ann Arbor, Mich. : University Microfilms, 1973. Thesis (Ph.D.)--University of California, Los Angeles, 1972. Bibliography: leaves 96-101.
Monograph; Bibliography.
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1112. Kelly KA. An inverse model for near-surface velocity from infrared images. J. PHYS. OCEANOGR 1989;19(12):1845-1864.
An inverse model to infer the near-surface velocity from the heat equation was applied to a series of six infrared satellite images from northern California. The inversion used a two-dimensional nondiffusive heat equation with a simple representation of surface heat fluxes and vertical entrainment. The along-isotherm component of the velocity was in the null space of this problem. An overdetermined problem was defined by adding weighted constraints on the energy, divergence and curl of the velocity and representative solutions were chosen from the family of solutions corresponding to a designated misfit level for the heat equation. The velocity solutions from these inversions supported the theory that the apparent cold filaments in the images were actually meanders of the California Current. ocean circulation/current velocity/surface currents/current meandering/mathematical models/INE/California Current/satellite sensing/ASFA.

1113. Ingle JCJ. Cenozoic paleoclimatic trends, history of the California Current, and Pacific Coast marine biostratigraphy. Geol. Soc. Am., Abstr. Programs. 1977;9(7):p.1032-1033
Stanford Univ., Dep. Geol., Stanford, Calif., United-States The Geological Society of America, 90th annual meeting, Seattle, Wash., Nov. 7-9, 1977 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).
Pacific Coast/stratigraphy/Cenozoic/paleoclimatology/North America/biogeography/Pacific Ocean/oceanography/ocean circulation/California Current/Northeast Pacific/changes/biostratigraphy/biofacies/faunal provinces/lithostratigraphy/lithofacies/diatomite/phosphorite/mud stone/currents /GEOREF.

1114. Riffenburg RH. California undersea aqueduct reconnaissance. The Oceanography 1973:71-75
Oceanography/Physical oceanography/currents/water masses.

1115. King C. The Evolution of Chumash Society: A Comparative Study of Artifacts Used in Social System Maintenance in the Santa Barbara Channel Region Before A.D. 1804 [dissertation] [Ph.D. Dissertation]. Univ. of Calif. Davis: UC Davis; 1981. University Microfilms, Ann Arbor, Mich.
archaeology/anthropology/Chumash.

1116. Smith KJ, Brown N. Oxygen consumption of pelagic juveniles and demersal adults of the deep-sea fish Sebastolobus altivelis , measured at depth. MAR. BIOL 1983;76(3):325-332.
Oxygen consumption rates of the deep-sea fish S. altivelis were measured in situ on pelagic juveniles at mesopelagic depths (608 m) and on demersal adults at bathyal depths (1,300 m) in the Santa

Catalina Basin in March 1982. Oxygen consumption rates were 1.5 to 1.8 times higher during the night than during the day. Gut contents of the juv eniles were mainly euphausiids. Weight-specific O sub(2) consumption rates for adults decreased with increasing body weight and were consistent in magnitude throughout the incubation period. Population O sub(2) consumption for demersal S. altivelis) was 11.01 mu l O sub(2) m super(-2) h super(-1).
oxygen consumption/Pacific Ocean/Santa Catalina Basin/food availability/ecophysiology/Sebastolobus altivelis/INE/USA/California/Santa Catalina Basin/juveniles/pelagic environment/adults/demersal environment/CSA Life Sciences Collection.

1117. Simpson JJ, Vallis GK, White WB (Performer: Scripps Institution of Oceanography, La Jolla, CA). Ocean Remote Sensing and Modeling. Semi-annual progress rept. no. 5, 15 Sep 88-15 Mar 89. ; 1989. 14p.
PC A03/MF A01 Contract: N0001486K0752.
No abstract available.
Remote detectors/Space based/Air water interactions/Ocean currents/Clouds/Pacific Ocean/Eddies Fluid mechanics/Surface temperature/Sea level/Scientific satellites/Oceanographic data/Algorithms/Data processing/Ocean models/El Nino/California Current/Ocean circulation/Undercurrents Ocean currents/Altimetry/Remote sensing/NTIS.

1118. Tershy BR, Breese D, Strong CS, Hammond PS, Mizroch SA, Donovan GP(. Abundance, seasonal distribution and population composition of balaenopterid whales in the Canal de Ballenas, Gulf of California, Mexico (SC/A88/ID22). Symp. and Workshop on Individual Recognition and the Estimation of Cetacean Population ParametersINDIVIDUAL RECOGNITION OF CETACEANS: USE OF PHOTO-IDENTIFICATION AND OTHER TECHNIQUES TO ESTIMATE POPULATION PARAMETERS. INCORPORATING THE PROCEEDINGS OF THE SYMPOSIUM AND WORKSHOP ON INDIVIDUAL RECOGNITION AND THE ESTIMATION OF CETACEAN POPULATION PARAME 1990:pp. 369-375
Sect. Neurobiol. and Behav., Seeley G. Mudd Hall, Cornell Univ., Ithaca, NY 14853, USA International Whaling Comm., Cambridge (UK).
The Canal de Ballenas, in the Gulf of California, Mexico, is sub-tropical but has high rates of year-round productivity. It is used by 4 balaenopterid species of whales. Between May 1983 and Apr 1986 2,758 hours were spent in a small boat censusing and photo-identifying balaenopterid whales in a 20 x 45 km section of the Canal. A total of 9 individual blue whales, 148 individual fin whales, 160 individual Bryde's whales and 6 individual minke whales were identified. At the same time 9 blue, 291 fin, 307 Bryde's and 17 minke whales were screen. The number of sightings per identified individual suggest that blue and fin whales are more transient to the study area than Bryde's and minke whales. This indicates that photo-identification data can improve the interpretation of sightings data. photography/identification/stock assessment/quantitative distribution/Balaenopteridae/ISE, California Gulf/community composition/Oceanic Abstracts.

1119. Allen MJ, Voglin RM. Commercial fish catches. ; 1977.
Pacific Ocean East/California Coast/Coastal waters/Fishing industry/ Fish catches/Catch yield/Shellfish/Pelagic fauna/Pelagic zones/ engraulis/scomber/trachurus/Anchovies/Mackerels/Sardines/Santa Barbara Channel/Standing crops/Abundance/Southern California Bight/pelagic wetfish/E/mordax/S/japonicus/T/ symmetricus/San Pedro Channel/Cortes Bank/OceanAbstracts.

1120. Cushman JA, I. McCulloch. Some Nonionidae in the collections of the Allan Hancock Foundation. Allan Hancock Pacific Expedition 1940;6(3):145-178 Includes sandy subtidal foraminifera from the northern Channel Islands. sandy subtidal, foraminifera, Santa Barbara Island, Santa Cruz Island.

1121. GREENBLATT PR. SMALL-SCALE HORIZONTAL DISTRIBUTIONS OF ZOOPLANKTON TAXA. MARINE BIOL., BERL. 67(1) 1982: 97-111, ILLUSTR. HABITAT/DISTRIBUTION WITHIN HABITAT/HORIZONTAL DISTRIBUTION/SMALL SCALE, PLANKTON, NORTHERN PACIFIC/PACIFIC OCEAN/NORTHERN PACIFIC/CAL IFORNIA CURRENT/PLANKTON SMALL SCALE HORIZONTAL DISTRIBUTIONS/Zoological Index.

1122. Anonymous. State lease sale eyed in Santa Barbara Channel (oil exploration). Oil Gas J. (Tulsa) 1982;80(17):78 energy policy/petroleum exploration/lease/sale/Santa Barbara Channel/contitental shelf/offshore geology.

1123. Blackburn M. Thaliacea of the California Current region: Relations to temperature, chlorophyll, currents, and upwelling. Calif. Coop. Fish. Invest. Rep. 1979;20:184-214. geographical distribution/upwelling/Thaliacea/zooplankton/abundance/biomass/water temperature/food availability/surface currents/Dolioletta gegenbauri/Doliolum denticulatum/Thalia democratica/ISE/California Current/zooplankton/Pieper/MINERALS MANAGEMENT SERVICE.

1124. PROPOSED 1982 OUTER CONTINENTAL SHELF OIL AND GAS LEASE SALE OFFSHORE SOUTHERN CALIFORNIA. LOS ANGELES, CALIFORNIA DEPARTMENT OF THE INTERIOR, BUREAU OF LAND MANAGEMENT JUNE 1981 (EPA: JUNE 2, 1981) 2 VOLUMES 1981 USDA EMPLOYEES REQUEST DOCUMENTS FROM NATIONAL AGRICULTURAL LIBRARY OTHERS ORDER FROM INFORMATION RESOURCES PRESS, 1700 NORTH MOORE STREET, SUITE 70 0, ARLINGTON, VA 22209. ENV.
PURSALE OF OIL AND GAS LEASES ON 218 TRACTS CONTAINING 1.1 MILLION ACRES OF OUTER CONTINENTAL SHELF LANDS OFFSHORE OF SOUTHERN CALIFORNIA IS PROPOSED. THE TRACTS ARE BETWEEN 3 AND 84 GEOGRAPHIC MILES OFFSHORE AND IN WATER DEPTHS RANGING FROM 150 TO 4,900 FEET. THE TRACTS LIE IN THREE SUBAREAS, NAMELY, THE SANTA BARBARA CHANNEL, INNER BANKS, AND OUTER BANKS. DEVELOPMENT OF THE LEASE TRACTS WOULD INVOLVE 19:N-179 EXPLORATORY WELLS, 35:N-199 DELINEATION WELLS, 40:N-339 PLATFORM WELLS, 3:N-12 PLATFORMS, O:N-7 SUBSEA COMPLETIONS, 96 MILES OF OFFSHORE PIPELINE, AND 2 MILES OF ONSHORE PIPELINE. ESTIMATED COST OF DEVELOPING OIL AND GAS RESOURCES WITHIN THE TRACTS IS $2.1 BILLION. POSDEVELOPMENT OF THE RESOURCES WITHIN THE TRACTS WOULD RESULT IN THE PRODUCTION OF 230 MILLION BARRELS OF OIL AND 662 BILLION CUBIC FEET OF NATURAL GAS. OIL AND GAS PRODUCED BY THE TRACTS WOULD DECREASE THE NATION'S DEPENDENCY ON FOREIGN SOURCES OF OIL. DIRECT EMPLOYMENT LEVELS OVER THE 25-YEAR PRODUCTIVE LIFE OF THE TRACTS WOULD PEAK IN 1985 AT 372 JOBS, WHILE INDIRECT EMPLOYMENT WOULD ACCOUNT FOR NEARLY 4,000 ADDITIONAL JOBS. INCOME FROM THE SALES WOULD INCREASE FEDERAL REVENUE. NEGDEVELOPMENT ACTIVITIES WOULD RESULT IN A STATISTICALLY ESTIMATED 1.1 SPILLS OF GREATER THAN 1,000 BARRELS AND 0.5 SPILLS GREATER THAN 10,000 BARRELS DURING THE LIFE OF THE LEASES. TRENCHING FOR PIPELINES AND OTHER ACTIVITIES ASSOCIATED WITH PIPELINE CONSTRUCTION AND OPERATION WOULD RESULT IN RELEASE OF 230 MILLION BARRELS OF FORMATION WATER, 220.4 MILLION BARRELS OF DRILL MUDS, AND 393.5 MILLION BARRELS OF CUTTINGS. ACTIVITIES AT OIL PLATFORMS AND DRILLING RIGS WOULD DEGRADE WATER QUALITY WITHIN 1,000 METERS OF THESE STRUCTURES. LARGE OIL SPILLS WOULD RESULT IN

SEVERE WATER QUALITY DEGRADATION IN RESTRICTED BAYS, SUCH AS UPPER NEWPORT BAY, AND IN SEVERE DEGRADATION OF SENSITIVE INTERTIDAL AREAS. RELEASE OF SULFUR DIOXIDE, CARBON MONOXIDE, HYDROGEN SULFIDE, AND PARTICULATES WOULD RESULT IN SLIGHTLY INCREASED POLLUTANT LOADINGS IN AREAS WHERE FEDERAL AIR QUALITY STANDARDS ARE ALREADY BEING VIOLATED. DEVELOPMENT STRUCTURES AND POTENTIAL OIL SPILLS COULD DEGRADE CRITICAL FISHERY HABITAT. OIL CONTACT WOULD CONSTITUTE A HAZARD FOR WHALES, PORPOISES, SEALS, DOLPHINS, AND SEABIRDS. SHIPPING TRAFFIC WOULD BECOME SOMEWHAT MORE CONGESTED, AND DEVELOPMENT ACTIVITIES COULD ENCROACH ON THE PACIFIC MISSILE TEST CENTER. PLACEMENT OF PERMANENT SOURCES OF MAGNETIC ANOMALITIES IN THE OCEAN FLOOR WOULD HAMPER THE SEARCH FOR CULTURAL RESOURCES IN SOME SHALLOW WATER AREAS. DEVELOPMENT STRUCTURES WOULD DEGRADE AESTHETICS SIGNIFICANTLY IN SOME SENSITIVE AREAS. LEGOUTER CONTINENTAL SHELF LANDS ACT OF 1953 (43 U.S.C. 1331). PACIFIC OCEAN/SANTA BARBARA CHANNEL/CONTINENTAL SHELVES/CRUDE OIL/CULTURAL RESOURCES/ENERGY SOURCES/EXPLORATION/FISHERIES/LEASING/NATURAL GAS/OFFSHORE ENERGY SOURCES/OIL PRODUCTION/OIL SPILLS/PIPELINES/WELLS/OUTER CONTINENTAL SHELF LANDS ACT OF 1953 PROGRAM AUTHORIZATION/AGRICOLA.

1125. Stabeno PJ, Smith RL. Deep-sea currents off northern California. J. GEOPHYS. RES. (C OCEANS) 1987;92(C1):755-771.
Current meter records from 14 moorings in the deep-sea basin (3000-4500 m deep) South of the Mendocino Fracture Zone are analyzed. Several records exceed 3 years in length, and one extended for 5 years. Spectral analysis of these shows that most of the kinetic energy below 3000 m is in the temporal mesocscale (periods of 31 to 120 days), while the spectral estimates in the upper 1000 m are dominated by longer time scales. Only in the deep records is there a significant southward mean flow. Neither a mean California Current nor a poleward undercurrent is apparent in the shallower data (above 1250 m). The currents in the upper 500 m nearest the continental margin are influenced by the presence of cold filaments originating near Point Arena.
INE/Mendocino Escarpment/INE/USA/California/Point Arena/ocean currents/deep currents/current meter data/oceanic eddies/physical oceanography/ASFA.

1126. Reid JL,J. A comparison of drogue and GEK measurements in deep water. CalCOFI 1960;7:91-95
Oceanography/Physical oceanography/currents.

1127. King C, . Chumash Inter-Village Economic Exchange. In : Bean LJ, Blackburn TC, editors. Native Californians: A Theoretical Retrospective. Socorro, New Mexico: Ballena Press; 1976. p. 288-318.
anthropology/archaeology/Chumash.

1128. Hoffmann MR (Performer: California Inst. of Tech., Pasadena. W.M. Keck Engineering Lab. of Hydraulics and Water Resources.
Funder: California State Air Resources Board, Sacramento.) Fog, Cloud, and Dew Chemistry. Final rept. ; 1989. Report No.: ARBR89390. 496p. Sponsored by California State Air Resources Board, Sacramento. PC A21/MF A01 Contract: ARBA407532.
The spatial and temporal variations of fog/cloud chemistry were determined in the San Joaquin Valley, in the Los Angeles Basin and in the Santa Barbara Channel area using automated fog- and cloudwater collectors that were designed and constructed for the project. A significant correlation was observed between the average nighttime cloud- and fogwater loadings of H+ and NO3- and the maximum levels of O3-. Higher aldehydes, a series of dicarbonyls,

and a variety of sulfonic acid salts formed by reaction of S(IV) and aldehydes were quantitatively determined in the droplet phase. Accumulators/San Joaquin Valley/Los Angeles Basin/Santa Barbara Channel/Acidity/Sulfates/Aldehydes/Sulfonic acids/Concentration Composition/Aerosols/Performance/Design criteria/Atmospheric chemistry/Reaction kinetics/Chemical analysis/Inorganic nitrates/Ozone/Fog/Clouds Meteorology/Dew/Moisture content/Samplers/Atmospheric condensation/Chemical reaction mechanisms/Air pollution sampling/NTIS.

1129. Richards LJ, Saunders MW, Low LL(. Problems in yield allocation of Pacific hake (Merluccius productus). Symp. on Application of Stock Assessment Techniques to GadidsPROCEEDINGS OF THE SYMPOSIUM ON APPLICATION OF STOCK ASSESSMENT TECHNIQUES TO GADIDS 1990:pp. 135-144
Dep. Fish. Oceans, Pacific Biol. Stn., Nanaimo, B.C. V9R 5K6, Canada International North Pacific Fisheries Comm., Vancouver, B.C. (Canada).
The offshore stock of Pacific hake (Merluccius productus) ranges from southern California to Queen Charlotte Sound and supports both Canadian and United States fisheries. Utilization of the Pacific hake resource has been increasing, and projections for 1989 indicate that the quota will be fully subscribed for the first time. The stock is assessed jointly by Canadian and U.S. scientists with one quota determined coastwide. At present, the quota is allocated between national zones in proportion to the relative biomass of the stock in each zone. This method biases the allocation in favour of the U.S. fishery over the long term, due to changes in the age structure of the stock with latitude. Other problems with the current allocation scheme arise from uncertainties in the northward extent and year-to-year variation of the hake migration into the Canadian zone. stock assessment/yield predictions/shared stocks/allocation systems/ Merluccius productus/INE, Canada/INE, USA/gadoid fisheries/fishery management/OCEANIC ABSTRACTS.

1130. Word JQ, Mearns AJ. Bottom invertebrate populations below 200 meters. ; 1977.
Pacific Ocean East/California Coast/Coastal waters/Invertebrata/Sea urchins/Brisaster/Brissopsis/Allocentrotus/Abundance/Species diversity/Wastewaters/Outfalls/Echinodermata/Biomass/Spatial distribution/Population composition/Trawling/Sampling methods/Deep sea/Marine pollution/Benthic organisms/Bioindicators/Southern California Bight/infaunal organism/Palos Verdes/B/ latifrons/B/pacificus/A/fragilis/OceanAbstracts.

1131. Cushman JA, I. McCulloch. Some Virgulininae in the collections of the Allan Hancock Foundation. Allan Hancock Pacific Expeditions 1942;6(4):179-230 Includes sandy subtidal Foraminifera from the northern Channel Islands. Sandy subtidal invertebrates Foraminifera, Anacapa Island, San Miguel Island, Santa Barbara Island, Santa Cruz Island,.

1132. CHELTON DB, BERNAL PA, MCGOWAN JA. LARGE-SCALE INTERANNUAL PHYSICAL AND BIOLOGICAL INTERACTION IN THE CALIFORNIA CURRENT. JOURNAL MAR. RES. 40(4) 1982: 1095-1125, ILLUSTR. ENVIRONMENTAL FACTORS/PHYSICAL ENVIRONMENT/TEMPERATURE/PLANKTON ABUNDANCE, RELATIONSHIPS, NORTHERN PACIFIC/WATER/CURRENTS, EFFECTS ON PLANKTON ABUNDANCE, NORTHERN PACIFIC/ECOLOGY/ECOLOGICAL ENERGETICS/B IOMASS/PLANKTON ABUNDANCE, TEMPERATURE & WATER CURRENT RELATIONS, NORTHERN PACIFIC/PACIFIC OCEAN/NORTHERN PACIFIC/CALIFORNIA CURRENT/ PLANKTON BIOMASS, TEMPERATURE & WATER CURRENT RELATIONSHIPS/Zoological Index.

1133. Anonymous. Texaco makes 'significant' strike in the Santa Barbara Channel. Energy Miner. Resour. (Silver Spring) 1982;10(26):251 petroleum discoveries/Santa Barbara Channel/geology/petroleum.

1134. Powell JA. Five insects believed to be newly established or recolonized on Santa Cruz Island, California (Dermaptera, Lepidoptera). Bull South Calif Acad Sci. Los Angeles, The Academy. Dec 1980. 1980;79(3):p.97-108 Other-US Bibliography p. 107-108. Article.
California/Islands/AGRICOLA.

1135. Poulain PM, Niiler PP. Statistical analysis of the surface circulation in the California Current System using satellite-tracked drifters. J. PHYS. OCEANOGR 1989;19(10):1588-1603.
A kinematic description of the surface circulation in the southern California Current System is presented using the statistics of the 7-11 month long trajectories of 29 satellite-tracked mixed layer drifters. The drifters were released north of 30 degree N and traveled southward at an average speed of 3-4 cm/s along Baja California through an inhomogeneous field of mesoscale eddies of 15 cm/s rms variability. Lagrangian and Eulerian statistics of the variations about this mean southward drift are computed. Particle-pair statistics are used to study the relative dispersion of particles. The relative diffusivities depend on the initial separation and on the duration of drift.
ocean circulation/ocean currents/current observations/Eulerian current measurement/Lagrangian current measurement/INE/California Current/drifting data buoys/statistical analysis/physical oceanography/ASFA.

1136. Johnson JR. An Ethnohistoric Study of the Island Chumash [dissertation] [MA Thesis]. Santa Barbara: Univ. of Calif., Santa Barbara; 1982. anthropology/archaeology/Chumash.

1137. Edwards BD. Animal sediment relationships in a slope environment; southern California continental borderland. Geol. Soc. Am., Abstr. Programs. 1977;9(4):p.415
Univ. South. Calif., Dep. Geol. Sci., Los Angeles, Calif., United-States The Geological Society of America, Cordilleran Section, 73rd annual meeting, Sacramento, Calif., April 5-7, 1977 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present). sediments/clastic sediments/textures/sedimentation/environment/marine environment/California/environmental geology/ecology/lithofacies/sorting/grain size/ridges/sand/silt/clay/fauna/oceanography/Borderland/continental slope/Santa Rosa Cortez Ridge/GEOREF.

1138. Reid JL,J. Oceanography of the northeastern Pacific Ocean during the last ten years. CalCOFI 1960;Report 7
Oceanography/Physical oceanography/water masses.

1139. Venkatesan MI, Kaplan IR (Performer: California Univ., Los Angeles. Inst. of Geophysics and Planetary Physics. Funder: Department of Energy, Washington, DC.) Program of Mineralization and Cycling in Marine Systems: Organic Geochemistry of Particulate and Sediments (CaBS): Progress Report Ending May 1987 of the Project. ; 1987. Report No.: DOEER603383. 20p.
Portions of this document are illegible in microfiche products. PC A03/MF A01 Contract: FG0585ER60338.

The objective of this study is to generate a dynamic model of the processes involved in the cycling of organic carbon in the sediments and the waters of the southern California Bight by the chemical and biological characterization of sedimenting particles intercepted in the water column at various depths as well as from recent sediments. At UCLA, the quantitative data of the various organic compounds in the sediments (cores) and particles from the interceptor traps deployed from the water column are gathered to determine the processes occurring in the water column and sedimentary regimes. (ERA citation 13:031378). California/Carbon Cycle/Geochemistry/Organic Compounds/Organic Matter/Progress Report/Spatial Distribution/Coastal Waters/Sediments/ERDA/580500/Water chemistry/NTIS.

1140. Card JC. Busiest port in the USA: Port complex of Los Angeles/Long Beach. SEAWAYS 1990:p. 15
Commanding Officer, USCG MSO/Group LA-LB, 165 N. Pico Ave., Los Angeles/Long Beach, CA 90802, USA.
The port complex of Los Angeles/Long Beach is the busiest in the United States, with over 7,000 vessel arrivals a year. The majority of these, over 5,500, are foreign-flag vessels. It is the US Coast Guard's responsibility to ensure port and vessel safety and protection of the marine environment. One of the ways to ensure this is by periodically boarding vessels to verify compliance with US and Solas requirements. The majority of the Coast Guard regulations for foreign vessels are contained in Title 33 of the Code of Federal Regulations. Vessels can expect the Coast Guard to come aboard twice a year to check for compliance with these regulations. The Coast Guard boarding team will look at licences, ship certificates and the dangerous cargo manifest, if applicable. port operations/surveillance and enforcement/harbor regulations/ship ping/cargo handling/marine transportation/hazardous materials/INE, USA, California, Los Angeles/Long Beach port complex/USCG/Oceanic Abstracts.

1141. Allen MJ, Mearns AJ. Bottom fish populations below 200 meters. ; 1977.
Pacific Ocean East/California Coast/Coastal waters/Population composition/Bioindicators/Demersal zones/Demersal fauna/Abundance/ Species diversity/Biomass/Sampling methods/Fins/Diseases/ Microstomus/Trawling/Spatial distribution/Wastewaters/Outfalls/ Deep sea/Marine pollution/Southern California Bight/bottom fish/fin erosion disease/health/M/ pacificus/Dover sole/low-O2 water/trawling samples/OceanAbstracts.

1142. Cushman JA, I. McCulloch. The species of Bulimina and related genera in the collections of the Allan Hancock Foundation. Allan Hancock Pacific Expedition 1948;6(5):231-294
Includes sandy subtidal Foraminifera from the northern Channel Islands. Invertebrates, Sandy Subtidal, Foraminifera, Santa Barbara Island, Santa Cruz Island, San Miguel Island, Anacapa Island.

1143. BRIGGS KT, LEWIS DB, TYLER WB, HUNT GL,J. BROWN PELICANS IN SOUTHERN CALIFORNIA: HABITAT USE AND ENVIRONMENTAL FLUCTUATIONS. CONDOR 1981; 83((1)):1-15 * AVES ** PELECANIFORMES *** PELECANIDAE **** PELECANUS OCCIDENTALIS. ECOLOGY/POPULATION STUDY/POPULATION DYNAMICS/POPULATION SIZE/CALIFO RNIA (MARINE)/POPULATION DENSITY/HABITAT/HABITAT EXPLOITATION/HABIT AT PREFERENCE/PACIFIC OCEAN/NORTHERN PACIFIC/SOUTHERN CALIFORNIA BIGHT/POPULATION SIZE, DISTRIBUTION & HABITAT PREFERENCES/Zoological Index.

1144. Langston RL. The Rhopalocera of Santa Cruz Island,

California. J Res Lepid. Santa Barbara, Calif., Lepidoptera Research Foundation. Spring 1979 (pub. 1981). 1979;18(1):p.24-35
Other-US Presented at the Multidisciplinary Symposium on the California Islands, Santa Barbara, Calif., 28 Feb. 1978.
California/AGRICOLA.

1145. Cary SC, Vetter RD, Felbeck H. Habitat characterization and nutritional strategies of the endosymbiont-bearing bivalve Lucinoma aequizonata. MAR. ECOL. (PROG. SER.) 1989;55(1):31-45.
A population of the lucinid bivalve Lucinoma aequizonata , with sulfur-oxidizing endosymbiotic bacteria in the gills, is restricted to a narrow depth range (500 plus or minus 10 m) on the slope of the Santa Barbara Basin, California, USA. In this zone, the seawater just above the substratum is sub-oxic ((O sub(2)) < 20 mu M). When the bivalves are incubated in the presence of hydrogen sulfide, thiosulfate is concentrated in the blood and apparently utilized by the bacteria for metabolic energy and the production of intracellular elemental sulfur. Laboratory growth experiments demonstrated that sulfide concentrations greater than 10 mu M were detrimental to the host, even though the bacteria continued to accumulate elemental sulfur.
symbionts/sulphur compounds/Bivalvia/Lucinoma aequizonata/vertical distribution/blood/burrowing organisms/sediment chemistry/anoxic conditions/INE/USA/California/Santa Barbara/habitat/bacteria/ASFA.

1146. Johnson JR. Chumash Social Organization: An Ethnohistoric Perspective [dissertation] [Ph.D. Dissertation]. Santa Barbara, CA: Univ. of Calif., Santa Barbara; 1988.
Anthropology/archaeology/Chumash.

1147. Anderhalt R, LeFever RD, Reed WE. Texture versus depth, and mainland versus offshore relationships, southern California borderland. Geol. Soc. Am., Abstr. Programs. 1977;9(4):p.379
Univ. Calif., Dep. Geol., Los Angeles, Calif., United-States The Geological Society of America, Cordilleran Section, 73rd annual meeting, Sacramento, Calif., April 5-7, 1977 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).
sediments/textures/environmental analysis/sedimentation/environment/marine environment/California/oceanography/grain size/sorting/variations/bathymetry/provenance/continental borderland/continental margin/GEOREF.

1148. Reid JL,J. On ghe geostrophic flow at the surface of the pacific Ocean during the last ten years. Tellus 1961(13):4
Oceanography/Physical oceanography/currents/waves/water masses.

1149. (Performer: Woods Hole Oceanographic Institution, MA). Coastal Zone Program. Technical rept. ; 1988. 7p.
Pub. in EOS Transactions, American Geophysical Union, v69 n27 p698-699, 704, 707, 5 Jul 88. PC A02/MF A01 Contract: N0001484C0134.
The Coastal Transition Zone (CTZ) Program, is designed to investigate the cold tongues ('filaments') often observed in satellite sea surface temperature images of the waters off the west coast of North America. Similar features have also been observed along other coasts, including those near Portugal and southwestern Africa. The causes, dynamics, and reasons for the growth and decay of cold filaments are unknown, as is the reason that they seem to appear most often in certain locations along a coastline and not in

others. Questions to be considered are: What is the nature and structure of the cold 'filaments' seen in the satellite images of sea surface temperatures. What causes these features to form, and What are the characteristics of the cold filaments. Keywords: California current, Upwelling. Reprints. (edc).
West Africa/Satellite photography/California/Decay/Dynamics/Filaments/Infrared images/Low temperature/North America/Ocean currents/Ocean surface/Portugal/Reprints/Surface temperature/Transitions/Upwelling/West Direction/Coastal regions/Sea water/Cold filaments Oceanography/Pacific Coast North America/NTIS.

1150. Naval Sea Support Center, Pacific. SEA TECHNOL 1990;VOL. 31, NO. 12:pp. 49-53
This article gives a brief history and description of the management and function of the US Naval Sea Support Center, Pacific. The mission (NAVSEACENPAC) is to represent the Commander, Naval Sea Systems Command (NAVSEA), in designated geographical areas, in regard to technical services to the fleet associated with the installation, operation, and maintenance of shipboard equipments and systems. Work is performed by in-house and contract personnel trained in engineering, technical, and logistics disciplines. NAVSEACENPAC serves the U.S. Navy Pacific Fleet with responsibilities extending from the Mississippi River to the Indian Ocean. In addition to the San Diego headquarters at Air Force Plant 19 (San Diego), offices are also located at the Naval Station (San Diego) and Submarine Base (Point Loma). Fleet Support Offices (FSOs) have been established at Mare Island, California; Long Beach, California; and Pearl Harbor, Hawaii. naval bases/military operations/shipboard equipment/installation/ma intenance/management/INE, USA, California/Naval Sea Support Cent., Pacific/Oceanic Abstracts.

1151. Mearns AJ, Hanan DA, Harris L. Recovery of kelp forest off Palos Verdes. ; 1977.
Pacific Ocean East/California Coast/Kelp/Brown algae/macrocystis/ Wastewaters/egregia/Environmental impact/Southern California Bight/kelp forest/Palos Verdes Peninsula/M/ pyrifera/kelp restoration projects/E/laevigata/kelp culture/kelp transplants/OceanAbstracts.

1152. Cushman JA, I. McCulloch. Some Lagenidae in the collections of the Allan Hancock Foundation. Allan Hancock Pacific Expeditions 1950;6(6):295-376 Includes sandy subtidal Foraminifera From the Northern Channel Islands. Sandy subtidal, sand beach, Foraminifera, Santa Barbara Island, Santa Rosa Island, San Miguel Island, Anacapa Island.

1153. Anonymous. Submerged pyramids cap seepage. World Dredg. Mar. Constr. 1983;19(1):28-29
Two huge steel pyramids have been moored beneath the Santa Barbara Channel in an unprecedented effort to cap the natural gas and oil seeps that have polluted that coastal area for centuries. The two structures, each 100 feet square and 50 feet high, and weighing 350 tons, were placed side by side on the ocean floor at a depth of 220 feet, covering a major seep of nearly half an acre. Together, they will collect as much as 500,000 cubic feet of natural gas and 50 barrels of crude oil that escape daily from the cratered bottom. pollution control/oil pollution/marine pollution/oil seepages/oil wells/materials recovery/offshore operations/Santa Barbara Channel/water quality/petroleum/pollution/resource management.

1154. Fuhrman JA, Ammerman JW, Azam F. Bacterioplankton in the coastal euphotic zone: distribution, activity and possible relationships with phytoplankton in the euphotic zone of the Southern California Bight. Mar Biol. Berlin, Springer International. 1980. 1980;60(2/3):p.201-207 Foreign 32 ref. Article.
California/Littoral Zone/AGRICOLA.

1155. Hartney KB. The foraging ecology of two sympatric gobiid fishes: Importance of behavior in prey type selection. ENVIRON. BIOL. FISH 1989;26(2):105-118.
The foraging ecology of two temperate marine gobies (Pisces: Gobiidae) was studied in rocky subtidal habitats off Santa Catalina Island, California. The bluebanded goby, Lythrypnus dalli , foraged from exposed ledges and fed on planktonic and benthic prey, although planktonic prey were more important in diets by number and weight. The more cryptic zebra goby, Lythrypnus zebra , remained hidden under rocks and in crevices feeding on benthic prey almost exclusively. The active selection of particular prey taxa from the two prey sources (water column and substratum), mediated by species-specific differences in foraging behavior, resulted in interspecific differences in type, number, size and weight of prey consumed. Interspecific differences in foraging ecology reflect the selection of prey most readily available to these fishes that occupy specific and fixed microhabitats within rocky reefs.
Lythrypnus dalli/Lythrypnus zebra/feeding behaviour/diets/sympatric populations/INE/USA/California/Santa Catalina Island/rocky shores/food organisms/zooplankton/zoobenthos/microhabitats/prey selection/ASFA.

1156. Timbrook J, Johnson JR, Earle DD. Vegetation burning by the Chumash. Journ. of Calif. and Great Basin Anthropology 1982;4:163-186 anthropology/archaeology/Chumash/fire/vegetation.

1157. Heusser L. Pollen in Santa Barbara Basin, California; a 12,000 yr record. Geol. Soc. Am., Bull. 1978;89(5):p.673-678 Box 608, Tuxedo, N.Y., United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
California/stratigraphy/Quaternary/palynomorphs/miospores/paleoecology/paleocli matology/Ventura County/Santa Barbara Basin/vegetation/pollen analysis/pollen diagrams/rhythmites/communities/Santa Clara River/Ventura River/sediments/cycles/upper Quaternary/GEOREF.

1158. Reid JL,J. Measurements of the California Counter current at a depth of 250 meters. Journal Mar. Res. 1962;20:134-137
Oceanography/Physical oceanography/currents.

1159. McCreary JP, Kindu PK (Performer: Nova Univ. Oceanographic Center, Dania, FL). Modelling of the Circulation of the Western Indian Ocean. Final rept. 1 Nov 84-31 Dec 88. ; 1988. 5p.
PC A02/MF A01 Contract: N0001485K0019.
Several different projects have been completed during the course of the terminating grant. Both analytical and numerical models have been developed, and applied to the following 5 projects: (1) Summer cooling of the Arabian Sea; (2) Upwelling in the Gulf of Tehuantepec; (3) Dynamics of the Somali Current; (4) Dynamics of the Leeuwin Current; (5) Dynamics of the California Current System. Results of these studies compare very well with observations. (fr).
Arabian Sea/California/Coastal regions/Cooling/Hydrodynamics/Gulfs/Indian

Ocean/Somalia/Summer/Upwelling/West Direction/North Pacific Ocean/Mexico/Mathematical models/Ocean currents/Leeuwin Current/California Current/Somali Current/Tehuantepec Gulf/NTIS.

1160. Rintoul B. California/Alaska: All's quiet on the western front. OCEAN IND 1990;VOL. 25, NO. 6:pp. 37-41 Bakersfield, CA, USA.
Facing problems exemplified by Chevron's frustrations in trying to remove the Pt. Arguello political roadblock after investing $2 billion in facilities in place since 1987, operators may be close to tossing in the towel in California for any E&P projects that are not already producing. Alaska's Chukchi Sea is generating exploratory interest, as Shell returns for a second summer of drilling. Texaco has plans there also for next year. Arco is the biggest name in Beaufort drilling with its limited probings on Fireweed and Camden Bay prospects. And the proven Seal Island area off Kuparuk River Delta appears next in line for development in the Beaufort Sea.
INE, USA, California/INE, USA, Alaska/PNW, Beaufort Sea/oil and gas industry/oil and gas exploration/offshore operations/oil and gas fields/government policy/economic analysis/Oceanic Abstracts.

1161. Word JQ, Mearns AJ, Allen MJ. Better control stations: The 60-meter survey. ; 1977.
Pacific Ocean East/California Coast/Coastal waters/Wastewaters/ Marine pollution/Monitoring methods/Environmental impact/Pollutant analysis/Sediments/Tissues/Trawls/Species diversity/Sampling methods/Surveys/Fish/Invertebrata/Benthic organisms/Water column/ Abundance/Southern California Bight/municipal wastewater discharges/control conditions/control stations/60-meter survey/trawl samples/ sediment-chemistry samples/grab samples/OceanAbstracts.

1162. Emery KO. The sea off Southern California. New York: J. Wiley and Sons; 1960.
Sediments of the island shelves discussed in detail esp. for Anacapa and Santa Barbara Islands. Discusses important factors governing infaunal distributions and records natural petroleum seepage on the shelf off San Miguel Island and adjacent to Anacapa Island.
Sandy subtidal, invertebrates, Anacapa Island, Santa Barbara Island, San Miguel Island, Ecology.

1163. SHAPIRO AM, PALM CA, WCISLO KL. THE ECOLOGY AND BIOGEOGRAPHY OF THE BUTTERFLIES OF THE TRINITY ALPS AND MOUNT EDDY, NORTHERN CALIFORNIA. JOURNAL RES. LEPID. 18(2) 1979(1981): 69-152.
FEEDING/HERBIVOROUS FEEDING/FOOD PLANTS/ALPINE & SUBALPINE FAUNA, NORTH CALIFORNIA/ENVIRONMENTAL FACTORS/PHYSICAL ENVIRONMENT/ALTITUDE/DISTRIBUTION DIFFERENCES, ALPINE FAUNAS, CALIFORNIA/HABITAT/TERREST RIAL HABITAT/MOUNTAIN HABITAT/ALPINE & SUBALPINE FAUNAS COMPARED, CALIFORNIA AREAS & OREGON/DISTRIBUTION WITHIN HABITAT/VERTICAL DISTRIBUTION/ALTITUDE DIFFERENCES, TRINITY/EDDY & NORTH SIERRA FAUNAS, CALIFORNIA/SEASONAL DISTRIBUTION WITHIN HABITAT/ALPINE FAUNA, CALIFORNIA/ZOOGEOGRAPHY/PALAEOZOOGEOGRAPHY/CALIFORNIA & OREGON/HIGH MONTANE FAUNAS DISTRIBUTION ROUTES SINCE PLEISTOCENE/NEARCTIC REGION/ UNITED STATES OF AMERICA/CALIFORNIA/TRINITY ALPS & MOUNT EDDY, YOSEMITE PARK & YUBA AREAS/ECOLOGY, BIOGEOGRAPHY, ANNOTATED LISTS & NOTES ON WILLIAMS 1909 LIST/OREGON/CRATER LAKE NATIONAL PARK/HIGH MONTANE FAUNA COMPARED WITH CALIFORNIA, TRINITY ALPS/EDDY MOUNT/RHOPALOCERA/Zoological Index.

1164. Anonymous. NAGT-FWS Santa Catalina Island field trip.

: Natl. Assoc. Geol. Teachers; 1984. 16.
Note: Natl. Assoc. Geol. Teachers, Far West Sect., field trip March 18, 1984; individual papers are cited separately.
guidebook Santa Catalina Island/Los Angeles County/areal geology.

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California/AGRICOLA.

1166. Matta JL, Chapman DJ. The seasonal photophysiology of Colpomenia peregrina across a vertical distributional gradient. J. PHYCOL 1988;24(suppl.):8. The seasonal photosynthetic performance and daily carbon balance has been examined over a 2-year period for populations of the brown saccate macroalga Colpomenia peregrina in Santa Catalina Island, California. Results from 135 photosynthesis-irradiance (P-I) experiments using an oxygen polarographic electrode indicate that significant differences are evident in the submersed net daily carbon gain of C. peregrina at three tidal elevations. The flux of molecular oxygen (non-dissolved) has been used to study the extent to which C. peregrina remains photosynthetically active during emersion. A three-way analysis of variance (ANOVA) indicated that the tolerance of C. peregrina to light, temperature and desiccation is significant modified by interactions between these factors. The winter decline found in the submersed daily carbon gain of C. peregrina is hypothesized to be one of the controlling factors responsible for the declines in standing stock of this alga during that season found along the shorelines of southern California.
vertical distribution/primary production/irradiance/Colpomenia peregrina/multivariate analysis/INE/USA/California/Santa Catalina Island/tolerance/ecological distribution/light effects/ASFA.

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anthropology/archaeology/Chumash.

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Pacific Ocean/paleontology/Radiolaria/distribution/zoning/North Pacific/Subarctic Water Mass/Intermediate Water/Central Water Mass/California Current/Castanidium/Haeckeliana/Castanissa/Castanea/Castanella/GEOREF.

1169. Reid JL,J. Distribution of dissolved oxygen in the summer thermoline. J. Mar. Res. 1962;20:138-148
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1170. Larsen S, King N, Agnew D, Hager B (Performer: California Inst. of Tech., Pasadena. Funder: National Aeronautics and Space Administration, Washington, DC.) Strain Accumulation in the Santa Barbara Channel, 1971-1987. ; 1988. Report No.: NAS126183402, NASACR183402. 15p.
PC A03/MF A01 Contract: NAG5842.
Geophysical evidence suggests a significant amount of north-south

convergence occurs across the Santa Barbara Channel. Tectonic studies indicate a discrepancy between observed fault slip in California and the North American-Pacific plate motion. Newer plate motion models (NUVEL-1) yield a lower rate of convergence. Global Positioning System (GPS) data collected in the Santa Barbara Channel in 1987, when combined with 1971 trilateration measurements, should be sufficient to resolve the present-day convergence rate. In early 1987, from January 3 to 7, GPS data were collected at 14 sites in California and at 5 additional stations throughout North America. The data can be used to estimate the rate of crustal deformation (convergence) occurring across the Santa Barbara Channel. The GPS baselines were computed with the Bernese 2nd generation software. A comparison was made between baseline lengths obtained with the Bernese and MIT softwares. Baseline changes from 1971 to January, 1987 (GPS-Bernese) across the Santa Barbara Channel were computed. A uniform strain model was calculated from the baseline changes. The present-day rate of convergence across the Santa Barbara Channel was determined to be 8 to 10 mm/yr. This conclusion is obtained from changes in the baseline length measured with a 1971 trilateration survey and a January, 1987, GPS survey. The rapid convergence rate, in addition to the history of large seismic events, suggests this region is a prime target for future geodetic and geophysical studies. California/Earthquakes/Global positioning system/Computer programs/Convergence/Mathematical models/Plates (Tectonics/Seismology/NTIS.

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Sch. Law (Boalt Hall), Univ. California, Berkeley, CA 94720, USA.
This historical perspective on CalCOFI in its early years (1947 to 1964) focuses on two important aspects. The first concerns how the scope and design of CalCOFI research on the California Current, and on the Pacific Ocean more generally, were originally formulated-that is, how the marine scientists and fisheries management specialists, industry leadership, and state and federal policy officials defined their research strategies and future needs in 1947-49. The state of American ocean research when the project was first designed will also be discussed. The second aspect concerns the dramatic development of the range and modes of scientific inquiry in the early years of CalCOFI research.
historical account/fishery oceanography/marine ecology/USA, California/CalCOFI/Oceanic Abstracts.

1172. Word JQ. Taxonomic standardization developments. ; 1977. Pacific Ocean East/California Coast/Coastal waters/Species diversity/Taxonomy/Spatial distribution/Abundance/Benthic organisms/ Invertebrata/Southern California Bight/Taxonomic Standardization Program/OceanAbstracts.

1173. Fraser CM. General account of the scientific work of the Velero III in the Eastern Pacific, 1931-1941. Part III. Allan Hancock Pacific Expeditions 1943;1(3):259-431
Includes station data from the Northern Channel Islands.

1174. BRINTON E, TOWNSEND AW. A COMPARISON OF EUPHAUSIID ABUNDANCES FROM BONGO AND 1-M CALCOFI NETS. REPORT CALIF. COOP. OCEANIC FISH. INVEST. 22 1981:111-125
* CRUSTACEA ** MALACOSTRACA *** EUCARIDA **** ORDER EUPHAUSIACEA. ECOLOGY/POPULATION STUDY/POPULATION STRUCTURE/POPULATION SEX RATIO/ NET CATCHES, CALIFORNIA CURRENT/POPULATION DYNAMICS/SEASONAL ABUNDANCE/NET CATCHES, COMPARATIVE STUDY, CALIFORNIA

CURRENT/HABITAT/ DISTRIBUTION WITHIN HABITAT/ABUNDANCE, DAY & NIGHT CATCHES, CALIFORNIA CURRENT/PACIFIC OCEAN/NORTHERN PACIFIC/CALIFORNIA CURRENT/ABUNDANCE , NET CATCHES, COMPARATIVE STUDY/Zoological Index.

1175. Anonymous. ARCO to revamp offshore California field development. Oil Gas J. 1985;83(17):46, 49
ARCO Oil & Gas Co.'s fault block extension to South Elwood oil field could change the configuration of the company's planned Coal Oil Point giant field development in California's Santa Barbara Channel state waters. ARCO has withdrawn temporarily its permit application for a pair of drilling/production platform complexes to develop Coal Oil Point. The move stems from its test of an apparent west extension to South Elwood field. ARCO plans more drilling near the well and has chosen locations for two more Monterey wildcats on state tracts in the area. oil industry/gas industry/drilling/coastal zone/Santa Barbara Channel/Coal Oil Point/South Elwood oil field/geology/petroleum/energy resources.

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1177. Friedman CS, McDowell T, Groff JM, Hollibaugh JT, Manzer D, Hedrick RP. Presence of Bonamia ostreae among populations of the European flat oyster, Ostrea edulis Linne, in California, USA. J. SHELLFISH RES 1989;8(1):133-137. European Flat oysters, Ostrea edulis , reared in Tomales Bay and the Santa Barbara Channel, California were examined to determine the possible causes of elevated mortality among these stocks. The protozoan parasite, Bonamia ostreae was found to be the most significant parasite in these oysters. A rickettsiales-like and a gregarine-like parasite were seen within gill tissues of a flat oyster and one bay mussel, respectively. B. ostreae elicited an intense inflammatory reaction in affected flat oysters and is believed to be the cause of the elevated mortality observed in these stocks.
mortality causes/parasitic diseases/Bonamia ostreae/Ostrea edulis/INE/ USA/California/oyster culture/ASFA.

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1179. Gorsline DS. A review of the marine geology of the Southern California offshore region. Lavenberg RJ, Earle SA. Recommendations for baseline research in Southern California relative to offshore resource development; proceedings. ; 1975. p. p.63-81.
Univ. South Calif., Los Ang., Calif., United-States South. Calif. Acad. Sci., Los Angeles, Calif. Recommendations for baseline research in Southern California relative to offshore resource development, Los Angeles, Calif., Dec. 5-7, 1974 Analytic; Book; Conference publication B; Bibliography and Index of Geology (1969-present).
California/oceanography/marine geology/sedimentation/transport/marine transport/Southern California/continental shelf/Santa Barbara Basin/Santa Monica Basin/San Pedro Basin/San Diego Trough/Colnett Basin/sediments/bathymetry/submarine canyons/bottom

features/Pacific Ocean/GEOREF.

1180. Pirie DM, Steller DD. California coastal processes study - Landsat II. landsat Investigation 22200 1977 Oceanography/Physical oceanography/water masses.

1181. Small LF, Huh CA (Performer: Oregon State Univ., Corvallis. Coll. of Oceanography. Funder: Department of Energy, Washington, DC.) Role of Zooplankton in the Cycling and Remineralization of Chemical Materials in the Southern California Bight: California Basin Study: DOE (Department of Energy) West Coast Basin Program: Progress Report 4, (June 1987-June 1988). ; 1988. Report No.: DOEER603404. 54p.
Portions of this document are illegible in microfiche products. PC A04/MF A01 Contract: FG0585ER60340.
The overall objective of our research, within the structure of the DOE CaBS (California Basin Study) program, is to understand the transport pathways and mass balances of selected metabolically active and inactive chemical species in the Santa Monica/San Pedro Basins. One focus of our study is to examine the role of zooplankton and micronekton in the cycling and remineralization of chemical materials in the Southern California Bight, with particular reference to C, N and certain radionuclides and trace metals. A second focus is to examine these same radionuclides and trace metals in other reservoirs besides the zooplankton (i.e., in seawater, sediment trap material and bottom sediments). Knowledge of the rates, routes and reservoirs of these nuclides and metals should lead to a cogent model for these elements in Santa Monica/San Pedro Basins. Our zooplankton C and N data, in conjunction with primary production, microbiological and sediment flux data from colleagues in the program, should also lead ultimately to a model of C and N cycling in the basins. 33 refs., 13 figs., 7 tabs. (ERA citation 14:003579). Baseline Ecology/Biomass/Buildup/Carbon Cycle/Coastal Waters/Crustaceans/Feces/Lead 210/Metals/Mineral Cycling/Mineralogy/Nitrogen Cycle/Nutrients/Progress Report/Radioisotopes/Sediments/Spatial Distribution/Thorium 228/Thorium 234/California/Environmental Transport/Zooplankton/Mineralization/ERDA/520500/Water pollution/NTIS.

1182. Mearns AJ. Underwater color photography. ; 1977. Pacific Ocean East/California Coast/Coastal waters/Underwater observations/Underwater instruments/Cameras/Color photography/ Species diversity/Fish/Caulolatilus/Citharichthys/Eptatratus/ Sebastes/Anoplopoma/Southern California Bight/underwater color photography/C/princeps/ C/sordidus/S/rosenblatti/A/fimbria/San Pedro Bay/Santa Monica Canyon/Redondo Canyon/Dago Bank/OceanAbstracts.

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* CRUSTACEA ** MALACOSTRACA *** EUCARIDA **** ORDER EUPHAUSIACEA. ENVIRONMENTAL FACTORS/PHYSICAL ENVIRONMENT/WARM CURRENT EFFECTS ON ABUNDANCE & DISTRIBUTION, CALIFORNIA CURRENT/ECOLOGY/POPULATION STUDY/POPULATION DYNAMICS/SEASONAL ABUNDANCE/WARM CURRENT EFFECTS

1977-78, CALIFORNIA CURRENT/HABITAT/DISTRIBUTION WITHIN HABITAT/PACI FIC OCEAN/NORTHERN PACIFIC/CALIFORNIA CURRENT/ABUNDANCE & DISTRIBUTION 1977-78, WARM CURRENT EFFECTS/Zoological Index.

1185. Anonymous. Union confirms find in marine sanctuary off California. Oil Gas J. 1985;83(7):50
Union Oil Co. of California has confirmed a 15 year old oil and gas field discovery in a Santa Barbara Channel marine sanctuary off California. Unocal is evaluating test results and mulling possible development plans for the field underlying Block 203 in the eastern channel. The strike may be an extension to Hueneme field, currently producing from Platform Gina 3 miles to the northeast, outside the sanctuary. Unocal's efforts to further confirm its Block 203 discovery were embroiled in a battle with the California Coastal Commission (CCC), which had sought to block drilling in or near the Channel Islands Marine Sanctuary. Congress established the sanctuary after the 1969 channel oil spill and after Unocal drilled the first four wells and a redrill to delineate the field. oil and gas fields/sanctuaries/environmental protection/oil and gas industry/Channel Islands National Marine Sanctuary/California Coastal Commission/Santa Barbara Channel/petroleum/resource protection.

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Other-US Literature review. Bibliography p. 52-53. Article. AGRICOLA.

1187. Bebout GE, Barton MD. Fluid flow and metasomatism in a subduction zone hydrothermal system: Catalina Schist terrane, California. GEOLOGY 1989;17(11):976-980.
On Santa Catalina Island, southern California, blueschist to amphibolite facies metasedimentary, metamafic, and meta-ultramafic rocks show veining and alteration that reflect fluid flow and mass transfer at 25-45 km depths in an Early Cretaceous subduction zone. Synkinematic and postkinematic veins record fluid transport and metasomatism during prograde metamorphism and uplift. Vein and host-rock mineralogy and whole-rock compositions demonstrate large-scale chemical redistribution, especially of Si and alkali elements. The record of subduction-zone mass transfer in the Catalina Schist is compatible with the record inferred for greater depths from geochemical and petrologic studies of arc magnetism. metamorphic rocks/metasomatism/subduction zones/island arcs/USA/ California/Santa Catalina I./Catalina Schist/petrology/ASFA.

1188. Hudson T, Timbrook J, Rempe M. Tomol: Chumash Watercraft as Described in the Ethnographic Notes of John P. Harrington. Anthropological Papers No. 9. Socorro, New Mexico: Ballena Press; 1978.
anthropology/archaeology/Chumash/Channel Islands.

1189. Hillard B. A bi seasonal analysis of surface temperature patterns along the California Bight. [dissertation] ; 1976.
San Diego State Univ., United-States; Bachelor's Monographic; Thesis B; Bibliography and Index of Geology (1969-present). Pacific Ocean/oceanography/ocean circulation/North Pacific/California Bight/California Current/Davidson Current/mixing/California/GEOREF.

1190. Pirie DM, Murphy MJ. California nearshor surface currents. Calfironia nearshore processes study, final report 1975;2-3:195-216
Oceanography/Physical oceanography/currents.

1191. van VD. Aerobatic rolls by ravens on Santa Cruz Island, California. AUK 1984;101(3):620-621.
Common Ravens (Corvus corax) are skillful fliers known for their aerobatic maneuvers, particularly rolls. Santa Cruz Island, one of the eight Channel Islands off the shore of southern California, supports a large population of ravens that exhibit a high frequency of rolling. The significance of rolling, and raven aerobatics in general, is uncertain; such behavior has been attributed to courtship play, or both. Angell (1978) noted that rolls often coincided with vocal communication, and Dawson (1923) reported that aerobatics seemed more frequent when ravens were in groups. The purpose of this study was to describe rolling by ravens on Santa Cruz Island, to test some hypotheses about the significance of rolling, and to compare frequency of occurrence of this behavior among island and mainland ravens.
Corvus corax/flight activity/USA/California/Santa Cruz Island/aerobatic rolls/CSA Life Sciences Collection.

1192. Bonnell ML, Le Boeuf BJ, Pierson MO, Dettman DH, Farrens GD. Marine mammal and seabird surveys of the Southern California Bight area. Synthesis of findings. Summary rept. (final) 1975-78. 1981;II:434.
SEALS/MAMMALS/BIRDS/AQUATIC/ANIMALS/ECOLOGY/SOUTHERN CALIFORNIA BIGHT/MAMMAL/BONNELL/ENVIRONMENTAL IMPACTS/ABUNDANCE/POPULATIONS/DISTRIBUTION PROPERTY/OFFSHORE DRILLING/CRUDE OIL/NATURAL GAS/TABLES DATA/CONTINENTAL SHELVES/NORTH PACIFIC OCEAN/CETACETA/Baird/birds/MINERALS MANAGEMENT SERVICE.

1193. Venkatesan MI, Kaplan IR (Performer: California Univ., Los Angeles. Inst. of Geophysics and Planetary Physics. Funder: Department of Energy, Washington, DC.) Program of Mineralization and Cycling in Marine Systems: Organic Geochemistry of Particulates and Sediments (CaBS): Progress Report, November 15, 1987--November 14, 1988. ; 1988. Report No.: DOEER603385. 14p. Portions of this document are illegible in microfiche products. PC A03/MF A01 Contract: FG0585ER60338.
The biogeochemical processes and the dynamics involved in the cycling and transport of organic carbon can be elucidated only by determining distributions of specific organic compounds associated with the particles. At UCLA, the quantitative data of the various organic compounds in the sediment cores and trap particulates from various depths of water column are gathered in order to construct a dynamic model of the biogeochemical cycling and processes occurring in the water and sedimentary columns. The sources of organic carbon in southern California Bight derive from both terrestrial and marine regimes. The varied organic carbon sources can be reasonably delineated within limits by the organic geochemical approach of determining various characteristic biomarkers, as well as a variety of pollution indicators. The distributions of organic biomarker compounds are characteristic of marine algae, terrestrial vascular plants, bacteria, etc. Presence of specific biomarkers also indicate the occurrence of specific species (e.g., dinosterol specific of dinoflagellates). There are some pollution indicators which one can look for in the marine environment to trace their origin to terrestrial inputs, i.e., polycyclic aromatic hydrocarbons from petroleum and combustion, coprostanol from sewage, etc. We study the distribution of many of

these compounds and from a correlation of their relative abundance, an attempt is made to delineate marine vs terrestrial influx to the organic carbon in the study area. 18 refs., 1 fig., 4 tabs. (ERA citation 14:013706). Alcohols/California/Geochemistry/Organic Compounds/Particulates/Polycyclic Aromatic Hydrocarbons/Progress Report/Sewage/Coastal Waters/Sediments/Carbon Cycle/Water Pollution/ERDA/580500/NTIS.

1194. Ferraro SP, Cole FA. Taxonomic level and sample size sufficient for assessing pollution impacts on the Southern California Bight macrobenthos. MAR. ECOL. (PROG. SER. 1990;VOL. 67, NO. 3:pp. 251-262
U.S. EPA, Pacific Ecosyst. Branch, Mark O. Hatfield Mar. Sci. Cent., Newport, OR 97365, USA.
Macrobenthic data from samples taken in 1980, 1983 and 1985 along a pollution gradient in the Southern California Bight (USA) were analyzed at 5 taxonomic levels (species, genus, family, order, phylum) to determine the taxon and sample size sufficient for assessing pollution impacts on 5 measures of community structure. Four replicate 0.1 m super(2) van Veen grabs per station were needed to ensure community-wide, unbiased estimates of Shannon's, 1-Simpson's and McIntosh's Index. Family-level identification appeared to be a good choice for assessing pollution impacts at the study site as it ensured a high probability (1-beta greater than or equal to 0.80) of detecting intermediate or larger impacts on most (impact effects design) or all (location effects design) of 5 measures of community structure when n sub(i) and n sub(i) greater than or equal to 4. zoobenthos/pollution effects/approximation/community composition/st atistical analysis/indicator species/biological sampling/ISE, Southern California Bight/Oceanic Abstracts.

1195. Hendricks TJ. Satellite imagery studies. ; 1977.
Pacific Ocean East/California Coast/Coastal waters/Satellite data/ Remote sensors/Circulation processes/Seasonal variations/Physical oceanography/Temperature variations/Surface waters/Upwelling/ California Current/Countercurrents/Bottom topography/Eddies/ Vertical motion/Southern California Bight/IR imagery/season circulation patterns/ thermal imagery/gyres/NOAA weather satellites/OceanAbstracts.

1196. Fusaro C. Growth rate of the sand crab, Emerita analoga (Hippidae) in two different environments. Fishery Bulletin 1978;76(2):369-375 Comparisons of growth rates from population of sand crabs inhabiting the northwest corner of Santa Cruz Island with a population inhabiting Goleta Bay. . Invertebrates, Sandy intertidal, Santa Cruz Island.

1197. BRULAND KW, SILVER MW. SINKING RATES OF FECAL PELLETS FROM GELATINOUS ZOOPLANKTON (SALPS, PTEROPODS, DOLIOLIDS). MARINE BIOL., BERL. 63(3) 1981: 295-300, ILLUSTR.
* MOLLUSCA ** GASTROPODA *** OPISTHOBRANCHIA **** ORDER THECOSOMATA ***** PERACLIDACEA ****** COROLLA SPECTABILIS.
DIGESTION & NUTRITION/DIGESTION/FAECES/PELLET SINKING RATES/PACIFIC OCEAN/NORTHERN PACIFIC/CALIFORNIA CURRENT/FAECAL PELLET SINKING RATES/Zoological Index.

1198. Antonelis Jr. GA, Fiscus CH, DeLong RL. Spring and summer prey of California sea lions Zalophus californianus at San Miguel Island, California, USA 1978-1979. U.S. Natl. Mar. Fish. Serv. Fish. Bull. 1985;82(1):67-76 Address: NORTHWEST AND ALASKA FISHERIES CENT. NATL. MARINE MAMMAL LAB., NATL. MARINE FISHERIES SERV., NOAA, 7600 SAND POINT WAY N.E., SEATTLE, WASH. 98115. During

the late spring and summer of 1978 and 1979, 224 scats were collected from rookeries of the California sea lion, Z. californianus, at San Miguel Island for the purpose of identifying prey species. A total of 2629 otoliths and 2061 cephalopod beaks were recovered. The frequency of occurrence for the 4 most commonly identified prey species was 48.7% Pacific whiting, Merluccius productus; 46.7% market squid , Loligo opalescens; 35.9% rockfish, Sebastes spp.; and 20.0% northern anchovy, Engraulis mordax. Seasonal variability in the frequency of occurrence of these 4 prey species from late spring to summer indicates that California sea lions feed opportunistically on seasonally abundant schooling fishes and squids. Five species of fish (California smoothtongue, Bathylagus stilbius; northern lampfish, Stenobrachius leucopsarus; chub mackerel, Scomber japonicus; medusafish, Icichthys lockingtoni; sablefish, Anoplopoma fimbria) and 1 cephalopod (2 spotted octopus, Octopus bimaculatus) were identified as previously unreported prey of the California sea lion.
feeding biology/predation/prey species/California sea lion/Zalophus californianus/Pacific whiting/Merluccius productus/market squid/Loligo opalescens/rockfish/Sebastes/northern anchovy/Engraulis mordax/San Miguel Island/marine biology/mammalogy.

1199. Bonnell ML, Le Boeuf BJ, Pierson MO, Dettman DH, Farrens GD. Summary of marine mammal and seabird surveys of the Southern California Bight Area, 1975-1978. Investigators' Reports. Part I. Pinnipeds of the Southern California Bight. Final rept. 1981;III:557.
AQUATIC ANIMALS/CRUDE OIL/ECOLOGY/WATER POLLUTION/SOUTHERN CALIFORNIA BIGHT/BONNELL/SEALS MAMMALS/DISTRIBUTION PROPERTY/ABUNDANCE/SEASONAL VARIATIONS/OFFSHORE DRILLING/ANIMAL MIGRATIONS/ENVIRONMENTAL IMPACTS/NATURAL GAS/TEXT/Dailey/marine mammals/MINERALS MANAGEMENT SERVICE.

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1201. Anderson DW, Gress F, Mais KF, Kelly PR. Brown pelicans in Southern California Bight as anchovy Engraulis mordax stock indicators and their relationships to commercial fishing. Rep Calif Coop Ocean Fish Invest. Sacramento, The Cooperative. July 1980. 1980;21:p.54-61
Other-US Bibliography p. 60-61. Article.
California/AGRICOLA.

1202. Dugdale RC, Wilkerson FP. New production in the upwelling center at Point Conception, California: Temporal and spatial patterns. DEEP-SEA RES. (A OCEANOGR. RES. PAP.) 1989;36(7A):985-1007.
A station (G-1) at the cold center between Points Conception and Arguello was occupied almost daily, a section measuring biological variables was made regularly along a line (the C-line) extending south from Point Arguello, and a series of drifter-following experiments were made on the R.V. Velero IV . Water upwelled at G-1 follows either a cyclonic or anticyclonic flow pattern and in both cases usually crosses the C-line to enter the Santa Barbara channel. The ability to take up nitrate increased with time and along with the circulation pattern, this "shift-up" determined the pattern of new production. Weak upwelling was associated with the

cyclonic path, longer travel time to the C-line, and higher new production rate at the south end of the C-line. High wind stress and strong upwelling was associated with the anticyclonic mode, short travel time, and low production rates at the north end of the C-line.
upwelling/current observations/primary production/secondary production/wind stress/anticyclonic motion/cyclonic motion/INE/USA/California/ Point Conception/coastal upwelling/USA/California/Point Conception/ASFA.

1203. Hudson T, Blackburn TC, Curletti R, Timbrook J. The Eye of the Flute: Chumash Traditional History and Ritual as Told by Fernando Librado Kitsepawit to John P. Harrington. Santa Barbara, CA: Santa Barbara Museum of Natural History; 1977.
anthropology/Chumash.

1204. Folk RL. A morphometric analysis of terrace gravels, California. Sediment. Geol. 1977;19(3):p.233-234
Univ. Tex., Dep. Geol., Tex. 78712, United-States Analytic; Serial Discussion; for reference to paper by Glover, B. K., ''A morphometric analysis of terrace gravels in Santa Ynez Basin, Santa Barbara County, California,'' see Sediment. Geol., Vol. 13, p. 109, 1975. B; Bibliography and Index of Geology (1969-present).
Santa Barbara County/California/sedimentary petrology/sediments/clastic sediments/gravel/Santa Ynez Basin/terraces/shape/sphericity/roundness/flatness/index/GEOREF.

1205. Pirie DM, Murphy MJ, Edmisten JR. California nearshore surface currents. Proceedings NASA Earth Resources Survey Symposium 1974 Oceanography/Physical oceanography/currents.

1206. Schmitt R, Holbrook S. Ontogeny of prey selection by black surfperch Embiotoca jacksoni (Pisces: Embiotocidae): The roles of fish morphology, foraging behavior, and patch selection. MAR. ECOL. (PROG. SER.) 1984;18(3):225-239. Proximate mechanisms leading to similarities and differences in diet of juvenile and adult black surfperch Embiotoca jacksoni in populations at Santa Catalina Island (USA) were explored. These fish are microcarnivorous, harvesting invertebrate prey primarily from benthic turf and foliose algae. Ontogenetic differences in prey size ultimately reflect age-specific differences in size of fish. Young juveniles are apparently gape limited and use a visual picking mode of foraging. This strongly influences the array of algal substrates from which prey can be effectively harvested. Turf substrates are used extensively by older fish that employ winnowing behavior to separate prey from debris. The marked differences in body size and foraging behavior have only a relatively small influences on the gross taxonomic makeup of the diet of black surfperch. foraging behavior/diets/prey selection/feeding behavior/Embiotoca jacksoni/body size/INE/USA/California/Santa Catalina I./CSA Life Sciences Collection.

1207. Webb FH, Hager BH, Agnew DC (Performer: California Inst. of Tech., Pasadena. Funder: National Aeronautics and Space Administration, Washington, DC.) Comparison of GPS (Global Positioning System) Surveys with Historical Triangulation Surveys in the Southern California Borderland. ; 1988. Report No.: NAS126183405, NASACR183405. 13p.
Contract: NAG5842.
Global plate models predict about 56 mm/yr of motion between the North American and Pacific plates along the plate boundary in southern California, while geodetic and Holocene geological data suggest only 34 mm/yr on the San Andreas fault. Deformation in the

Great Basin does not explain this discrepancy, and it has been suggested that faulting in the offshore of southern California could account for some of the discrepancy. Evidence of deformation in the offshore region of southern California is most abundant in the Santa Barbara Channel. Geological investigations of folding and faulting in this region, as well as earthquake investigations, indicate north-south shortening across the channel on the order of 10 to 20 mm/yr. The most rapid rates occur to the east of the channel in the Ventura Basin. South of the Santa Barbara Channel, though, evidence for deformation is limited to seismicity studies which are sparse. Seismic events are abundant in this area, but their implication for the amount of deformation in the offshore is unclear. GPS measurements made between June 1986 and May 1988 have been used to obtain vector positions for several stations at which historical first order triangulation observations were performed between the late 1800's and the mid 1900's between the coast of southern California and the nearby offshore islands. By comparing the spheroidal angles obtained from the GPS positions with the the previously observed triangulation data, shear strain rates can be calculated for the region using Frank's method. These results seem to suggest that shear strain deformation occurs in the offshore of southern California as a result of north to north-west shortening. That deformation is most active in the Santa Barbara Channel region and least active between Catalina and San Nicholas islands. Just how much of the missing plate motion can be accounted for by this deformation is not known at this time and will have to await further analysis. Deformation/Plates Tectonics/San Andreas fault/Seismology/California/Geodetic surveys/Global positioning system/Triangulation/NTIS.

1208. Estes JA. Indices used to assess status of sea otter populations: A reply. J. WILDL. MANAGE 1990;VOL. 54, NO. 2:pp. 270-272
U.S. Fish and Wildl. Serv., Inst. Mar. Sci., Univ. California, Santa Cruz, CA 95064, USA.
The California sea otter (Enhydra lutris) population, after increasing for more than half a century, stabilized and probably declined from the mid-1970's to the mid-1980's. Estes et al. (1986) suggested that the stabilization and decline were not due to food limitation. Garshelis et al. (1990) challenged this suggestion, although in doing so they misrepresented arguments made by Estes et al. (1986), provided no evidence for alternative hypotheses, and offered no constructive recommendations for a better means of population assessment. While acknowledging some of the points made by Garshelis et al. (1990), I believe the collective evidence presented by Estes et al. (1986) provided a reasonable basis for rejecting the food-limitation hypothesis, and point out that recent increases in the California sea otter population following a legislated reduction in net entanglement mortality is strong evidence against the food-limitation hypothesis.
methodology/Enhydra lutris/population structure/stock assessment/resource management/literature reviews/INE, USA, California/Oceanic Abstracts.

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Pacific Ocean East/California Coast/Coastal waters/Hydrocarbons/Chlorine compounds/Pollutant analysis/Toxins/Marine pollution/Sediments/Tissues/Metal uptake/Sampling methods/Measuring methods/Wastewaters/Grab samplers/Soles/PCB compounds/Southern California Bight/chlorinated hydrocarbons/fish tissue/storm runoff/aerial fallout/DDT/Palos Verdes Peninsula/Santa Monica Bay/ municipal waste waters/chorinated benzene/OceanAbstracts.

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Includes several sandy subtidal crabs from the Channel Islands. Sandy Subtidal, invertebrates, San Miguel Island, Santa Rosa Island, Santa Cruz Island, Santa Barbara Island, Anacapa Island.

1211. DAY RW, OSMAN RW. PREDATION BY PATIRIA MINIATA (ASTEROIDEA) ON BRYOZOANS: PREY DIVERSITY MAY DEPEND ON THE MECHANISM OF SUCCESSION. OECOLOGIA 51(3) 1981: 300-309, ILLUSTR.
* BRYOZOA ** STENOLAEMATA *** TUBULIPORA.
FEEDING/CARNIVOROUS FEEDING/PREDATION/PREDATORS/PATIRIA MINIATA (ECHINODERMATA)/PREDATION EFFECT ON DIVERSITY DURING SUCCESSION, CALIFORNIA (MARINE)/ECOLOGY/COMMUNITY/COMMUNITY STRUCTURE/SPECIES DIVERSITY/SUCCESSION, ECHINODERM PREDATION ON TUBULIPORA/INFLUENCE, CALIFORNIA
(MARINE)/HABITAT/SUCCESSION IN HABITATS/DIVERSITY, ECHINODERM PREDATION ON TUBULIPORA/PACIFIC OCEAN/NORTHERN PACIFIC/SO UTHERN CALIFORNIA BIGHT/ECHINODERM PREDATORS, EFFECT ON DIVERSITY DURING SUCCESSION/Zoological Index.

1212. Antonelis Jr. GA, Leatherwood S, Odell DK. Population growth and censuses of the northern elephant seal Mirounga angustirostris on the California Channel Islands, USA 1958-1978. U.S. Natl. Mar. Fish. Serv. Fish. Bull. 1981;79(3):562-567
Address: NATIONAL MARINE MAMMAL LABORATORY, NATIONAL MARINE FISHERIES SERVICE, NOAA, 7600 SAND POINT WAY NE., SEATTLE, WASH. 98115.
breeding biology/population growth/censuses/Phocidae/northern elephant seal/Mirounga angustirostris/California Channel Islands/marine biology/mammalogy.

1213. Booth JS. Early diagenesis in southern California continental borderland sediments. Diss. Abstr. Int. 1974;35(1):319B-320B. eganhouse/geochemistry/chemical oceanography/sedimentation/diagenesis/cores/pore water/continental borderland/MINERALS MANAGEMENT SERVICE.

1214. Hunt GLJ, Butler JL. Reproductive ecology of western gulls and xantus' murrelets foraged on larval fish, particularly larval northern anchovies (Engraulis mordax) with respect to food resources in the Southern California Bight. Rep Calif Coop Ocean Fish Invest. Sacramento, The Cooperative. July 1980. 1980;21:p.62-67
Other-US 17 ref. Article.
California/AGRICOLA.

1215. Walker HJJ, Watson W, Barnett AM. Seasonal occurrence of larval fishes in the nearshore Southern California Bight off San Onofre, California. ESTUAR. COAST. SHELF SCI 1987;25(1):91-109.
Larval fishes were sampled from the nearshore region of the Southern California Bight off San Onofre to determine temporal assemblages and species associations. Two major assemblages of larvae were found: members of the winter-spring (December-May) assemblage were most abundant from January to May; members of the summer-fall (June-November) assemblage were most abundant from July to September. Demersal spawners tended to have spawning seasons of longer duration than pelagic spawners; winter-spring spawners generally had longer spawning seasons than summer-fall spawners. The annual ocean temperature cycle near San Onofre was a good indicator of the seasonal occurrence of fish larvae in this area.
spawning seasons/temperature effects/upwelling/geographical distribution/INE/USA/California/fish larvae/ASFA.

1216. Graham RL. A paleomagnetic study of the Santa Barbara Basin. Eos (Am. Geophys. Union, Trans.). 1976;57(12):p.909
Oreg. State Univ., Corvallis, Oreg., United-States American Geophysical Union; 1976 fall annual meeting, San Franc., Calif., Dec. 6-10, 1976 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).
Pacific Ocean/stratigraphy/Quaternary/paleomagnetism/East Pacific/Santa Barbara Basin/magnetic field/inclination/declination/variations/GEOREF.

1217. Preisendorfer RW. Application of radiative transfer theory to light measurements in the sea. Symp. Rediant Energy in the Sea, Intl. union Geodesy. and Geophys. 1960;10:11-30
Oceanography/Physical oceanography/water masses.

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Time/Phase/Sunrise/Sunset/California/Santa Barbara Islands/Hawaii/Naval shore facilities/Ephemerides/Tables Data/Moon/Ocean tides/Point Mugu/San Nicholas Island/Barking Sands Hawaii/Moonrise/Moonset/NTIS.

1219. Cailliet GM, Ebeling AW. The vertical distribution and feeding habits of two common midwater fishes (Leuroglossus stilbius and Stenobrachius leucopsarus) off Santa Barbara. REP. CCOFI 1990;VOL. 31:pp. 106-123
Moss Landing Mar. Lab., P.O. Box 450, Moss Landing, CA 95039, USA.
Leuroglossus stilbius (Bathylagidae) was abundant in the nearshore Santa Barbara Basin (SBB), but less so in the more offshore Santa Cruz Basin (SCB). Stenobrachius leucopsarus (Myctophidae) was abundant in both basins. L. stilbius is adapted morphologically to feed by suction and to eat smaller, less active organisms. S. leucopsarus is better adapted to feed by grasping, and to eat larger, faster, and more elusive prey. In the SBB, L. stilbius fed, mostly at night in surface waters, on larvaceans and salps all year, reflecting the seasonally consistent abundance of these prey items. In the SCB, it fed less intensely, mostly at night in surface waters, and its diet varied with the seasonal abundance of its gelatinous prey. S. leucopsarus fed mainly on crustaceans, and it did not exhibit a distinct chronology. It ate similar prey all year in both basins, but euphausiids dominated the diet when they were most abundant. Thus L. stilbius is well adapted to inshore, eutrophic midwater habitats.
vertical distribution/feeding behavior/abundance/circadian rhythms/ Leuroglossus stilbius/Stenobrachius leucopsarus/INE, USA, California, Santa Barbara/Oceanic Abstracts.

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Pacific Ocean East/California Coast/Coastal waters/Pollutant analysis/PCB compounds/Sediments/Contaminants/Metals/Grab samplers/Measuring methods/Outfalls/Silver/Cadmium/Chromium/Copper/ Nickel/Lead/Zinc/Mercury/Wastewaters/Marine pollution/Sediment cores/Distribution/Southern California Bight/surface sediments/trace metals/DDT/ submarine discharges/OceanAbstracts.

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ECOLOGY/ECOLOGICAL ENERGETICS/BIOMASS/ZOOPLANKTON FLUCTUATIONS, PELAGIC ECOSYSTEM EFFECTS, CALIFORNIA CURRENT/POPULATION STUDY/POPULA TION DYNAMICS/CYCLES OF ABUNDANCE/PLANKTON BIOMASS & PELAGIC ECOSYSTEM EFFECTS CYCLES, CALIFORNIA CURRENT/LIFE HABIT/AQUATIC HABIT/PLANKTON/BIOMASS FLUCTUATIONS, PELAGIC ECOSYSTEM EFFECTS, CALIFORNIA CURRENT/PACIFIC OCEAN/NORTHERN PACIFIC/CALIFORNIA CURRENT/ZOOPLANKTON FLUCTUATIONS 1949-1969, PELAGIC ECOSYSTEM EFFECTS/Zoological Index.

1223. Antonelis Jr. GA, Lowry MS, Fiscus CH. Assessing northern elephant seal feeding habits by stomach levage. Mar. Mamm. Sci. 1987;3(4):308-322 Address: NATL. MARINE MAMMAL LAB., NORTHWEST ALASKA FISHERIES CENT., NATL. MARINE FISHERIES SERV., NATL. OCEANIC ATMOSPHERIC ADMINISTRATION, 7600 SAND POINT WAY N.E., BUILD. 4, SEATTLE, WASH. 98115.
Stomach lavaging was used to study the feeding habits of northern elephant seals (Mirounga angustirostris) found on San Miguel Island, California, [USA] during the spring of 1984. Fifty-nine elephant seals were chemically immobilized with an intramuscular injection of ketamine hydrochloride. Once immobilized, an animal's stomach was intubated, filled with 3-4 liters of water to create a slurry of the undigested food items, and evacuated into a collection device. The stomachs of 57 (96.6%) of the animals lavaged contained identifiable parts of prey. Twenty-nine different food items were identified, 12 of which have not been previously reported as prey of the northern elephant seal: two teleost fish, Coryphaenoides acrolepis (Pacific rattail) and another unidentified macrourid; two crustaceans, Pasiphaea pacifica (glass shrimp) and Euphausia sp.; six squid, Abraliopsis felis, Gonatus berryi, Histioteuthis dofleini, Cranchia scabra, Taonius pavo, and Galiteuthis sp. and two octopi, Octopus dofleini and Octopus rubescens. The following prey species were found in at least 20% of stomachs lavaged: Octopoteuthis deletron (squid), Merluccius productus (Pacific whiting), Gonatopsis borealis (squid), Pleuroncodes planipes (pelagic red crab), H. dofleini and H. heteropsis. The diversity of habitats in which many of these prey are commonly found indicates that the northern elephant seals from San Miguel Island are capable of foraging in a variety of marine. environments (epipelagic, mesopelagic, bathypelagic, neritic and benthic) and many only be limited by the depth to which they can dive.
stomach lavaging/feeding biology/feeding habits/foraging biology/diets/food/organisms/northern elephant seals/Mirounga angustirostris/San Miguel Island/marine biology/mammalogy.

1224. Tont SA, Delistraty DA. The effects of climate on terrestrial and marine populations in California Current system. Rep Calif Coop Ocean Fish Invest. Sacramento, The Cooperative. July 1980. 1980;21:p.85-89
Other-US Literature review. Bibliography p. 88-89. Article. California/AGRICOLA.

1225. Crawford RJM. Food and population variability in five

regions supporting large stocks of anchovy, sardine and horse mackerel. THE BENGUELA AND COMPARABLE FRONTAL SYSTEMS.; S. AFR. J. MAR. SCI./S.-AFR. TYDSKR. SEEWET. 1987;(5):735-757.
The Benguela, California, Humboldt and Canary currents and the coastal waters of Japan support large stocks of Sardinops spp., Sardina sp., Engraulis spp., Trachurus spp. and Scomber japonicus , with Merluccius spp. also abundant in each of the systems except off Japan. Many of the more numerous fish, birds and mammals are opportunistic feeders. Species often have overlapping diets, and when a particular food item is plentiful it may be consumed by a wide variety of organisms at higher trophic levels. Opportunistic feeding by species at lower trophic levels suggests that they could be advantaged by an increased food supply, and it may not be unreasonable to interpret species replacements in catches as reflecting shifts in the dominance of species. Overall catches from the systems have usually been more stable than the catches of individual species, which have shown wide fluctuations. The likelihood of a particular organism becoming the main replacing species will probably be influenced by the degree to which it is utilized during and after the collapse of the originally dominant resource. food preferences/upwelling/diets/pelagic fisheries/Teleostei/World Oceans/PSW/Benguela Current/INE/California Current/ISE/California Current/ASE/Canary Current/ISE/Humboldt Current/PSW/Humboldt Current/INE/Japan/population dynamics/ASFA.

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Ohio Univ., Dep. Geol., Athens, Ohio, United-States The Geological Society of America, Cordilleran Section, 71st annual meeting, Los Angeles, Calif., March 25-27, 1975 Analytic; Serial; Conference publication B; Bibliography and Index of Geology (1969-present). Ventura County/tectonics/structure/faults/reverse faults/fault zones/extent/Cenozoic/California/Oak Ridge fault zone/Santa Susana fault zone/United States/Pliocene/Pleistocene/structural geology/Santa Barbara Channel/Torrey County/GEOREF.

1227. Putnam JA, Munk WH, Taylor MA. The prediction of longshore currents. Trans. Amer. Geophys. Union 1949;30:337-345
Oceanography/Physical oceanography/currents/waves.

1228. Van VD. Diurnal activity and habitat use by feral pigs on Santa Cruz Island, California. CALIF. FISH GAME 1984;70(3):140-144.
Feral pigs, Sus scrofa on Santa Cruz Island were active mornings and evenings during fall and spring and were active at midday during winter. Canyon bottoms were frequented in fall and early winter, with a shift to ridgetops during late winter and spring. Pigs occurred most often in chaparral and oak woodland in fall, then moved to chaparral-grassland and grassland from midwinter through spring. Activity availability, and to availability of escape cover. habitat utilization/diets/Sus scrofa/USA/California/Santa Cruz Island/activity patterns/diurnal variations/feral populations/CSA Life Sciences Collection.

1229. Hickey B (Performer: Washington Univ., Seattle. School of Oceanography. Funder: Department of Energy, Washington, DC.) DOE (Department of Energy) West Coast Environmental Studies: Circulation and Particle Fluxes in the Southern California Bight. Report of Progress, May 15, 1985-November 15, 1988. ; 1988. Report No.: DOEER603336. 337p.
Portions of this document are illegible in microfiche products. PC

A15/MF A01 Contract: FG0585ER60333.
The overall objective of the DOE West Coast Basin study (CaBS) is to understand the dispersion of potential contaminants from inshore waters, where they may primarily be generated, across the shelf out to deeper waters; in particular, the role of particulate fluxes, determination of general pathways of material removal, residence times, and water column/sediment exchanges. The CaBS program differs significantly from the other DOE marine programs. In most East Coast regions, anthropogenic material is either swept away from the coastal zone by the high energy physical environment or, if it is sedimented out of the water column, is reworked by organisms to such an extent that accurate estimates of particulate fluxes cannot be obtained. The deep basins off the California coast, on the other hand, provide relatively efficient traps for anthropogenic material introduced into the coastal zone. Moreover, since the basins are anoxic, or nearly so, reworking of sediments by marine organisms is minimized, so that accurate estimates of sediment accumulation rates and recycling processes can be obtained. Specific questions to be addressed include (1) to what extent can the coastal basins safely absorb potentially harmful energy-related anthropogenic materials. and (2) to what extent do anthropogenic materials introduced into the basins find a pathway back to man. The long-term goals of the Hickey component of CaBS are to investigate (1) circulation in the Southern California Bight, including both patterns and forcing mechanisms, and (2) particle dynamics in this region; in particular, the relative importance of horizontal advection, wave/current resuspension processes, and intermediate-depth nepheloid layers, in redistributing particles, on time scales of minutes to seasons. 9 refs., 40 figs. (ERA citation 14:009629).
California/Coastal Regions/Compiled Data/Oceanography/Pacific Ocean/Progress Report/Sampling/Currents/Sediments/Continental Shelf/ERDA/580500/Water pollution/NTIS.

1230. Thomas WH, Gibson CH. Quantified small-scale turbulence inhibits a red tide dinoflagellate, Gonyaulax polyedra Stein. DEEP-SEA RES. (A OCEANOGR. RES. PAP. 1990;VOL. 37, NO. 10A:pp. 1583-1593
Scripps Inst. Oceanogr., Univ. California at San Diego, La Jolla, CA 92093, USA. The development of marine dinoflagellate red tides off southern California requires optimal temperature and light regimes, a source of nutrients that may be supplied by wind-induced upwelling and upmixing, and vertical migration by cells to this source. Red tides occur after the winds decrease and the water becomes highly stratified with a shallow mixed layer. This implies low turbulence levels may be an additional requirement for red tide development. Because dinoflagellates with sizes about 35 mu m are much smaller than the inertial-viscous, or Kolmogorov scales L sub(K) identical with (nu super(3)/ epsilon) super(1/4) = (nu / gamma) super(1/2) of oceanic turbulence, the important flow parameters are the viscous dissipation rate per unit mass epsilon (cm super(2)/s super(3) or ergs/g/s), the rate-of-strain gamma identical with (epsilon / nu) super(1/2) (rad/s), and the stress tau identical with mu gamma (dyne/cm super(2)), where nu is the kinematic viscosity and mu is the dynamic viscosity. In the present work we cultured the red tide dinoflagellate, Gonyaulax polyedra) Stein, under conditions of known epsilon , gamma and tau .
inhibitors/turbulence/algal blooms/red tides/temperature effects/light effects/Gonyaulax polyedra/INE, USA, California/physical oceanography/Oceanic Abstracts.

1231. Hendricks TJ. Coastal currents. ; 1977.
Marine pollution/California Coast/Pacific Ocean East/Coastal

waters/ Currents/Sub-thermocline/Wastewaters/Water transport/Dispersion/ Current meters/Water movement/Outfalls/Effluents/Current data/Wind/Tidal variations/Flow rates/Measuring methods/Suspended sediments/Southern California Bight/flushing rates/municipal wastewater discharges/subthermocline current speeds/Point Loma/near-bottom currents/tidal oscillations/midwater currents/OceanAbstracts.

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Sandy Subtidal Invertebrates, Santa Barbara Island.

1233. TONT SA, DELISTRATY DA. THE EFFECTS OF CLIMATE ON TERRESTRIAL AND MARINE POPULATIONS. REPORT CALIF. COOP. OCEANIC FISH. INVEST. 21 1980: 85-89. ENVIRONMENTAL FACTORS/PHYSICAL ENVIRONMENT/CLIMATE & WEATHER/BIOLOGI CAL SYSTEMS EFFECT, CALIFORNIA CURRENT/ECOLOGY/ECOLOGICAL ENERGETICS/ COMMUNITY ENERGETICS/CLIMATIC IMPACT ON BIOLOGICAL SYSTEMS, CALIFORNIA CURRENT/COMMUNITY/PACIFIC OCEAN/NORTHERN PACIFIC/CALIFORNIA CURRENT/CLIMATIC EFFECTS ON TERRESTRIAL & MARINE POPULATIONS/Zoological Index.

1234. Antonelis Jr. GA, Leatherwood S, ODell D. Population growth and censuses of the northern elephant seal, Mirounga angustirostris, on the California Channel Islands, 1958-78. Fishery Bulletin (Seattle) 1981;79(3):562-567 Address: National Marine Fisheries Service, Seattle, WA. Prepared in cooperation with Hubbs-Sea World Research Inst., San Diego, CA., and Miami Univ., FL. Rosenstiel School of Marine and Atmospheric Science.
The northern elephant seal, Mirounga angustirostris, has received considerable attention because of its dramatic recovery from near extinction in the late 19th century. One can trace a rapid increase in size of the California Channel Island subpopulation over the last nearly three decades. Using estimated pup production figures from this and other published censuses for the years 1958-78, rates of growth for each island are assessed within the subpopulation and for the subpopulation as a whole.
Census/Population growth/marine mammals/northern elephant seal/Mirounga angustirostris/California Channel Islands/marine biology/mammalogy.

1235. Bowman TE, Johnson MW. Distributional atlas of calanoid copepods in the California current region, 1949 and 1950. Calif. Coop. Ocean. Fish. Invest. Atlas No. 19 1973;:239.
invertebrates/Pieper/Dawson/plankton/MINERALS MANAGEMENT SERVICE.

1236. Bracewell LW, Selleck RE, Carter R. Contribution of waste water discharges to ocean surface particulates. J. Water Pollut. Control Fed. 1980;52(8):2230-2245.
Waste water/marine pollution/surface layers/INE/Southern CaliforniaBight/Hood/ecosystem/water analysis/pollution effects/pollution legislation/waste water treatment/analytical/techniques/coliforms/wastewater treatment/water/seawater/pollution/disposal/wastewater/Anthropoge nic/Anderson/H ickey/physical oceanography/Geesey/microbiology/MINERALS MANAGEMENT SERVICE.

1237. Wells H. A distance coefficient as a hybridization index: an example using Mimulus longiflorus and Mimulus flemingii (Scrophulariaceae) from Santa Cruz Island, California. Taxon. Utrecht, International Bureau for Plant Taxonomy and Nomenclature. 1980;29(1):p.53-65

Foreign Bibliography p. 62-65. Article.
California/Islands/AGRICOLA.

1238. Simpson JJ. Transport processes affecting the survival of pelagic fish stocks in the California Current. 10th ANNUAL LARVAL FISH CONFERENCE. PROCEEDINGS OF A CONFERENCE HELD IN MIAMI, FLORIDA, USA, MAY 18-23, 1986.; AM. FISH. SOC. SYMP. SER 1987;2:39-60.
Starvation and predation affect the survival of fish eggs and larvae to the juvenile stage within a given year class. Water movement affects survival because it can carry eggs and larvae into areas poor in food, rich in predators, or both. Within the California Current, small-scale wind-induced near-surface mixing, mesoscale vertical transport (upwelling-downwelling), mesoscale vortex entrainment, and large-scale mean flow are the dominant water transport mechanisms that affect the space-time distribution of eggs and larvae of a given species in relation to the space-time distributions of food and predators for that species. The scales of variability associated with each of these transport processes are presented and specific examples of the effects of these processes on various species in the California Current are shown based on in situ data, remotely sensed data, and dynamical and numerical models.
fish eggs/fish larvae/survival/population dynamics/transport processes/INE/California Current/predation/starvation/ASFA.

1239. Zieglar DL. The Santa Barbara Channel; to be or not to be. Weaver DW, Hornaday GR, Tipton A. Paleogene symposium and selected technical papers; conference on future energy horizons of the Pacific Coast. ; 1975. p. p. 594-612. Standard Oil Co. Calif., United-States Pac. Sect., Am. Assoc. Pet. Geol. 50th annual meeting of the Pacific sections, AAPG, SEPM, SEG Future energy horizons of the Pacific Coast; Paleogene symposium, Long Beach, Calif., April 23-26, 1975 Analytic; Book; Conference publication B; Bibliography and Index of Geology (1969-present).
Santa Barbara County/petroleum/United States/California/Santa Barbara
Channel/resources/exploration/production/structure/lithostratigraphy/environmental geology/pollution/geologic hazards/oil spills/economic geology/offshore/GEOREF.

1240. Radovitch J. Relationships of some marine organisms of the northeast Pacific to water temperatures, particularly during 1957 through 1959. Calif. Fish and Game, Fish. Bull. 1961;112:62
Oceanography/Physical oceanography/water masses.

1241. Alldredge A, Robison B, Fleminger A, Torres J, King J, Hamner W. Direct sampling and in situ observation of a persistent copepod aggregation in the mesopelagic zone of the Santa Barbara Basin. MAR. BIOL 1984;80(1):75-81. Observations from a one-person submersible (Wasp) in fall, 1982, revealed a persistent aggregation of non-migrating, Stage V copepodites of Calanus pacificus californicus Brodsky in a band 20 plus or minus 3 m thick at a depth of 450 m, about 100 m above the bottom of the Santa Barbara Basin, California. Copepod a bundances, calculated from nearest-neighbor distances measured directly from the submersible, yielded maximum densities of 26 x 10 super(6) copepodites m super(-3). Quiescent behavior, low laminarinase activity, low protein content, high lipid content and evidence of low excretion rate all suggest that these copepodites were in a state of diapause. Diapausing C. pacificus californicus at other locations along the eastern Pacific coast were also captured in discrete depth plankton tows.

population density/diapause/Calanus pacificus californicus/Pacific Ocean/ Santa Barbara Basin/aggregation/CSA Life Sciences Collection.

1242. Hickey B (Performer: Washington Univ., Seattle. School of Oceanography. Funder: Department of Energy, Washington, DC.) California Basin Study (CaBS): Circulation and Particle Fluxes in the Southern California Bight: Annual Progress Report, 15 November 1987-14 November 1988. ; 1988. Report No.: DOEER603335. 53p. Portions of this document are illegible in microfiche products. PC A04/MF A01 Contract: FG0585ER60333.
During this period we have executed three CTD/oxygen/transmission surveys, during 1-7 Feb (SHELF 1), 5-12 April (SHELF 2), and 1-9 Oct (SHELF 3). Data were obtained at 78, 70, and 109 stations, respectively. Calibration of these data sets has been completed and processing has been initiated. The SHELF 2 and SHELF 3 cruises also included shipboard acoustic Doppler current surveys. Cruise reports for the three cruises are appended. During February we successfully deployed several moorings in an array designed to monitor the important seasonal transition between winter and spring (TRANSITION). In April, additional moorings were added to the array to provide a detailed description of circulation over the Santa Monica shelf (SHELF). Rationale for and details of these experiments are described below. All moorings except one and a half were successfully fishermen earlier in the season and were returned to us intact. One mooring in the October cruise failed to release and was recovered via a submersible the next day. The malfunction was due to the fact that the release mechanism of the mooring, which had been deployed for nine months in 30 m of water, was jammed with rock scallopsexclamation 9 refs., 10 figs., 8 tabs. (ERA citation 14:009628).
California/Continental Shelf/Oceanography/Oxygen/Pacific Ocean/Progress Report/Samplers/Sampling/Sediments/Site Surveys/Currents/Coastal Regions/ERDA/580500/California Basin/NTIS.

1243. Urrutia LP, Drummond H. Brood reduction and parental infanticide in Heermann's gull. AUK 1990;VOL. 107, NO. 4:pp. 772-774
Cent. Ecol., Univ. Nac. Auton. Mexico, A.P. 70-275, 04510 Mexico D.F., Mexico. We have evidence from a single season for an active parental role in chick deaths in Heermann's Gull (Larus heermanni), a poorly known species that breeds exclusively on islands in and near Mexico's Sea of Cortez. Our study to detect possible brood reduction showed that parents not only created competitive asymmetry between their chicks, but also sometimes precipitated the death of the last egg/chick by neglect or aggression. Observations were made on Isla Rasa (28 degree 49'N, 112 degree 59'W), a small (0.55 km super(2)), arid island located in a zone of high marine productivity.
parental behavior/infanticide/Larus heermanni/ISE, California Gulf/ mortality/juveniles/Oceanic Abstracts.

1244. Hendricks TJ. In situ measurements of initial dilution. ; 1977. Marine pollution/California Coast/Pacific Ocean East/Coastal waters/ Outfalls/Measuring methods/Currents/Effluents/Chemistry/Water column/Vertical distribution/Horizontal distribution/Wastewaters/In situ measurements/Turbidity/Stratification/Simulation/Sampling methods/Diffusion/Southern California Bight/initial dilution/buoyant plume behavior/ surfacing wastefields/water column profiles/optical brighteners/ Rhodamine dye/concentration profiles/OceanAbstracts.

1245. Dugan JE. Geographic and temporal variation in the life history, growth and reproductive biology of the sand crab, Emerita analoga (Stimpson) [dissertation]. Santa Barbara, CA: University of California at Santa Barbara; 1990. 329 pages. UCSB Library, University Microfilms
Includes comparisions of population biology of sand crabs on the Channel Islands and the mainland.
Sandy intertidal invertebrates, population biology, Santa Cruz Island, San Miguel Island, Santa rosa Island, Santa Catalina Island.

1246. MILLER DJ. THE SEA OTTER IN CALIFORNIA. REPORT CALIF. COOP. OCEANIC FISH. INVEST. 21 1980: 79-81.
* MAMMALIA ** CARNIVORA *** FISSIPEDA **** MUSTELIDAE ***** ENHYDRA LUTRIS. FEEDING/FEEDING BEHAVIOUR/FORAGING/DISPERSAL, MIGRANT & ESTABLISHED POPULATIONS, CALIFORNIA CURRENT/ECOLOGY/POPULATION STUDY/CALIFORNIA CURRENT/PACIFIC OCEAN/NORTHERN PACIFIC/POPULATION STUDY, FEEDING DISPERSAL MIGRANT & ESTABLISHED POPULATIONS/Zoological Index.

1247. Apt K, D'Antonio C, Crisp J, Gauvain J. Intertidal macrophytes of Santa Cruz Island, California. Santa Barbara, CA: The Herbarium, Department of Biological Sciences, University of California; 1988.
funded by U.C. Natural Land/Water Reserves Committee.
We surveyed 10 intertidal sites around Santa Cruz Island to provide a detailed, thorough collection of intertidal macrophytes for the island and the University of CA herbariums. We looked for biogeographic patterns in the species composition and provided a cursory comparison with northern and southern mainland marine macrophyte distributions.
intertidal macroflora/intertidal zone/algae/Santa Cruz Island/marine biology/botany/phycology.

1248. Brandsma D, Lund SP, Henyey TL. Paleomagnetism of late Quaternary marine sediments from Santa Catalina Basin, California continental borderland. J. Geophys. Res., B, Solid Earth and Planets 1989;94(1):547-564.
California/sedimentation/paleomagnetism/Pacific Ocean/geochronology/oceanography/stratigraphy/Quaternary/sediment ation rates/continental margin/marine sedimentation/secular variations/Pacific Coast/Western U.S./United States/Southern California/Santa Catalina Basin/upper Quaternary/marine sediments/accuracy/high-resolution methods/North American Pacific/marginal basins/continental borderland/SURFICIAL GEOLOGY/QUATERNARY/GEOLOGY/GEOCHRONOLOGY/07/MARINE GEOLOGY/OCEANOGRAPHY/MINERALS MANAGEMENT SERVICE.

1249. PROPOSED 1979 OUTER CONTINENTAL SHELF OIL AND GAS LEASE SALE, OCS SALE NO. 48, OFFSHORE SOUTHERN CALIFORNIA. LOS ANGELES, CALIFORNIA DEPARTMENT OF THE INTERIOR, BUREAU OF LAND MANAGEMENT JANUARY 1979 (EPA: JANUARY 31, 1979) 5 VOLUMES 1979 LEASING OF OUTER CONTINENTAL SHELF TRACTS (SALE NO. 48) FOR GAS AND OIL PRODUCTION OFFSHORE SOUTHERN CALIFORNIA. USDA EMPLOYEES REQUEST DOCUMENTS FROM NATIONAL AGRICULTURAL LIBRARY OTHERS ORDER FROM INFORMATION RESOURCES PRESS, 1700 NORTH MOORE STREET, SUITE 70 ARLINGTON, VA 22209.   ENV.
PURLEASING OF 217 TRACTS (1.1 MILLION ACRES) ON THE OUTER CONTINENTAL SHELF (OCS) OFFSHORE OF SOUTHERN CALIFORNIA FOR EXPLORATION, DEVELOPMENT, AND PRODUCTION OF OIL AND GAS RESOURCES IS PROPOSED. THE TRACTS ARE LOCATED IN THE VICINITY OF THE SANTA BARBARA CHANNEL (544,693 ACRES), SANTA ROSA (34,560 ACRES), SANTA BARBARA ISLAND (23,980 ACRES), SAN PEDRO BAY (116,020 ACRES),

TANNER-CORTES (275,825 ACRES), AND DANA POINT-SAN DIEGO (146,740 ACRES). WATER DEPTHS ARE 25:N-750 METERS. CONSTRUCTION OF OFFSHORE FACILITIES WOULD INCLUDE 31 PLATFORMS, 86 EXPLORATORY WELLS, 701 PRODUCTION WELLS, 71 DELINEATION WELLS, 641 MILES OF OFFSHORE PIPELINE, 3 SINGLE BUOY MOORS, AND 3 OFFSHORE STORAGE AND TREATING PLANTS. THE SALE IS TENTATIVELY SCHEDULED FOR JUNE 1979. POSAPPROXIMATELY 715 MILLION BARRELS OF RECOVERABLE OIL AND 860 BILLION CUBIC FEET OF RECOVERABLE GAS COULD BE PRODUCED FROM THE PROPOSED LEASE AREA. THE SALE ALSO COULD GENERATE UP TO 14,629 JOBS, $241 MILLION IN PERSONAL INCOME, AND $519 MILLION IN GROSS REGIONAL PRODUCT BY 1986, WHICH IS THE PEAK YEAR OF THE TWENTY-YEAR PERIOD (1980:N-2000) DURING WHICH 90 PERCENT OF THE RESOURCES WOULD BE DEPLETED. NEGCOMBINED IMPACTS FROM THE PROPOSED SALE COULD INJURE, DESTROY, OR DISPLACE POPULATIONS OF THREATENED OR ENDANGERED WILDLIFE SPECIES FOUND IN THE AREA; GRAY WHALES, IN PARTICULAR, WOULD BE ESPECIALLY VULNERABLE DURING MIGRATION. POSSIBLE OIL SPILLS WOULD DESTROY MARINE MAMMALS, SEABIRDS, SEALS, SEA LIONS, HYDROCORAL COMMUNITIES, KELP BEDS, AND SALT MARSH VEGETATION AND WOULD CONTRIBUTE INDIRECTLY TO SOIL EROSION. OIL SPILLS ALSO COULD DAMAGE INTERTIDAL ORGANISMS IN THE NORTHERN CHANNEL ISLANDS AREA AND CONTAMINATE STATE-DEFINED AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE. PIPELINE CONSTRUCTION ACTIVITIES WOULD CAUSE SUSTAINED TURBIDITY, DEGRADE OCEAN WATER QUALITY, AND DISRUPT THE HABITAT OF THE BROWN PELICAN, THE LIGHT-FOOTED CLAPPER RAIL, AND THE BELDINGS SAVANNAH SPARROW. DEVELOPMENT ACTIVITIES COULD DISTURB BREEDING GROUNDS FOR PINNIPEDS AND SEABIRDS. EMISSIONS WOULD ADD TO AIR POLLUTION LEVELS THAT CURRENTLY EXCEED FEDERAL STANDARDS. THE LOSS OF 201 ACRES OF FISHING SPACE WOULD HARM THE COMMERCIAL FISHING INDUSTRY OF SOUTHERN, CENTRAL, AND BAJA CALIFORNIA. PETROLEUM DEVELOPMENT ACTIVITIES WOULD DISRUPT SHIPPING AND NAVIGATION IN FOUR SHIPPING LANES, AND OFFSHORE STRUCTURES WOULD LOWER SCENIC VALUES IN THE AREA. ALTMODIFICATION OF AREAS TO BE LEASED; ALTERNATIVE DEVELOPMENT SCENARIOS; DELAY OF SALE; ALTERNATIVE LOCAL GOVERNMENT STIPULATIONS. LEGLEASING OF THE OCS TRACTS IS IN ACCORDANCE WITH SECTION 8 OF THE OUTER CONTINENTAL SHELF LANDS ACT OF 1953 (43 U.S.C. 1331). PAMMATRIX (PROXIMITY) ANALYSIS OF IMPACTS. CRNO SUBSTANTIVE CHANGES WERE FOUND BETWEEN THE DRAFT STATEMENT (ITSEE RO78-1270D, VOLUME 2, NUMBER 12) AND THIS FINAL STATEMEN. CALIFORNIA/PACIFIC OCEAN/AQUATIC SYSTEMS IMPACTS/CONTINENTAL SHELVES/CRUDE OIL/EMPLOYMENT IMPACTS/ENDANGERED SPECIES ANIMALS/FISHERIES IMPACTS/GAS EXPLORATION/LEASING/MATRIX ANALYSES OF IMPACTS/NATURAL GAS/OFFSHORE ENERGY SOURCES/OIL EXPLORATION/PACIFIC OCEAN/PIPELINES/WETLANDS IMPACTS/WHALES/WILDLIFE IMPACTS/OUTER CONTINENTAL SHELF LANDS ACT OF 1953 PROJECT AUTHORIZATION/AGRICOLA.

1250. Fiscal year 1986 program report: Arizona Water Resources Research Center. 1987;
The research projects supported by the 1986 program addressed the following critical water issues in Arizona; water quality, agricultural water management. Project 02 examined the conditions affecting biodegradation of phenol and chlorophenol in the subsurface. Project 07 comprised a risk analysis of potential ground-water contamination from agricultural, industrial (mining), and municipal sources in the Upper Santa Cruz Basin. The utility of chloride-bromide ratios in ground water as indication of water origin was determined during Project 09. Project 04 developed improved irrigation management criteria for turfgrass. Project 05 assessed the economics of alternative irrigation techniques. (Grant DI-14-08-0001-G-1211. See also report for FY 1985, PB87-122057. Sponsored by Geological Survey, Reston, VA (USA). Water Resources Div.). research institutions/research programs/annual reports/USA/Arizona/ Tucson/Water Resour. Res. Cent./ASFA.

1251. Erickson JW. Petrology of some middle and late Eocene sandstones from the southern California borderland. Weaver DW, Hornaday GR, Tipton A. Paleogene symposium and selected technical papers; conference on future energy horizons of the Pacific Coast. ; 1975. p. p.191-209.
Exxon Co., Los Angeles, Calif., United-States Pac. Sect., Am. Assoc. Pet. Geol. 50th annual meeting of the Pacific sections, AAPG, SEPM, SEG Future energy horizons of the Pacific Coast; Paleogene symposium, Long Beach, Calif., April 23-26, 1975
Analytic; Book; Conference publication B; Bibliography and Index of Geology (1969-present).
Santa Barbara County/San Diego County/South Point Formation/Jolla Vieja Formation/Torrey Sandstone/Scripps Formation/Stadium Conglomerate/sedimentary rocks/clastic rocks/terrigenous/sandstone/mineral composition/petrography/textures/grain size/rounding/sorting/provenance/environmental analysis/Eocene/California/south/coastal/United States/middle Eocene/Ulatisian/Narizian/upper Eocene/sedimentary petrology/San Diego/Santa Barbara/Santa Rosa Island/San Miguel Island/Santa Cruz Island/GEOREF.

1252. Reid JL,J. Pacific Ocean. McGraw-Hill Encyclopedia of Science and Technology;9:438-488
Oceanography/Physical oceanography/currents/winds/water masses/waves.

1253. Small LF, Huh CA (Performer: Oregon State Univ., Corvallis. Coll. of Oceanography. Funder: Department of Energy, Washington, DC.) California Basin Study (CaBS): The Role of Zooplankton and Micronektron in the Cycling and Remineralization of Chemical Materials in the Southern California Bight: Progress Report 6, May 1985-November 1988. ; 1988. Report No.: DOEER603406. 41p. Portions of this document are illegible in microfiche products. PC A03/MF A01 Contract: FG0585ER60340.
The overall objective of Phase-I of our research, within the structure of the DOE CaBS (California Basin Study) program, has been to understand the transport pathways and mass balances of selected metabolically active and inactive chemical species in the Santa Monica/San Pedro (SM/SP) Basins. During Phase-I, Drs. L.F. Small and C.-A. Huh were part of the same proposal, and so this progress report reflects our joint effect over the first three years of the CaBS program. One focus of our study has been to examine the role of zooplankton in the cycling and remineralization of chemical materials in the Southern California Bight, with particular reference to C, N and certain radionuclides and trace metals. A second focus has been to examine these same radionuclides and trace metals in other important reservoirs (i.e., in seawater, sediment trap material and bottom sediments). Knowledge of the rates and routes of transfer of these nuclides and metals through these reservoirs should lead to a cogent model for these elements in SM/SP Basins. Our zooplankton C and N data, in conjunction with primary production, microbiological and sediment trap data from colleagues in the program, has led to a model of C and N cycling in the upper water column. Our sediment core data (chronologies and chemical profiles), together with sediment trap and benthic flux data, has resulted in the construction of an organic carbon mass balance in the SM/SP Basins. Both efforts are first attempts (see Appendices), but we have been heartened by the reasonableness of these first attempts after just three years of data. 29 refs., 13 figs., 5 tabs. (ERA citation 14:009630). Baseline
Ecology/Biomass/Coastal Waters/Crustaceans/Feces/Nutrients/Progress

Report/Sediments/Spatial Distribution/Zooplankton/California/Environmental Transport/Carbon Cycle/Metals/Mineral Cycling/Nitrogen Cycle/ERDA/580500/ERDA/520500/Radioisotopes/NTIS.

1254. dePaola A, Hopkins LH, Peeler JT, Wentz B, McPhearson RM. Incidence of Vibrio parahaemolyticus in U.S. coastal waters and oysters. APPL. ENVIRON. MICROBIOL 1990;VOL. 56, NO. 8:pp. 2299-2302 Fish. Res. Branch, U.S. Food and Drug Adm., Dauphin Island, AL 36528, USA. Oyster and seawater samples were collected seasonally from May 1984 through April 1985 from shellfish-growing areas in Washington, California, Texas, Louisiana, Alabama, Florida, South Carolina, Virginia, and Rhode Island which had been designated as approved or prohibited by the National Shellfish Sanitation Program. Fecal coliforms counts, aerobic plate counts, and Vibrio parahaemolyticus densities were determined for the samples. Mean V. parahaemolyticus density was more than 100 times greater in oysters than in water, whereas density of fecal coliforms was approximately 10 times higher in oysters. Seasonal and geographical distributions of V. parahaemolyticus were related to water temperature, with highest densities in samples collected in the spring and the summer along the Gulf coast. The synthetic DNA probe for thermostable direct hemolysin hybridized with 2 of 50 isolates, 1 of which was positive by the Kanagawa test. microbial contamination/coastal waters/viral diseases/oyster culture/marine pollution/pollution effects/Vibrio parahaemolyticus/ Crassostrea virginica/Crassostrea gigas/USA Coasts/OCEANIC ABSTRACTS.

1255. Heesen TC, Young DR. Halogenated hydrocarbons in wastewaters: Knowns and unknowns. ; 1977.
Pacific Ocean East/Hydrocarbons/Halogens/Pollutant analysis/ California Coast/Wastewaters/Coastal waters/Marine pollution/Toxins/Chlorine compounds/Waste effluents/Gas chromatography/Sampling methods/Outfalls/Sludges/PCB compounds/Southern California Bight/municipal wastewaters/chlorinated hydrocarbons/DDT/chlorinated benzenes/mass emission rates 1976/ halogenated hydrocarbons/OceanAbstracts.

1256. Hartman O. Polychaetous Annelids Part I. Aphroditidae to Pisionidae. Allan Hancock Pacific Expeditions 1939;7(1):1-156 Sandy Subtidal Invertebrates, Annelida, Anacapa, Santa Rosa, San Miguel.

1257. ANTONELIS GA, JR, FISCUS CH. THE PINNIPEDS OF THE CALIFORNIA CURRENT. REPORT CALIF. COOP. OCEANIC FISH. INVEST. 21 1980:68-78
* MAMMALIA ** CARNIVORA *** PINNIPEDIA **** OTARIIDAE ***** ARCTOCEPHALUS TOWNSENDI, CALLORHINUS URSINUS, EUMETOPIAS JUBATUS, ZALOPHUS CALIFORNIANUS **** PHOCIDAE ***** MIROUNGA ANGUSTIROSTRIS, PHOCA VITULINA RICHARDI. FEEDING/CARNIVOROUS FEEDING/PREDATION/PREY/SPECIES LIST (PISCES), CALIFORNIA CURRENT/ECOLOGY/COMMUNITY/COMMUNITY STRUCTURE/RELATIVE ABUNDANCE/DISTRIBUTION & SEASONAL MOVEMENTS, CALIFORNIA CURRENT/BEHAV IOUR/MIGRATION/SEASONAL MOVEMENTS, CALIFORNIA CURRENT/PACIFIC OCEAN/ NORTHERN PACIFIC/CALIFORNIA CURRENT/DISTRIBUTION, SEASONAL MOVEMENTS & FEEDING HABITS/Zoological Index.

1258. Marine mammal and seabird survey of the Southern California Bight area. Washington : Dept. of the Interior, Bureau of Land Management; Springfield, Va. : for sale by the National Technical Information Service, 1978 1978 United States. National Technical Information Service. PB; 295933, etc. Other-US

Prepared for Bureau of Land Management. Includes bibliographies.
Monograph; Bibliography.
Marine mammals/California/Sea birds/AGRICOLA.

1259. Roden GI, Fredericks WJ. North Pacific Ocean.
Tradewind region east of Hawaii, R/V Thomas G. Thompson : 25
September - 1 November 1972, STD data report. CONTRIB. WASH. UNIV.
SCH. OCEANOGR 1987;
During September and October 1972, scientists aboard the R/V Thomas
G. Thompson studied the thermohaline and density structures in the
tradewind region east of the Hawaiian Islands. An additional
hydrographic section was made from the working area to San Diego,
Ca. A total of 300 stations were taken. The primary objectives of
the field study in the tradewind region east of Hawaii were: 1) to
investigate the mesoscale thermohaline and density structure in
2700 km high resolution sections across the tradewind region; 2) to
determined the subtropical and doldrum fronts occurring at the
boundaries of this region; 3) to study the mesoscale dynamic height
and baroclinic flow perturbations in the tradewind region; and 4)
to assess the mesoscale and baroclinic flow structures across the
California current between the subtropical gyre and the coast.
research vessels/thermohaline circulation/trade winds/dynamic
height anomaly/baroclinic motion/INE/cruise stations/CTD
observations/INE/ California Current/R/V Thomas G. Thompson/ASFA.

1260. Erickson JW. Sedimentology of the South Point
Formation (Eocene), Santa Rosa Island, California. Weaver DW,
Hornaday GR, Tipton A. Paleogene symposium and selected technical
papers; conference on future energy horizons of the Pacific Coast.
; 1975. p. p.169-190.
Exxon Co., Los Angeles, Calif., United-States Pac. Sect., Am.
Assoc. Pet. Geol. 50th annual meeting of the Pacific sections,
AAPG, SEPM, SEG Future energy horizons of the Pacific Coast;
Paleogene symposium, Long Beach, Calif., April 23-26, 1975
Analytic; Book; Conference publication B; Bibliography and Index
of Geology (1969-present).
Santa Barbara County/South Point Formation/sedimentary
rocks/clastic
rocks/terrigenous/sandstone/siltstone/mudstone/mineral
composition/lithostratigraphy/correlation/lithofacies/environmental
analysis/Eocene/California/Santa Rosa
Island/sedimentation/environment/marine environment/submarine
fans/sedimentary structures/flute casts/flame
structures/imbrication/cross bedding/grooves/United
States/Ulatisian/Narizian/sedimentary petrology/GEOREF.

1261. Reid JL,J. Observations of internal tides in October
1950. Trans. Amer. Geophys. Union 1956;37(3):278-286
Oceanography/Physical oceanography/currents/winds/water masses.

1262. Venkatesan MI, Kaplan IR (Performer: California Univ.,
Los Angeles. Inst. of Geophysics and Planetary Physics.
Funder: Department of Energy, Washington, DC.) Program of
Mineralization and Cycling in Marine Systems: Organic Geochemistry
of Particulates and Sediments (CaBS): Comprehensive Report,
November 1985-November 1988. ; 1988. Report No.: DOEER603386. 58p.
Portions of this document are illegible in microfiche products. PC
A04/MF A01 Contract: FG0585ER60338.
The major objective of the present on-going project was to
understand the processes involved in the cycling of organic carbon
in the southern California Bight. This involves the evaluation of
the relative flux of planktonic carbon to the seafloor versus the
import of terrestrial carbon components and the determination of

the rate of decompositions of sedimenting organic matter in the waste column. These goals were achieved by the chemical characterization of sedimenting particles (from traps) as well as in the near surface sediments. At UCLA we have been focusing on the chemical characterization of selected classes of organic carbon compounds derived from different sources to understand the vertical flux and the chemical composition of the particulate organic matter which are controlled by complex transport, transformations, degradation and remineralization. 25 refs., 22 figs., 12 tabs. (ERA citation 14:011960). California/Carbon Cycle/Geochemistry/Organic Compounds/Organic Matter/Polycyclic Aromatic Hydrocarbons/Progress Report/Spatial Distribution/Coastal Waters/Sediments/ERDA/580500/NTIS.

1263. Casas E, Lowenstein TK. Diagenesis of saline pan halite: Comparison of petrographic features of Modern, Quaternary and Permian halites. J. SEDIMENT. PETROL 1989;VOL. 59, NO. 5:pp. 724-739
Dep. Geol. Sci. and Environ. Stud., State Univ. New York, Binghamton, NY 13901, USA.
Petrographic studies of modern saline pan halites (Saline Valley, CA; Salina Omotepec, Baja California, Mexico) and Quaternary shallow-buried (0-200 m) halites (Saline Valley, CA; Bristol Dry Lake, CA; Searles Lake, CA; Qarhan saline pan, Qaidam Basin, China; Lake Uyuni, Bolivia) show that the diagenetic modification of halite begins contemporaneously with deposition, is most intense within the upper few meters of burial, and is essentially complete within the first 45 m of burial. Complete cementation of saline pan halites at shallow burial depths has important implications for the origin of saline formation waters in sedimentary basins. Parent evaporite brines may not be stored in the pores of halite rocks and later expelled during burial compaction if the rocks are cemented early, and tightly crystallized halite rocks may also impede the downward migration of dense syndepositional brines.
sedimentology/petrology/diagenesis/evaporites/halite/cementation/ Quaternary/Permian/brines/USA, California/Mexico, Baja California, Salina Omotepec/Bolivia, Uyuni L./China, People's Rep., Qaidam Basin/Oceanic Abstracts.

1264. Young DR, Jan TK, Moore MD. Metals in power plant cooling water discharges. ; 1977.
Pacific Ocean East/Metals/Electric power plants/Thermal discharges/ Thermal pollution/Toxins/Coastal waters/California Coast/Flow rates/Wastewaters/Waste effluents/Pollutant analysis/Marine pollution/
Cadmium/Chromium/Copper/Nickel/Lead/Zinc/Sampling methods/Southern California Bight/cooling water discharges/trace metals/ influent/OceanAbstracts.

1265. Hartman O. Polychaetous Annelids Part II. Chrysopetalidae to Goniadidae. Allan Hancock Pacific Expeditions 1940;7(3):173-287 Includes worms from the Velero III stations.
Sandy Subtidal Invertebrates, Annelids, Anacapa Island, Santa Rosa Island, San Miguel Island.

1266. YOUNG DR, MEARNS AJ, JAN TK, HEESEN TC, MOORE MD, EGANHOUSE RP, HERSHELMAN GP, GOSSETT RW. TROPHIC STRUCTURE AND POLLUTANT CONCENTRATIONS IN MARINE ECOSYSTEMS OF SOUTHERN CALIFORNIA. REPORT CALIF. COOP. OCEANIC FISH. INVEST. 21 1980: 197-206, ILLUSTR.
ECOLOGY/ECOLOGICAL ENERGETICS/TROPHIC STRUCTURE/POLLUTANT CONCENTRATIONS RELATIONSHIPS, MARINE ECOSYSTEMS, CALIFORNIA/PACIFIC OCEAN/NORTHERN PACIFIC/CALIFORNIA CURRENT/TROPHIC STRUCTURE &

1267. Arnold JE. Chumash economic specialization: an analysis of the Quarries and Bladelet production villages of the Channel Islands, California [dissertation]. Santa Barbara, California, USA: University of California; 1983. 278.
A variety of archaeological indicators can be used to explore the evidence for economic specialization in prehistoric societies. The most important among these are applied to an analysis of the massive chipped stone bladelet-drill production industry practiced by the Chumash of the Santa Barbara Channel Islands, California, during the later Middle and Late Periods (ca. AD 950-1782). Explicit consideration is given to the evidence for a high volume of specialized artifact production, the evidence for standardization in methods of production, the evidence for industry-related site activity areas, and the evidence for the exercise of aboriginal control over critical resources, particularly over quarry resources. A review of major studies on North American quarries serves as a preamble to a suggested analytical framework for the examination of quarry sites. The Chumash of the Channel Islands exploited a circumscribed zone of quarries on northeastern Santa Cruz Island and eventually transformed an incipient specialization involving moderate bladelet-drill production into a centralized, large-scale industry supplying drills to a set of special shell bead money-making villages elsewhere on the islands. The transformation of this industry was concurrent with changes in Chumash economic and political complexity leading to a money economy. and a simple chiefdom organization. At least one village which was established during this transformation (ca. AD 1300) was from the time of its founding an exclusive manufacturing center for bladelets. This site bears the evidence for the highest density of blade/bladelet production known for aboriginal North America. Several simple but powerful tests on the data firmly support the proposition that the Chumash bladelet production industry was a legitimate specialization. Parallels to this economic specialization are provided by ethnographic evidence on Chumash canoe-making and bead-making and specializations in other societies. Chumash Indians/economic specialization/bladelet-drill/artifacts/ quarries/Homo sapiens/Santa Barbara Channel Islands/Santa Cruz Island/ anthropology/archaeology.

1268. Breaker LC, Conrad JC, Traganza ED. Satellite observation of a cyclonic upwelling system and giant plume in the California current. IDOE International Symposium on Coastal Upwelling, Los Angeles, CA (USA) 1981;:228-241. chemical oceanography/MINERALS MANAGEMENT SERVICE.

1269. Ferguson HL. The feral goats of San Clemente Island threat to native flora. Fremontia. Berkeley, Calif., California Native Plant Society. Oct 1979. 1979;7(3):p.3-8
Other-US Article.
California/San Clemente Island/AGRICOLA.

1270. Roden GI, Fredericks WJ. North Pacific Ocean. Northeast Pacific transition zone, R/V Thomas G. Thompson : 1 November - 6 December 1969, STD data report. CONTRIB. WASH. UNIV. SCH. OCEANOGR 1987;
During Nov and Dec 1969 scientists aboard the R/V Thomas G. Thompson studied the thermohaline and density structures in the transition zones between the California current, the tradewind circulation, the outflow from the Gulf of California, and the north equatorial current. Most of the investigation were concentrated off

Baja California, the Revilla Gigedos Island region, and across the mouth of the Gulf of California. Of the 254 STD stations planned, 249 were completed. research vessels/thermohaline circulation/CTD observations/ISE/ California Current/ISE/North Equatorial Current/ISE/California Gulf/baroclinic motion/R/V Thomas G. Thompson/ASFA.

1271. Howell DG, McLean H. Basin analysis of lower middle Miocene strata, Santa Rosa and Santa Cruz islands, California. Am. Assoc. Pet. Geol., Bull. 1977;61(5):p.796-797
U. S. Geol. Surv., Menlo Park, Calif., United-States AAPG-SEPM annual meeting, Washington, D.C., June 12-16, 1977 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present). California/sedimentary petrology/sedimentary rocks/breccia/Miocene/Santa Rosa Island/Santa Cruz Island/United States/stratigraphy/paleoenvironment/sedimentation/middle Miocene/clastic rocks/terrigenous/lithofacies/environmental analysis/paleocurrents/basins/lithostratigraphy/tectonics/structu re/faults/mode ls/GEOREF.

1272. Nierenberg WA, Gautier C, Simpson JJ, Somerville RC, Vallis GK (Performer: Scripps Institution of Oceanography, La Jolla, CA). Scripps Ocean Modeling and Remote Sensing (SOMARS). Semi-annual progress rept. 15 Mar-15 Sep 88. ; 1988. 40p.
PC A03/MF A01 Contract: N0001486K0752.
Topics in this brief reports include: Kalman filtering of oceanographic data; Remote sensing of sea surface temperature; Altimetry and Surface heat fluxes; Ocean models of the marine mixed layer; Radar altimetry; Mathematical model of California current eddies. Keywords: SOMARS (Scripps Ocean Modeling and Remote Sensing). (edc).
California/Eddies Fluid mechanics/Oceanographic data/Heat flux/Height finding/Kalman filtering/Mixed layer Marine/Mathematical models/Ocean currents/Ocean surface/Radio altimeters/Remote detectors/Sea water/Surface temperature/Ocean models/SOMARS Scripps Ocean Modeling and Remote Sensing/Remote sensing/NTIS.

1273. Huang J, Turcotte DL. Evidence for chaotic fault interactions in the seismicity of the San Andreas Fault and Nankai Trough. NATURE 1990;VOL. 348, NO. 6298:pp. 234-236
Dep. Geol. Sci., Cornell Univ., Ithaca, NY 14853, USA.
Interactions between fault segments are one of the main sources of complexity in the seismicity of active tectonic regions. Such interactions are likely to influence the spatial and temporal patterns of earthquakes. Here we examine the dynamical behaviour introduced by fault interactions using a simple spring-loaded, slider-block model with velocity-weakening friction. The model consists of two slider blocks coupled to each other and to a constant-velocity driver by elastic springs. For an asymmetric system in which the frictional forces on the two blocks are not equal, the solutions exhibit chaotic behaviour. The system's behaviour over a range of parameter values seems to be generally analogous to that of weakly coupled segments of an active fault. We see similarities between our model simulations and observed patterns of seismicity on the south central San Andreas fault in California and in the Nankai trough along the coast of southwestern Japan.
USA, California, San Andreas Fault/Japan, Nankai Trough/earthquakes/ seismic activity/fault zones/friction/simulation/interactions/Oceanic Abstracts.

1274. Schafer HA. Characteristics of municipal wastewater discharges, 1976. ; 1977.
Pacific Ocean East/Waste effluents/Hydrocarbons/Coastal waters/ Pollutant analysis/Chlorine compounds/California Coast/Sludges/Flow rates/PCB compounds/Outfalls/Metals/Suspended matter/Marine pollution/Wastewaters/Domestic wastes/municipal wastewater discharges/Southern California Bight/chlorinated hydrocarbons/trace metals/mass emission rates/1976/general constituents/DDT/OceanAbstracts.

1275. Hartman O. Polychaetous Annelids Part IV. Pectinariidae. Allan Hancock Pacific Expeditions 1941;7(5):325-345
Sandy Subtidal Invertebrates, Annelids, Anacapa Island, Santa Rosa Island, San Miguel Island.

1276. Ashley M, Wills C. Analysis of mitochondrial DNA polymorphisms among Channel Island deer mice. Evolution 1987;41(4):854-863
Address: DEP. ANTHROPOL., COLUMBIA UNIV., NEW YORK, N.Y. 10027.
Mitochondrial DNA (mtDNA) from 131 deer mice, Peromyscus maniculatus, collected on the eight California Channel Islands [USA] and from seven southern California mainland locations, was isolated and analyzed for restriction endonuclease fragment polymorphisms. A total of 26 mtDNA genotypes were distinguishable among the deer mice sampled. All of the island samples had mtDNA restriction-fragment patterns not found among the mainland samples. Distributions of specific restriction-fragment patterns provide evidence for at least four separate colonization events to the Channel Islands. The estimated percentage of sequence divergence between all mtDNA's in this study was less than 1%, suggesting that colonization of the islands occurred fairly recently, probably within the last 500,000 years. Levels of mtDNA heterogeneity were much lower within island populations than within mainland populations.
mitochondrial DNA/colonization/restriction/endonuclease fragment/deer mice/Peromyscus maniculatus/California Channel Islands/California mainland/terrestrial biology/mammalogy/evolution.

1277. Evenhuis NL. First record of Bombyliidae from Santa Barbara Island, California (Diptera). Pan Pac Entomol. San Francisco, Pacific Coast Entomological Society. Oct 1979. 1979;55(4):p.250
Other-US Article.
California/Santa Barbara Island/Entomology/Bombyliidae/AGRICOLA.

1278. Bauer JE, Montagna PA, Spies RB, Prieto MC, Hardin D. Microbial biogeochemistry and heterotrophy in sediments of a marine hydrocarbon seep. LIMNOL. OCEANOGR 1988;33(6, pt. 2):1493-1513.
Vertical profiles of sediment and pore-water constituents and rates of microbially mediated geochemical processes were determined in surficial sediments (0-7-cm depth) of three stations in and around Isla Vista hydrocarbon seep off Santa Barbara, California. Measurements were made of pore-water alkalinity (total and carbonate), pH, Eh, dissolved oxygen, sulfate, and sulfide, total sedimentary organic carbon (TOC) and nitrogen, ATP, sulfate reduction and dark bicarbonate uptake and incorporation, and oxygen flux across the sediment-water interface in benthic chambers.
heterotrophy/biogeochemistry/microorganisms/marine environment/sediments/hydrocarbon-degrading bacteria/USA/California/oil seepages/bacteria/INE/Santa Barbara Channel/Isla Vista Island/vertical profiles/ASFA.

1279. Blake GH. Distribution and temporal migration of bank top foraminifera assemblages, outer southern California borderland. Am. Assoc. Pet. Geol., Bull. 1977;61(5):p.768-769
Univ. South. Calif., Los Ang., Calif., United-States AAPG-SEPM annual meeting, Washington, D.C., June 12-16, 1977 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).
California/paleontology/foraminifera/Holocene/modern/south/offshore/ecology/ben thonic taxa/assemblages/biocenoses/thanatocenoses/distribution/continental borderland/communities/substrate/United States/marine environment/sedimentation/rates/currents/GEOREF.

1280. Haemig P. Island Scrub Jay predation on cliff nests of house finches. WILSON BULL 100(1, p. 140; 1988).
The Island Scrub Jay (Aphelocoma coerulescens insularis) is found only on Santa Cruz Island, 30 km from the coast of southern California (34 degree 00'N, 119 degree 42'W). Not as well studied as the jays of the adjacent mainland, many aspects of its biology remain unknown. In this note, the author documents predation by Island Scrub Jays on the nests of House Finches (Carpodacus mexicanus). Although such predation is well known among other Corvids, no specific reports of it have been published before for the Island Scrub Jay.
Aphelocoma coerulescens insularis/Carpodacus mexicanus/eggs/predation/USA/California/Santa Cruz I./CSA Life Sciences Collection.

1281. Johnson CD. Numerical Ocean Prediction in the California Coastal Region Using a High-Resolution Primitive Equation Model. [dissertation] ; 1988. 52p.
Performer: Naval Postgraduate School, Monterey, CA
A high resolution, multi-level, primitive equation (PE) model of the California coastal region is initialized with a temperature field analyzed from real data collected during the OPTOMA11 cruises of June and July, 1984, for the purpose of forecasting the movement of thermal features in the region. The results are compared to the observations and to the forecast experiments of Rienecker et al. (1987), since they initialized their quasi-geostrophic (QG) model with the same OPTOMA11 temperature data. Key prediction features include an anticyclone and cyclone pair, and an offshore 'Jet' that was formed between the pair with velocities on the order of 60 cm/sec in the upper ocean region (<225m). The temperature front associated with this 'jet' is traced at the 85m level, in a time series from day 0 to day 14, as is the perturbation pressure field. Translational velocities of this frontal feature are on the order of 5-10 cm/sec in a southward direction, which is consistent with those observed. Some quantitative differences between the PE model prediction and the QG model are found. Based on these cast by a multi-level, high resolution PE model, given synoptic data for initialization. However, many more studies are needed to understand the dynamics and robustness of the present model predictions.
Anticyclones/Boundaries/California/Coastal regions/Cyclones/Dynamics/East Direction/Equations/Forecasting/Fronts Oceanography/Geostrophic currents/High resolution/Jet flow/Mathematical models/Mathematical prediction/Motion/Numerical analysis/Ocean models/Oceanographic data/Oceans/Perturbations/Predictions/Pressure/Sea water/Temperature/Thermal properties/Theses/Time series analysis/Water flow/Ocean currents/Primitive equations/California Current System/Eastern boundary currents/High resolution primitive equation model/NTIS.

1282. Setran AC, Behrens DW. New ecological information on Scytalina cerdale (Pisces: Scytalinidae) from a central California rocky intertidal zone. ENVIRON. BIOL. FISH 1990;VOL. 29, NO. 2:pp. 107-117
Pacific Gas and Electric Res. and Dev., 3400 Crow Canyon Rd., San Ramon, CA 94583, USA.
New information regarding the ecology of Scytalina cerdale was obtained over a four year period as a consequence of a long-term marine ecological study at the Diablo Canyon Power Plant (DCPP), San Luis Obispo County, California. Twenty intertidal fish surveys were conducted at approximately quarterly intervals, between March 1979 and June 1983, at three separate rocky shore locations (stations). During each survey, a total of 108 square meters (36 M super(2) per station) was searched for fish during periods of low tide. A total of 280 S. cerdale) were collected, identified, measured, and released back into the same 4 m super(2) area, from the same intertidal station (Diablo Cove), throughout the study period. This limited intertidal occurrence most likely reflects S. cerdale) microhabitat requirements; a combination of intertidal elevation (mean = +0.3 MLLW), substratum specificity (loose gravel, 5-10 mm size range, overlying a base of sand and shell fragments), and degree of wave exposure (semi-protected). intertidal environment/Scytalina cerdale/INE, USA, California/rocky shores/microhabitats/autecology/Oceanic Abstracts.

1283. Anonymous. Coastal Water Research Project: Annual report for the year ended 30 June 1977. SOUTHERN CALIFORNIA COASTAL WATER RESEARCH PROJECT. ANNUAL REPORT. ; 1977.
Research projects investigating the ecology of the open coastal waters off southern California (the Southern California Bight) cover the following topics: possible pollutants contributed to these waters by various sources with emphasis on municipal wastewaters; how the discharged material is distributed by coastal currents; animal and plant populations; levels of pollutants in animals; the levels at which metals and chlorinated hydrocarbon pollutants become toxic to marine life; evidence of actual effects on marine animals; and taxonomic standardization. The coefficients of variation of the organics laboratory range from 10% to 20% for all but the lowest concentrations of organic constituents in seawater. MS.
Pacific Ocean East/Coastal waters/California Coast/Population variations/Population composition/Pollutant analysis/Marine pollution/Currents/Behavior/Water transport/Metal uptake/ Histopathology/Hydrocarbons/Wastewaters/Inshore oceanographic surveys/Bioindicators/Marine organisms/Toxins/Outfalls/annual report/1977/municipal wastewaters/Southern California Bight/OceanAbstracts.

1284. Hartman O. Polychaetous Annelids Part V. Eunicea. Allan Hancock Pacific Expeditions 1944;10(1):1-237
Sandy Subtidal Invertebrates, Annelids, Anacapa Island, Santa Rosa Island, San Miguel Island.

1285. SUMIDA BY, MOSER HG. FOOD AND FEEDING OF PACIFIC HAKE LARVAE, MERLUCCIUS PRODUCTUS, OFF SOUTHERN CALIFORNIA AND NORTHERN BAJA CALIFORNIA. REPORT CALIF. COOP. OCEANIC FISH. INVEST. 21 1980: 161-166, ILLUSTR. * PISCES ** SUPERCLASS GNATHOSTOMATA *** CLASS TELEOSTOMI **** DIVISION TELEOSTEI ***** SUPERORDER PARACANTHOPTERYGII ****** GADIFORMES ******* SUBORDER GADOIDEI ******** MERLUCCIIDAE ********* MERLUCCIUS PRODUCTUS. FEEDING/CARNIVOROUS FEEDING/PREDATION/PREY/COPEPODA (CRUSTACEA) & OTHER INVERTEBRATES/LARVAL DIET, CALIFORNIA CURRENT/DIGESTION & NUTRITION/NUTRITION/DIET/PREY COMPOSITION, LARVAE, CALIFORNIA

CURRENT/PACIFIC OCEAN/NORTHERN PACIFIC/CALIFORNIA CURRENT/LARVAL FOOD & FEEDING/Zoological Index.

1286. Ashley MV. Genetic variation in mitochondrial DNA among subspecies of California USA Channel Island deer mice Peromyscus manicualtus. Genetics 1984;107(3 PART 2):S4
Address: UNIV. CALIF. SAN DIEGO, LA JOLLA CONFERENCE PAPER: 1984 JOINT MEETING OF THE GENETICS SOCIETY OF AMERICA AND THE GENETICS SOCIETY OF CANADA, VANCOUVER, B.C., CANADA, AUG. 12-15, 1984.
population relations/DNA/evolution/mitochondrial DNA/deer mouse/Peromyscus manicualtus/California Channel Islands/terrestrial biology/mammalogy/genetics.

1287. Brewer GD, Lavenberg RJ, McGowan GE. Abundance and vertical distribution of fish eggs and larvae in the Southern California Bight, June and October 1978. Rapp. P.V. Reun. Cons. Int. Explor. Mer. 1981;178:165-168.
fish/Pieper/Dawson/zooplankton/TEXT/MINERALS MANAGEMENT SERVICE.

1288. Coblentz BE. Some range relationships of feral goats on Santa Catalina Island, California [Forage production, utilization]. J Range Manage, Nov 1977. 1977;30(6):p.415-419
Other-US Article.
California/Santa Catalina Island/AGRICOLA.

1289. Vance RR. Ecological succession and the climax community on a marine subtidal rock wall. MAR. ECOL. (PROG. SER.) 1988;48(2):125-136. Persistence and development of an epibiotic community occupying a temperate, marine, subtidal rock wall was studied for 4.5 yr. Composition and abundance of the biota of unmanipulated control quadrats remained remarkably constant. Fleshy red algae fluctuated seasonally, and other taxa fluctuated aperiodically, but abundances of all taxa remained within rather narrow limits. To determine the repeatability of succession, quadrats were cleared of all residents in summer and in winter in each of 2 yr.
epibionts/ecological succession/community composition/predation/growth/biomass/habitat improvement (biological)/seasonal variations/INE/ California Current/Santa Catalina I./ASFA.

1290. Fischer PJ. Late Neogene Quaternary tectonics and depositional environments of the Santa Barbara Basin, California. Fritsche AE, Ter Best H, Jr., Wornardt WW. The Neogene symposium; selected technical papers on paleontology, sedimentology, petrology, tectonics and geologic history of the Pacific Coast of North America. ; 1976. p. p.33-52.
Calif. State Univ., Northridge, Calif., United-States Soc. Econ. Paleontol. Mineral. 51st annual meeting of the Pacific Section of SEPM; Tomorrow's oil from today's provinces, San Francisco, Calif., April 21-24, 1976 Analytic; Book; Conference publication B; Bibliography and Index of Geology (1969-present).
California/oceanography/sedimentation/continental shelf/tectonics/Tertiary/Quaternary/Santa Barbara Basin/environment/basins/shelf environment/submarine canyons/submarine fans/troughs/transport/regression/transgression/controls/structural controls/United States/evolution/faults/folds/vertical tectonics/uplifts/subsidence/sedimentary cover/systems/block faults/effects/upper Tertiary/Neogene/GEOREF.

1291. Briggs KT, Chu EW, Lewis DB, Tyler WB, Pitman RL, G.L. Hunt Jr. Distribution, numbers, and seasonal status of seabirds of

the Southern California Bight. Marine Mammal and Seabird Survey of the Southern California Bight Area, Summary Report 1975-1978, Book 3 1981;III:1-212.
birds/MINERALS MANAGEMENT SERVICE.

1292. Tielking TA. Wind Forcing of Eddies and Jets in the California Current System. Master's thesis. [dissertation] ; 1988. 118p. Performer: Naval Postgraduate School, Monterey, CA
A high-resolution, multi-level, primitive equation ocean model is used to examine the response to wind forcing of an idealized flatbottomed oceanic regime along an eastern ocean boundary. A band of steady winds, either with or without a curl, is used as forcing on both an f-plane and a beta-plane. In addition, a stability analysis is made to determine if the necessary and sufficient conditions for instability processes to occur are satisfied. It is seen that when the wind driven coastal jet and undercurrent are unstable (which occurs in the cases of wind with no curl), eddies and jets are generated. In the case of wind with curl, since the Davidson Current develops rather than the coastal jet and undercurrent, no eddies develop. A comparison of model results with available observations shows that both the time-averaged and instantaneous model simulations of the coastal jet, undercurrent and eddies are consistent with available observational data. Study results support the hypothesis that wind forcing can be an important eddy generation mechanism for the California Current System. (edc). Comparison/Eddies Fluid mechanics/Equations/Ocean models/Stability/Jet flow/Boundaries/East Direction/Hypotheses/Simulation/Response/Stresses/Coastal regions/Theses/Air water interactions/Ocean currents/Wind/Mathematical models/Primitive equations/Wind forcing/Instability/Undercurrents Ocean currents/Wind stress curl/Davidson Current/California Current/NTIS.

1293. Emslie SD, Henderson RP, Ainley DG. Annual variation of primary molt with age and sex in Cassin's auklet. AUK 1990;VOL. 107, NO. 4:pp. 689-695 Point Reyes Bird Obs., 4990 Shoreline Highw., Stinson Beach, CA 94970, USA. In Cassin's Auklet (Ptychoramphus aleuticus) on Southeast Farallon Island, California, 1979-1984, we found significant annual and seasonal variation in timing and rate of primary molt in adult males, adult females, and subadults (1-2 years old). Except in 1979, adult males began to molt at least 10 days before adult females, and males molted at a slower rate. Subadult birds initiated molt later and molted faster, but showed less annual variation than adults. Timing of breeding and breeding success varied annually but were not correlated directly with molt. In years of extended breeding, molt rates were slower apparently in response to the energetic demands caused by the overlap of breeding and molt. molting/biological age/annual variations/Ptychoramphus aleuticus/se x characters/INE, USA, California, Farallon I/Oceanic Abstracts.

1294. Squire JL,J. Surface currents as determined by drift card releases over the continental shelf off central and southern California. NATIONAL MARINE FISHERIES SERVICE. TECHNICAL REPORT NMFS SSRF. ; 1977 Dec. NMFS, Southwest Fisheries Center, La Jolla Lab., La Jolla, CA 92038. From Mar. 1964 through Feb. 1966, 8,320 plastic drift cards were released at selected points from an aircraft to measure surface current drift over 2 areas: from the coast to j48 nm off central California between Point Arena and Point Sur; and from the coast to about 90 nm off southern California between Point Arguello and Punta Salsipuedes, Baja California, Mexico. The recovery rate was 3.5% in the central area and 5.7% in the southern area. An average 79.4% of the recoveries

were found within 2 wk following release. The distribution of the directions from which drift cards were returned increased the evidence for the presence of an eddy off the coast between San Francisco and Monterey Bay during May through July, and of the large gyre and associated southern California countercurrent S of Point Conception during Apr. through Aug. and to a lesser extent in Oct. and Dec. Surface waters/Currents/Continental shelves/Drift currents/Eddies/ California Coast/Mexico West Coast/Baja California Coast/drift card releases/OceanAbstracts.

1295. Hartman O. Polychaetous Annelids Part VI. Paraonidae, Megelonidae, Iongosomidae, Ctenodrilidae and Sabellariidae. Allan Hancock Pacific Expeditions 1944;10(3):311-389
Sandy Subtidal Invertebrates, Annelids, Anacapa Island, Santa Rosa Island, San Miguel Island.

1296. MEARNS AJ, ALLEN MJ, MOORE MD, SHERWOOD MJ. DISTRIBUTION, ABUNDANCE, AND RECRUITMENT OF SOFT-BOTTOM ROCKFISHES (SCORPAENIDAE: SEBASTES) ON THE SOUTHERN CALIFORNIA MAINLAND SHELF. REPORT CALIF. COOP. OCEANIC FISH. INVEST. 21 1980: 180-190, ILLUSTR.
* PISCES ** SUPERCLASS GNATHOSTOMATA *** CLASS TELEOSTOMI **** DIVISION TELEOSTEI ***** SUPERORDER ACANTHOPTERYGII ****** SCORPAENIFORMES ******* SUBORDER SCORPAENOIDEI ******** SCORPAENIDAE ********* SEBASTES.
ENVIRONMENTAL FACTORS/PHYSICAL ENVIRONMENT/OCEANIC CONDITIONS, RECRUITMENT RELATIONSHIPS/ECOLOGY/POPULATION STUDY/POPULATION STRUCTURE/RECRUITMENT, CALIFORNIA CURRENT/POPULATION DYNAMICS/DISTRI BUTION, ABUNDANCE & RECRUITMENT, CALIFORNIA CURRENT/HABITAT/DISTRIBUT ION WITHIN HABITAT/VERTICAL DISTRIBUTION/DEPTH DISTRIBUTION PATTERNS, CALIFORNIA CURRENT/BEHAVIOUR/SOCIAL BEHAVIOUR/GROUP BEHAVIOUR/SCHOO LING/RECRUITMENT VARIATIONS, OCEANIC RELATIONSHIPS/PACIFIC OCEAN/NOR THERN PACIFIC/CALIFORNIA CURRENT/DISTRIBUTION, ABUNDANCE & RECRUITMENT/Zoological Index.

1297. Ashley MV. Mitochondrial DNA divergence in the genus Peromyscus. Genetics 1985;110(3 PART 2):S88
Presented at: 54TH ANNUAL MEETING OF THE GENETICS SOCIETY OF AMERICA, BOSTON, MASS., USA, AUG. 11-15, 1985 Address: UNIV. California, SAN DIEGO, LA JOLLA. phylogenetic relationships/Peromyscus maniculatus/deer mouse/California Channel Islands/terrestrial biology/genetics/evolution/mammalogy.

1298. Briggs KT, Tyler WB, Lewis DB, Dettman KF. Summary of marine mammal and seabird surveys of the Southern California Bight area (1975/78). Seabirds. Vol. III. Part 3. Book 2. Prep. for U.S. Dep. Interior, Minerals Management Service, Pacific OCS Region, Los Angeles, CA. Prep. by Univ. Calif., Santa Cruz. 1981;III:237.
MINERALS MANAGEMENT SERVICE.

1299. Moran R. Resurrection of Dudleya traskiae [from tiny Santa Barbara Island]. Fremontia, Jan 1978 1978;5(4):p.37-38
Other-US Article.
California/AGRICOLA.

1300. Finney BP, Huh CA. History of metal pollution in the Southern California Bight: An update. ENVIRON. SCI. TECHNOL 1989;23(3):294-303. Box cores collected in 1985 and 1986 along an offshore transect in the Santa Monica Basin, CA, were analyzed for organic carbon, calcium carbonate, U-series radionuclides, and a suite of major and minor elements. Downcore profiles of metals and

organics carbon reflect anthropogenic influence and diagenetic processes. The deep basin cores show pronounced subsurface maxima in Pb, Zn, Cr, and organic carbon during the time interval 1960-1970. Increases from the base of the core to this time horizon are consistent with increasing anthropogenic inputs to the Santa Monica Basin. The near-surface decreases in heavy-metal accumulation reflect recent improvements in waste water treatment. Sediment compositions cannot be fully explained by simple mixtures of sewage particles and natural sediment because of factors such as diagenesis of sewage during transport and sedimentation, additional metal sources, and variations in surface water productivity.
heavy metals/California/sediment pollution/pollution surveys/organic carbon/diagenesis/sewage/historical account/sediments/trace elements/INE/Southern California Bight/INE/USA/California/Santa Monica Basin/coves/basins/ASFA.

1301. Crowe BM, Howell DG, McLean H. Miocene volcanic and volcaniclastic rocks of Santa Cruz Island; evidence for offset along the Santa Cruz Island Fault. Fritsche AE, Ter Best H, Jr., Wornardt WW. The Neogene symposium; selected technical papers on paleontology, sedimentology, petrology, tectonics and geologic history of the Pacific Coast of North America. ; 1976. p. p.18. U. S. Geol. Surv., Menlo Park, Calif., United-States Soc. Econ. Paleontol. Mineral. 51st annual meeting of the Pacific Section of SEPM; Tomorrow's oil from today's provinces, San Francisco, Calif., April 21-24, 1976 Analytic; Book; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).
Santa Barbara County/San Onofre Breccia/Monterey Formation/Blanca Formation/California/structural geology/faults/Miocene/Santa Cruz Island/Santa Cruz Island Fault/displacements/strike slip faults/effects/sedimentary rocks/igneous rocks/lithostratigraphy/age/clastic rocks/terrigenous/conglomerate/sandstone/diagenesis/volcanic/basalt/andesite/da cite/breccia/absolute age/dates/volcanic rocks/K/Ar/United States/lower Miocene/GEOREF.

1302. Spero H. Ultrastructural examination of chamber morphogenesis and biomineralization in the planktonic foraminifer Orbulina universa. MAR. BIOL 1988;99(1):9-20.
Pre-sphere, trochospiral Orbulina universa (d'Orbigny) were hand-collected between June and September, 1982 to 1984, from surface waters of the Pacific Ocean ca. 2 km off Santa Catalina Island, California, USA. The formation of a spherical chamber by this planktonic foraminifer was studied with light and electron microscopy. Chamber morphogenesis is preceded by the secretion of a cytoplasmic layer rich in mitochondria. The layer expands away from the pre-existing foraminiferal shell surface in a spherical pattern. Full cytoplasm expansion is followed by the secretion of an organic matrix (OM) approximately 200 mu m above the original shell surface. Cytoplasm, mitochondria and/or vesicles may play a role in OM secretion. Calcification and chamber thickening, new spine growth and pore development are documented and continue for a period of 1-7 d. Orbulina universa/chambers/mineralization/morphogenesis/ultrastructure/CSA Life Sciences Collection.

1303. Ford RG (Performer: Ecological Consulting, San Diego, CA. Funder: Minerals Management Service, Los Angeles, CA. Pacific OCS Region.) Risk Analysis Model for Marine Mammals and Seabirds: A Southern California Bight Scenario. Final rept. ; 1985. Report No.: MMS850104. 264p.
Sponsored by Minerals Management Service, Los Angeles, CA. Pacific OCS Region. PC A12/MF A01 Contract: DI1412000130224.

The objective of the study was to model the risks to selected species of marine mammal and seabird populations in the Southern California Bight from oil spills during OCS oil and gas development and operations. Risk analysis is a procedure designed to investigate the possible negative effects of projects and activities. The conventional approach to analyzing oil and gas reserves is through the use of the MMS Oil Spill Risk Analysis Model (OSRAM). OSRAM was developed to aid in estimating the environmental hazards of developing oil resources in OCS lease areas. Two other computer models were used in these analyses. They are: (2) the short term oil response model, STORM and (3) the oil spill population response model, OSPREY. In the report, a methodology for describing the range of consequences which oil spills might have on Southern California Bight seabird and marine mammal populations and the likelihood of those effects were developed. Two general categories of spill consequences were examined: (1) the immediate mortality to a population caused by a spill from a given source, and (2) the long term marine mammal and seabird populations effects of the projected Southern California Bight OCS development.
Habitability/Risk/Cetacea/Aquatic animals/Population Statistics/California/Birds/Animal ecology/Mammals/Mathematical models/Ecosystems/Pinnipedia/Southern California Bight/Oil spills/NTIS.

1304. Amsler CD, Neushul M. Diel periodicity of spore release from the kelp Nereocystis luetkeana (Mertens) Postels et Ruprecht. J. EXP. MAR. BIOL. ECOL 1990;VOL. 134, NO. 2:pp. 117-127
Mar. Sci. Inst., Univ. California, Santa Barbara, CA 93106, USA.
Sorus abscission and associated spore release were monitored in the laboratory from Nereocystis luetkeana plants collected at three sites in central California, U.S.A. Nearly 80% of the sori were released in the interval between 2 h before sunrise and 4 h after sunrise. This dawn abscission pattern was observed on each day and from plants collected at all sites. Short-term observations in nature confirmed the pattern. Sori from individual plants were usually abscised at intervals of 2-4 days. Sori often began releasing spores before abscission and, in nature, probably continue to release spores as they are falling through the water column. > 50% of the spores released from abscised sori in the laboratory were released in the 1st h after abscission at a mean rate two to four orders of magnitude higher than previously reported for related macroalgae; nearly 95% had been released within 4 h.
diurnal variations/spores/kelps/dispersion/phenology/reproductive cycle/Nereocystis luetkeana/INE, USA, California/spore release/Oceanic Abstracts.

1305. Halpern D, Smith RL, Reed RK. On the California Undercurrent over the continental slope off Oregon. JOURNAL OF GEOPHYSICAL RESEARCH 1978 Mar 20;83(C3):1366-1372
NOAA, Environmental Research Labs., Pacific Marine Environmental Lab., Seattle, WA 98105.
In July 1975, moored current measurements and a spatially dense approximately isochronal hydrographic survey were made off Oregon. The patterns of geopotential topography, the longshore and onshore-offshore variations in temperature and salinity, and the current measurements indicated a poleward flow of warmer, more saline water at intermediate depths over the continental slope throughout a longshore distance of about 600 km. The agreement between linear approximations of the north-south velocity shears determined from baroclinic geostrophic currents and from 3-d vector-averaged current measurements was within 3%. The current measurements at

intermediate depths indicated a wavelike oscillation, lateral meander, or eddy with a time scale of about 7-10 d, and the surface pattern of the geopotential topography (referred to 1000 dbar) contained eddies or a wavelike feature with a wavelength of about 200 km. Comparison of the time variations of currents recorded simultaneously over the slope and shelf indicated that the subsurface poleward flows observed there were connected. AM. Continental slopes/Oregon Coast/US West Coast/Undercurrents/ Currents/Hydrographic surveys/Temperature variations/Salinity variations/Eddies/geopotential topography/California Undercurrent/OceanAbstracts.

1306. HUNTER JR, MACEWICZ BJ. SEXUAL MATURITY, BATCH FECUNDITY, SPAWNING FREQUENCY, AND TEMPORAL PATTERN OF SPAWNING FOR THE NORTHERN ANCHOVY, ENGRAULIS MORDAX, DURING THE 1979 SPAWNING SEASON. REPORT CALIF. COOP. OCEANIC FISH. INVEST. 21 1980: 139-149, ILLUSTR.
* PISCES ** SUPERCLASS GNATHOSTOMATA *** CLASS TELEOSTOMI **** DIVISION TELEOSTEI ***** SUPERORDER CLUPEOMORPHA ****** CLUPEIFORMES ******* SUBORDER CLUPEOIDEI ******** ENGRAULIDAE ********* ENGRAULIS MORDAX.
REPRODUCTION/REPRODUCTIVE CONDITION/SEXUAL MATURATION/BODY SIZE, FEMALES, CALIFORNIA CURRENT/FECUNDITY/SPAWNING BATCH, CALIFORNIA CURRENT/REPRODUCTIVE BEHAVIOUR/SPAWNING/FREQUENCY & TEMPORAL PATTERN, 1979 SEASON, CALIFORNIA CURRENT/HABITAT/DISTRIBUTION WITHIN HABITAT/TEMPORAL DISTRIBUTION/NORTHERN PACIFIC/BEHAVIOUR/ACTIVITY PATTERNS/SPAWNING, 1979 SEASON, CALIFORNIA CURRENT/PACIFIC OCEAN/CAL IFORNIA CURRENT/SPAWNING DURING 1979 SEASON/Zoological Index.

1307. Ashley MV. Analysis of mitochondrial-DNA polymorphisms among Channel Island Deer mice, Peromyscus maniculatus [dissertation]. San Diego, California, USA: University of California; 1986. 133.
The populations of deer mice, Peromyscus maniculatus, which occupy the eight California Channel Islands are at an early stage of evolutionary divergence. Restriction endonuclease fragment polymorphisms of the rapidly evolving mitochondrial DNA (mtDNA) were used to examine the evolutionary history of the deer mice on the Channel Islands and nearby southern California mainland.^ A total of 131 deer mice were collected from the Channel Islands and seven mainland locations. MtDNA was isolated from each individual and surveyed with nine restriction endonucleases. The restriction endonuclease analysis revealed a total of 26 distinguishable mtDNA genotypes. Distributions of specific restriction fragment patterns suggest that at least four separate colonization events have brought deer mice to the Channel Islands, and some islands appear to be occupied by descendents of two different colonization episodes.^ Estimated percent sequence divergence between all mtDNAs in this study were very low, invariably less than 1%. This suggests that colonization of the Channel Islands by deer mice occurred fairly recently, probably in the last 500,000 years.^ Levels of mtDNA heterogeneity was much higher within mainland populations than within island populations. Founder effects, reduced effective population sizes, and stochastic lineage extinctions could be forces eroding mtDNA. heterogeneity in insular deer mouse populations.^ Correlations betw matrices for morphological divergence, allozyme distance, mtDNA divergence, and geographic distance were examined. The two genetic measures, based on allozyme frequencies and mtDNA analysis, were significantly correlated with each other but not with morphological divergence. Allozyme distance was significantly

correlated with geographic distance between islands.^ Island and mainland populations of another species of cricetid rodent, Reithrodontomys megalotis, were also examined for mtDNA restriction fragment polymorphisms. Samples of R. megalotis from Santa Catalina Island and the southern California mainland had identical mtDNA restriction fragment patterns when digested with nine restriction endonucleases. This suggests that colonization of Santa Catalina by R. megalotis may have occurred more recently than colonization by P. maniculatus. An alternative explanation is that mtDNA of R. megalotis is less polymorphic than that of other rodents. mitochondrial DNA (mtDNA)/founder effects/ Peromyscus maniculatus/deer mice/Reithrodontomys megalotis/California Channel Islands/Southern California mainland/terrestrial biology/mammalogy.

1308. Brinton E. Changes in the distribution of euphausiid crustaceans in the region of the California current. Calif. Coop. Oceanic Fish. Invest. Rep. 1960;7:137-146. invertebrates/MINERALS MANAGEMENT SERVICE.

1309. Brinton E. Vertical migration and avoidance capability of euphausiids in the California current. Limnol. Oceanogr. 1967;12(3):451-483. California current/nets/euphausids/zoogeography/functional morphology/vertical migrations/zooplankton/Pieper/MINERALS MANAGEMENT SERVICE.

1310. Brinton E. Distributional atlas of Euphausiacea (Crustacea) in the California Current region. Calif. Coop. Oceanic Fish. Invest. Atlas 18 1973;II:336. zooplankton/text/dawson/pieper/MINERALS MANAGEMENT SERVICE.

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1312. Muller P, Henderson D. Dynamics of the Oceanic Surface Mixed Layer. Proceedings of Aha Huliko'a Hawaiian Winter Workshop (4th) held in Manoa, Hawaii on January 14-16, 1987. 1987; Partial contents: structures and fluxes in a deep convecting mixed layer; equatorial turbulence--mixed layer and thermocline; zonal momentum balance at the equator; the mixed layer of the western equatorial Pacific Ocean; observations of ocean waves and Langmuir circulation with Doppler sonars; unsteady shallowing mixed layer; some effects of heating on the wind-driven velocity in the upper ocean; mixed-layer shear related to wind stress in the Central Equatorial Pacific; mixed-layer fronts in the California Current; horizontal scales of wind forced inertial motions; subduction; wind forcing and observed oceanic wavenumber spectra; energy and momentum fluxes through the sea surface; hamiltonian description of the interaction of surface waves with mixed-layer currents; radiative processes affecting ocean mixed-layer heat content and their monitoring from satellite; monitoring ocean surface layer processes; similarity theories and microturbulence in the atmospheric mixed layer; global mixed-layer natural and anthropogenic fluxes.

dynamical oceanography/surface mixed layer/oceanic boundary layer/thermocline/surface water waves/ocean circulation/Langmuir circulation/current measurement/Doppler sonar/wave-current interaction/satellite sensing/heat transfer/anthropogenic factors/ASFA.

1313. Howell DG. A review of the estimates for the radiometric ages for the Relizian Stage of the Pacific Coast. Fritsche AE, Ter Best H, Jr., Wornardt WW. The Neogene symposium; selected technical papers on paleontology, sedimentology, petrology, tectonics and geologic history of the Pacific Coast of North America. ; 1976. p. p.13-15.
U. S. Geol. Surv., Menlo Park, Calif., United-States Soc. Econ. Paleontol. Mineral. 51st annual meeting of the Pacific Section of SEPM; Tomorrow's oil from today's provinces, San Francisco, Calif., April 21-24, 1976 Analytic; Book; Conference publication B; Bibliography and Index of Geology (1969-present). Obispo Formation/Point Sal Formation/Tranquillon Volcanics/Monterey Formation/California/stratigraphy/Miocene/biostratigraphy/foramin ifera/absolute age/coastal/San Luis Obispo/Santa Ynez Mountains/Santa Cruz Island/Santa Barbara Island/San Clemente Island/assemblages/sedimentary rocks/Neogene/clastic rocks/terrigenous/shale/mudstone/fossiliferous/lithostratigraphy/ igneous
rocks/volcanic/tuff/basalt/andesite/dacite/breccia/dates/volcanic rocks/K/Ar/review/United States/correlation/boundary/lower Miocene/Saucesian/Relizian/Luisian/GEOREF.

1314. Halvorson W, Fenn D, Allardice W. Soils and vegetation of Santa Barbara Island, Channel Islands National Park, California, USA. ENVIRON. MANAGE 1988;12(1):109-118.
The multifaceted development of an erosion surface on Santa Barbara Island, Channel Islands National Park, California, has led to this study of the relationship between soils and vegetation. A dry Mediterranean climate and past attempts at farming and introductions of alien species have led to vegetative degradation accompanied by both gully and surface erosion. Soil and vegetation analyses show this erosion to be in a location of transition. The soils are Typic Chromoxererts (Vertisol Order) with high clay, salinity, and sodium contents. The vegetation is ecotonal in nature, grading from a principally alien annual grassland with Avena fatua and Atriplex semibaccata to a shrub community dominated by the native Suaeda californica . Management toward revegetation and stabilization of this island ecosystem will be difficult with high clay, saline-sodic soils and disturbed vegetation.
soil/vegetation/environment management/USA/California/Channel Islands Natl. Park/soils/environmental management/California/Channel Islands Natl. Park/relationship/CSA Life Sciences Collection.

1315. Brinton E. Parameters relating to the distributions of planktonic organisms, especially euphausiids in the eastern tropical Pacific. Prog. Oceanogr. 1979;8(3):125-189.
Distribution/Population parameters/Euphausiacea/Pacific Ocean/East Baja/California Coast/Zooplankton/Habitats/California Current/Euphausia/Nyctiphanes/Stylocheiron/Pleuroncodes/Statistical analysis/Crabs/Density/Zoogeography/E/eximia/N/simplex/P/planipes /E/diomedeae/s pecies range/Pieper/Bonnell/marine mammals/MINERALS MANAGEMENT SERVICE.

1316. Hickey BM (Performer: Washington Univ., Seattle. School of Oceanography. Funder: Department of Energy, Washington, DC.) West Coast Physical Oceanography Program: Circulation and

Particle Fluxes in the Southern California Bight: Annual Technical Progress Report: A Short Report. ; 1988. Report No.: DOEER603334. 36p.
Portions of this document are illegible in microfiche products. PC A03/MF A01 Contract: FG0585ER60333.
Field programs consisting of 40 current meters distributed on 10-15 current meter moorings were executed during 1985 to 1988 in the Santa Monica/San Pedro shelf and basin region. The CROSS experiment was designed to investigate cross-shelf/slope/basin coherence scales and forcing mechanisms; the BASIN experiment was designed to investigate longshelf and longslope and round the basin coherence scales and forcing mechanisms; the SILL experiment was designed to ascertain the importance of water and property exchange between basins; the SHELF experiment was designed to study the spring transition period, with a special focus on circulation over the shelf. CTD surveys over the basin and shelf were taken upon deployment and retrieval of the moorings and usually on one cruise mid-way through the deployment. The CTD cruises, each with /approximately/80 stations that include transmission and oxygen data as well as temperature and conductivity, will number eight when the final six months of this grant begins. Several conclusions are possible. With few exceptions, flow the Santa Monica Basin is poleward throughout the year for monthly averages. The poleward flow occurs in long period pulses that have generally short (<20 km) coherence scales. The pulses are not driven by local wind and do not have the characteristics of coastal trapped waves. Pulses of equatorward flow can occur at times, particularly during spring in the surface layers. At this time, inflow from the Santa Barbara Channel occurs (e.g., May 86). The average below-sill depth circulation pattern is a counterclockwise gyre, with speeds /approximately/0.5 cm/s. (ERA citation 13:049772).
California/Coastal Regions/Compiled Data/Continental Shelf/Oceanography/Progress Report/Sampling/Currents/Pacific Ocean/Sediments/ERDA/580500/NTIS.

1317. Eichbaum WM, Bernstein BB. Comprehensive analysis of marine monitoring in southern California. Oceans '89OCEANS '89: THE GLOBAL OCEAN. VOLUME 2: OCEAN POLLUTION 1989:pp. 337-343
5204 Wissioming Rd., Bethesda, MD 20816, USA.
The purpose of the case study was to conduct a review and assessment of marine environmental monitoring in the Southern California Bight. The bight was selected in part because of substantial concern in California that the intensive monitoring activities in the bight do not produce information that can be used for decision making by government agencies. The study's goal was to assess whether monitoring in Southern California is optimally designed to address the bight's physical, chemical, and biological characteristics. Further, and more importantly, the study would determine whether or not monitoring was meeting society's needs by providing information that had an impact on decision making.
marine pollution/environmental monitoring/marine ecology/marine geology/chemical oceanography/physical oceanography/government policy/INE, USA, California/Oceanic Abstracts.

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NUC, Ocean Acoustics Group, San Diego, CA 92132.
Data presented were collected as a cooperative study between the NUC and the Southwest Fishery Center of NMFS. Field work was done during 6 cruises of the Fisheries Service's R/V David Starr Jordan. Acoustic target strengths of 10,534 fish schools were measured in the California Current system during 6 cruises from Nov. 1974 to

Oct. 1975. Measurements were made with a side-looking, 30 kHz sonar with a pulse duration of 10 msec; a separate set of 260 schools was measured with a pulse duration of 170 msec. Peak target strength for the 10 msec data set ranged from -20 to +20 dB with a mean of -7.3 dB (SD of 5.9 dB); mean intensity target strength was -2.4 dB. For the 170 msec data set, peak target strength ranged from -10 to +23 with a mean of +1.6 dB (SD of 5.6 dB); mean intensity target strength was +4.8 dB. Target strength depended on pulse length and range (vol sampled). AM, FT.
Fish schools/California Coast/California Current/Mexico West Coast/ Acoustic surveys/David Starr Jordan cruises/acoustic target strength/OceanAbstracts.

1319. Hilton A. Pycnogonids from the Allan Hancock Expeditions. Allan Hancock Pacific Expeditions 1946;5(9):227-340
Sandy Subtidal Invertebrates, Santa Barbara Island.

1320. D'VINCENT S, MOSER HG, AHLSTROM EH. DESCRIPTION OF THE LARVAE AND EARLY JUVENILES OF THE PACIFIC BUTTERFISH, PEPRILUS SIMILLIMUS (FAMILY STROMATEIDAE). REPORT CALIF. COOP. OCEANIC FISH. INVEST. 21 1980: 172-179, ILLUSTR.
* PISCES ** SUPERCLASS GNATHOSTOMATA *** CLASS TELEOSTOMI **** DIVISION TELEOSTEI ***** SUPERORDER ACANTHOPTERYGII ****** PERCIFORMES ******* SUBORDER STROMATOIDEI ******** STROMATEIDAE ********* PEPRILUS SIMILLIMUS.
BIOMETRICS/MEASUREMENTS/DEVELOPMENTAL STAGES/LIFE CYCLE & DEVELOPMENT/LIFE CYCLE/LARVA/DESCRIPTION/JUVENILE STAGES/LIFE HISTORY/CALIFORNIA CURRENT/DEVELOPMENT/ONTOGENESIS/FIN FORMATION & INTERNAL STRUCTURES/Zoological Index.

1321. Audesirk TE. A field study of growth and reproduction in Aplysia californica. Biol. Bull. 1979;157(3):407-421
Address: Div. Biol. Sci., Univ. Missouri, Columbia, MO 65211.
Observations of field growth rates, reproductive activities, and abundance of Aplysia californica were made over a 3-yr period on Santa Catalina Island off southern California. The mean weight of the population was found to vary with the location in which the animals were collected, presumably as a result of differing availability of food. Seasonal weight differences were also apparent. In general, small specimens of A. californica appear between Feb and May. Mean weight reached a maximum between June and Aug. Considerable variability was encountered from year to year. Tagging and recapture showed that growth rates reached a maximum in the spring just prior to breeding. The rate decreased thereafter until weight loss was experienced in Aug and Sept. A. californica was usually most abundant in the spring, with numbers decreasing during the summer. The animals almost completely disappeared during Oct, Nov, and Dec with the exception of extremely small specimens found on algae. Breeding activity was occasionally observed as early as April and reached its greatest intensity during July and Aug when at least 80% of the animals collected were in breeding aggregations. Histological examination of gonads showed maximum oocyte diameter between June and Oct, and minimum between Jan and March. Data are consistent with an annual species whose extended summer breeding period is. terminated by the death of mature individuals during the fall. growth/reproduction/reproductive biology/seasonal variations/population dynamics/seasonal effects/food availability/growth rates/abundance Mollusca/Gastropoda Aplysia californica/Santa Catalina Island/marine biology.

1322. Brinton E. Euphausiid distributions in the California current during the warm winter-spring of 1977-1978 in the context

of a 1949-1966 time series. Calif. Coop. Oceanic Fish. Invest. Rep. 1981;22:135-154.
MINERALS MANAGEMENT SERVICE.

1323. Brinton E, Reid JL. On the effects of interannual variations in circulation and temperature upon the euphausiids of the California current. Pelagic Biogeography, Proceedings of an International Conference, the Netherlands 29 May-5-June 1985. UNESCO Technical Papers in Marine Science 1986;49:24-34. physical oceanography/ecosystems/MINERALS MANAGEMENT SERVICE.

1324. Mais KF. Pelagic fish surveys in the California current / by Kenneth F. mais. [Sacramento] : State of California, Resources Agency, Dept. of Fish and Game, 1974. 1974:p.79 California, Department of Fish and Game. fish bulletin; 162 Other-US Bibliography: p. 78-79. Monograph.
Fishery resources/California/Northern anchovy/Echo sounding/fishing/AGRICOLA.

1325. Fiedler PC. Relationships between remotely-sensed surface properties and subsurface structure in the ocean. 1988; The analyses of historical temperature-depth data from the California Current and recent surface and Expendable Bathythermograph data from the Gulf of California have demonstrated that surface variables measurable by remote sensors do provide information about subsurface structure. However, estimates of subsurface structure based on empirical relationships are valid only regionally and are of limited reliability. A vertical model like the one developed here can be a powerful tool in studying the physical and biological mechanisms that produce empirical surface-subsurface relationships. Ultimately, such a model could serve as the basis for a scheme to maintain continuously-updated estimates of subsurface structure. The estimates would be nowcasted by the model using surface variables (e.g. surface temperature and color) and physical driving variables (e.g. winds, back radiation and cloudiness) monitored continuously by remote sensing. remote sensing/sea surface/surface temperature/bathythermographic data/XBTs/temperature profiles/vertical profiles/thermal structure/ISE/ California Current/ISE/California Gulf/mathematical models/ASFA.

1326. Bischoff JL, Clancy JJ, Booth JS. Magnesium removal in reducing marine sediments by cation exchange. Geochim. Cosmochim. Acta. Univ. South. Calif., Dep. Geol. Sci.; Contrib. No. 346 1975;39(5):p.559-568 Univ. South. Calif., Dep. Geol. Sci., Los Ang., Calif., United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
California/geochemistry/magnesium/sediments/Santa Barbara Basin/abundance/marine environment/pore water/experimental studies/data/cation exchange capacity/reduction/Pacific Ocean/North Pacific/United
States/Holocene/modern/offshore/GEOREF.

1327. Caddell S. Early life history descriptions of the deepbody and slough anchovies with comparisons to the northern anchovy (family Engraulidae). BULL. MAR. SCI 1988;42(2):273-291. Larval descriptions of Anchoa compressa and A. delicatissima are based upon laboratory-reared specimens and larvae collected from Newport Bay, California. Eggs of engraulid species indigenous to the southern California Bight are pelagic, lack an oil globule and have a segmented yolk. Anchoa compressa eggs are nearly spherical and average 0.80 mm in diameter. Eggs of A. delicatissima and Engraulis mordax are ellipsoid; major axis averages 0.94 mm and

1.33 mm respectively; minor axis averages 0.57 mm and 0.66 mm respectively. Newly hatched Anchoa larvae are unpigmented and relatively undifferentiated. Preanal lengths of larvae less than 10 mm range from 68 to 70% SL and progressively decline to values less than 62% SL in post-flexion larvae. Anchoa larvae are distinguished from E. mordax by lower preanal myomere counts (20-26 vs. 26-31), greater dorsal-anal fin overlap lengths, higher anal fin ray counts and dorsolateral gut pigmentation located near the anus.
surveys/USA/California/Newport Bay/fish eggs/fish larvae/animal morphology/ontogeny/life history/Anchoa compressa/Anchoa delicatissima/comparative studies/rearing/Engraulis mordax/ichthyoplankton
surveys/INE/USA/California/Newport Bay/larvae/Anchoa/CSA Life Sciences Collection.

1328. Eppley RW (Performer: California Univ., San Diego, La Jolla. Inst. of Marine Resources.
Funder: Department of Energy, Washington, DC.) Primary Production, Nutrients, and Particulate Matter in the Southern California Bight: Contribution to the C, N, and O sub 2 Budgets: Goals, Priorities and Technical Progress, June 1986. ; 1986. Report No.: DOEER603362. 11p.
Paper copy only, copy does not permit microfiche production. PC A03 Contract: FG0585ER60336.
The goal of this work is to determine the spatial and temporal variations in the planktonic primary productions and to estimate the sinking flux of biogenic carbon leaving the surface layer by measuring new production. New production is that fraction of the primary production that drives the sinking flux of biogenic organic particles. It is the production due to nutrients that enter the euphotic zone from the outside, such as those mixed up from deep water or those scrubbed out of the atmosphere by rain. The rest of the primary production is based upon nutrients recycled within the euphotic zone and is called regenerated production. In practice, new production is usually measured as the rate of nitrate assimilated by the plankton, calculated in carbon units. Nitrate is present in concentrations up to 40 micromolar several hundred meters below the euphotic zone in the North Pacific Ocean while it is usually depleted from local surface waters. In the Southern California Bight nitrate is usually present in the lower part of the euphotic zone. Concentrations increase with depth reaching maximum values at about 1000 m. The region of increasing nitrate with depth is called the nitracline. Only the upper part of the nitracline is in the euphotic zone where there is enough light for plant growth. 10 refs., 2 figs., 2 tabs. (ERA citation 13:047434).
Carbon Cycle/Evaluation/Nitrates/Plankton/Progress Report/Sampling/Spatial Distribution/Time Dependence/Nutrients/Particulates/Plant Growth/ERDA/580500/NTIS.

1329. Howe BM, Mercer JA, Spindel RC, Worcester PF. Accurate positioning for moving ship tomography. Oceans '89OCEANS '89: THE GLOBAL OCEAN. VOLUME 3: NAVIGATION, REMOTE SENSING, UNDERWATER VEHICLES/EXPLORATION 1989:pp. 880-886 Appl. Phys. Lab., Coll. Ocean and Fish. Sci., Univ. Washington, Seattle, WA 98105-6698, USA.
The goal of Moving Ship Tomography (MST) is to synoptically measure the sound speed field c(x,y,z) over a large (Mm) region of the ocean. In the present version, a ship lowers a hydrophone array to listen to moored acoustic sources several hundred kilometers away. The acoustic travel times between the sources and the receiving hydrophone array, at many different ship stations, are then inverted to obtain the sound speed field. One challenging problem in MST is to accurately track position of the receiving hydrophone array. Two complementary systems are used. One is ship-mounted and

consists of a very-short-baseline (VSBL) acoustic tracking system, roll and pitch sensors, the ship's gyro, and a GPS receiver. The other is a Floating Acoustic-Satellite Tracking (FAST) range consisting of two spar buoys, each with a GPS receiver, acoustic pinger, and RF link to the ship. The advantage of the ship-mounted system is its seaworthiness. Two advantages of the FAST range are the long baselines possible when the buoys are deployed far apart, and the independence from the ship and its motion. The FAST range can be deployed and recovered in seas up to sea state 4 and used to calibrate the VSBL system. Results from tests off San Clemente Island and on Lake Washington are presented.
acoustic tomography/positioning systems/ship motion/hydrophones/aco ustic arrays/acoustic tracking systems/satellites/sea state/INE, USA, California, San Clemente I./USA, Washington, Washington L./pinge rs/Oceanic Abstracts.

1330. Love MS, Larson RJ. Geographic variation in the occurrence of tympanic spines and possible genetic differentiation in the kelp rockfish (Sebastes atrovirens). COPEIA 1978 Feb 10;No. 1:53-59
Univ. of California, Dept. of Biological Sciences and Marine Science Inst., Santa Barbara, CA 93106.
The frequency of occurrence of tympanic cranial spines in S. atrovirens, an eastern Pacific scorpaenid, was examined over much of the species' geographic range. Tympanic spines occur significantly more often in individuals from the southern part of the range. Apparently, S. atrovirens falls roughly into 2 groups: central and southern California, though there is clinal variation within each group. It is hypothesized that the occurrence of tympanic spines is determined genetically and that the difference in tympanic spine occurrence between the northern and southern parts of S. atrovirens' range is due to low gene flow between northern and southern populations. This restricted gene flow may be due to the actions of the California Current and the southern California eddy. Recruitment of S. atrovirens in central California would come primarily from local eddies of the California Current in central California, while recruitment in southern California would come primarily from southern California larvae entrained in the southern California eddy. AM.
Genetics/Sebastes/Rockfish/California Coast/Geographic variations/ Zoogeography/Fish larvae/Population variations/S/atrovirens/tympanic cranial spines/OceanAbstracts.

1331. Johnson NW, W.M. Lewis. Pelagic larval stages of the sand crabs, Emerita analoga, Stimpson, Blepharipoda occidentialis Randall, and Lepidopa myops, Stimpson. Biological Bulletin 1942;83(1):67-87
Sandy Subtidal Invertebrates, San Miguel Island, dispersal Larvae.

1332. CALIFORNIAN COOPERATIVE OCEANIC FISHERIES INVESTIGATIONS. SYMPOSIUM OF THE CALCOFI CONFERENCE PT. 2. IDYLLWILD, CALIFORNIA OCTOBER 31 - NOVEMBER 2, 1978. NONCONSUMABLE, LIVING RESOURCES OF THE CALIFORNIA CURRENT: INTERACTIONS WITH CONSUMABLE RESOURCES AND THEIR EXPLOITATION. REPORT CALIF. COOP. OCEANIC FISH. INVEST. 21 1980: 27-81.
PAPERS INDEXED SEPARATELY.
ANIMALS & MAN/ORGANIZED STUDY/MEETINGS/CALIFORNIA/IDYLLWILD OCT/31 - NOV/2 1978, RESOURCES OF CALIFORNIA CURRENT/PACIFIC OCEAN/NORTHERN PACIFIC/CALIFORNIA CURRENT/SYMPOSIUM ON FISH RESOURCES/Zoological Index.

1333. Azzaroli A. About pigmy mammoths of the northern Channel Islands and other island faunas. Quaternary Research (New

York) 1981;16(3):423-425 Address: Univ. Firenze, Mus. Geol. e Paleontol., Florence, ITA.
biogeography/paleogeography/paleontology/Pleistocene/Quaternary/Cenozoic/upper Pleistocene/islands Mammalia/Elephantoidea/pigmy mammoths/Santa Barbara County/northern California Channel Islands/vertebrate paleontology.

1334. Brooks ER, Mullin MM. Diel changes in the vertical distribution of biomass and spacing in the Southern California Bight. Calif. Coop. Ocean. Fish. Invest. Rep. 1983;24:210-215.
Pieper/Dawson/zooplankton/TEXT/MINERALS MANAGEMENT SERVICE.

1335. Martin JH, Bruland KW, Broenkow WW. Cadmium transport in the California current [Water pollutants]. Marine Pollutant Transfer. H. L. Windom & R. A. Duce, eds. 1976. ; 1976. p. p.159-184.
Other-US Article.
California/AGRICOLA.

1336. Wishner KF, Gowing MM. In situ filtering and ingestion rates of deep-sea benthic boundary-layer zooplankton in the Santa Catalina Basin. MAR. BIOL 1987;94(3):357-366.
In situ rates of filtration, particulate ingestion, and carbon ingestion of deep-sea benthic boundary-layer zooplankton were determined in December 1984 in the Santa Catalina Basin, at 1,300 m depth in the California Borderland, by a short-term radioisotope-incorporation technique. Zooplankton were collected at 1 or 50 m above the bottom with an opening-closing net system on a submersible, and incubated at depth with labelled amino acids in special cod-end chambers. Concentrations of particulate material and particulate organic carbon in the ambient water were also measured. These deep-sea benthic boundary-layer zooplankton may have the potential to respond to food pulses, and their relatively high ingestion rates suggest that they could have significant effects on particulate, chemical, and bacterial processes in the near-bottom water column. filter feeders/zooplankton/benthic boundary layer/deep water/particulate organic matter/INE/USA/California/Santa Catalina Basin/ASFA.

1337. Quintino J, Machado F. Heat flow and the Mid Atlantic Rift volcanism of San Miguel Island, Azores. Tectonophysics. 1977;41(1-3):p.173 Heat flow and geodynamics, Grenoble, Aug. 29, 1975 Analytic; Serial; Conference publication B; Bibliography and Index of Geology (1969-present). Azores/tectonophysics/heat flow/plate tectonics/San Miguel Island/Atlantic Ocean/Mid Atlantic Ridge/geothermal gradient/temperature/magma chambers/models/rifting/volcanism/magmas/volcanology/volcanoes/structure/erupti ons/mechanism/GEOREF.

1338. Bruner BL. Numerical Study of Baroclinic Circulation in Monterey Bay. [dissertation] ; 1988. 49p.
Performer: Naval Postgraduate School, Monterey, CA
The circulation of Monterey Bay is both variable and complex, and is likely to be significantly influenced by circulation in the adjacent California current. To study this circulation a two-layer, numerical model was used. The model was forced by inflow and outflow at an open boundary that connected the Pacific Ocean with the bay. Topography representing Monterey Canyon was included in the lower layer of the model. The effects of wind and tidal forcing were not considered. Results indicate that surface circulation is strongly constrained by topography when the lower layer flow is 5 cm/sec or larger and that the flows within the bay are consistent with geostrophic, vorticity-conserving flow over bottom topography.

The sensitivity of the model to the distribution and strength of inflow and outflow forcing location was investigated. The model was found to be sensitive to the location of inflow and outflow forcing and also to the inflow and outflow vertical structure. Flow/Layers/Mathematical models/Numerical analysis/Ocean models/Pacific ocean/Strength General/Submarine canyons/Surfaces/Theses/Variables/Vertical orientation/Ocean currents/Ocean bottom topography/California current/Two layer ocean model/Monterey Bay/NTIS.

1339. Wang DW-, Teng CC, Steele KE. Buoy directional wave observations in high seas. Oceans '89OCEANS '89: THE GLOBAL OCEAN. VOLUME 5: DIVING SAFETY AND PHYSIOLOGY, OCEAN ENGINEERING/TECHNOLOGY 1989:pp. 1416-1420 Computer Sciences Corp., Stennis Space Center, MS 39529-6000, USA. Directional wave data from an NDBC 3-meter heave-pitch-roll discus buoy located off the coast of California were analyzed for a storm event in late 1987. The measured nondirectional wave spectra showed a constant slope at the high frequency end on a log-log plot. Higher frequency waves responded more quickly to the wind direction than lower frequency waves. The spreading parameter, s, was expressed as a function of wave frequency, which agreed with the results from several previous studies. This paper also concisely describes NDBC's standard directional wave measurement buoy system and the related techniques for data processing. wave direction sensors/discus-shaped buoys/wave buoys/wave spectra/ wave analysis/wind direction/data processing/OCEANIC ABSTRACTS.

1340. Bernstein RL, Breaker L, Whritner R. California Current eddy formation: Ship, air and satellite results. SCIENCE 1977 Jan 28;195(4276):353-359 SIO, La Jolla, CA 92093. Quantitative measurements of the circulation of the California Current, obtained through hydrographic determinations of temperature and salinity, are being augmented by satellite data. Clouds permitting, satellite scanner systems can locate major ocean frontal boundaries if they are associated with even quite weak horizontal sea-surface temperature gradients. The satellite data are most usefully interpreted where the surface and main thermocline temperature distributions bear some relation to each other. In such a region it is possible to make interpretations of circulation based on satellite-derived sea-surface temperature patterns. The accuracy of these interpretations depends on the availability of historical and present-day subsurface data, collected by conventional methods from ships and aircraft. The very high resolution radiometer (VHRR) of the NOAA-3 satellite is the highest quality IR scanner orbited to date. Satellite IR scanners, in addition to providing information on circulation with vastly increased spatial resolution, can provide increased time resolution. These improvements in resolution have shown that much of the spatial variation in the California Current takes place along well-defined fronts. from AS. Coastal currents/Eddies/California Current/California Coast/ Circulation/Pacific Ocean Northeast/Remote sensing/Satellite observations/Radiometers/OceanAbstracts.

1341. Lalicker CG, I. McCulloch. Some Textulariidae of the Pacific Ocean. Allan Hancock Pacific Expeditions 1940;6(2):115-143 Sandy Subtidal Invertebrates, Anacapa Island, Santa Rosa Island, San Clemente Island, Santa Cruz Island.

1342. CALIFORNIAN COOPERATIVE OCEANIC FISHERIES INVESTIGATIONS. SYMPOSIUM OF THE CALCOFI CONCERENCE PART 3. IDYLLWILD, CALIFORNIA OCTOBER 23-25, 1979. CLIMATE & ECOLOGICAL

REGIMES. REPORT CALIF. COOP. OCEANIC FISH. INVEST. 21 1980: 83-112, ILLUSTR.
PAPERS INDEXED SEPARATELY.
ANIMALS & MAN/ORGANIZED STUDY/MEETINGS/CALIFORNIA/IDYLLWILD OCTOBER 23-25 1979/CLIMATE & ECOLOGICAL REGIMES, CALIFORNIA CURRENT/PACIFIC OCEAN/NORTHERN PACIFIC/CALIFORNIA CURRENT/SYMPOSIUM ON CLIMATE & ECOLOGICAL REGIMES/Zoological Index.

1343. Baber DW, Coblentz BE. Immobilization of feral pigs with a combination of ketamine and xylazine. J. Wildl. Manage. 1982;46(2):557-560 Address: Dep. Fish. & Wildlife, Oregon State Univ., Corvallis, OR 97331. This paper reports the use of a combination of ketamine hydrochloride and xylazine hydrochloride (KH-XH) to immobilize feral pigs (Sus scrofa) on Santa Catalina Island, California.
catching methods/feral populations/immobilization/live capture/drugs/ketamine/xylazine/feral pigs/Sus scrofa/Santa Catalina Island/terrestrial biology/mammalogy.

1344. Brown DA, Gossett RW, Hershelman GP, Ward CF, Westcott AM, Cross JN. Municipal wastewater contamination in the Southern California Bight: Part 1. Metal and organic contaminants in sediments and organisms. Mar. Environ. Res. 1986;18(4):291-310.
Outfalls/heavy metals/PCB/DDT/marine pollution/Wastewater treatment/industrial wastes/domestic Wastes/sediment/pollution/pollution effects/ marine organisms/marine fish/marine/invertebrate/scadmium/zinc/copper/INE/USA/California/ Southern/Calif ornia/Bight/ANTHROPOGENIC/anderson/Hood/ Thompson/Bray/Murray/ecosystem/algae/spermatophytes/text/chemical oceanography/MINERALS MANAGEMENT SERVICE.

1345. The ecology of the Southern California Bight : implications for water quality management, three year report / of the Southern California Coastal Water Research Project. El Segundo : Southern California Coastal Water Research Project, 1973. 1973;xxx:p.531
Southern California Coastal Water Research Project. SCCWRP TR; 104 Other-US Updates and supercedes SCCWRP TR 104-I. bibliography: p. 505-531. Monograph. Marine ecology/Water quality management/Marine resources conservation/Southern California Bight/AGRICOLA.

1346. Brown DA, Bay SM, Greenstein DJ, Szalay P, Hershelman GP, Ward CF, Westcott AM, Cross JN. Municipal wastewater contamination in the Southern California Bight. Part 2. Cytosolic distribution of contaminants and biochemical effects in fish livers. MAR. ENVIRON. RES 1987;21(2):135-161. This study examines the cytosolic distribution of metals and oxygenated organic metabolites (MTBs), and biochemical effects, in livers of fish collected from both highly contaminated and less contaminated southern California coastal sites. Concentrations of Cd, Cu and Zn were frequently lower in cytosolic pools of longspine combfish, yellowchin sculpin, and California tonguefish from highly contaminated Palos Verdes (PV) relative to those from less contaminated Santa Monica Bay (SMB) despite much higher concentrations of these metals in sediments at PV. Patterns of cytosolic metal distribution differed more between metals than between species or sampling locations. The lower metal concentrations, higher glutathione concentrations, and higher catalase activities found in fish from PV relative to those from SMB are in accordance with effects known to result from exposure to organic contaminants.
heavy metals/outfalls/Zaniolepis latipinnis/Icelinus

guadriseriatus/Symphurus atricauda/Scorpaena guttata/Pisces/waste water/cadmium/copper/zinc/sewage disposal/pollution effects/INE/Southern California Bight/INE/USA/California/liver/marine fish/ASFA.

1347. McLean H, Howell DG, Vedder JG. Paleogeographic implications of the Miocene basement unconformity, Santa Cruz Island, California. Geol. Soc. Am., Abstr. Programs. 1975;7(3):p.346
U. S. Geol. Surv., Menlo Park, Calif., United-States The Geological Society of America, Cordilleran Section, 71st annual meeting, Los Angeles, Calif., March 25-27, 1975 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).
San Onofre Breccia/Willows Diorite/Blanca Formation/California/stratigraphy/Miocene/lithostratigraphy/paleo geography/Santa Cruz Island/United States/reconstruction/unconformities/transgression/basement/GEOREF.

1348. Middaugh D, Hemmer M. Reproductive ecology of the tidewater silverside, Menidia peninsulae (Pisces: Atherinidae) from Santa Rosa Island, Florida. COPEIA.; no. 3 1987;:727-732.
The reproductive ecology of the tidewater silverside, Menidia peninsulae , was studied during 1982-83 along the shoreline of Santa Rosa Island, Florida. Adult Menidia were observed at low tide spawning on a red alga, Ceramium byssoideum . Pinfish, Lagodon rhomboides , were noted preying upon newly spawned Menidia eggs. The annual reproductive cycle of M. peninsulae extended from Feb.-July with the highest spawning activity during March-June at water temperatures of 16.7-30.8 C. Spawning and subsequent hatching of larvae may have occurred in periodic pulses throughout the spring and early summer.
USA/Florida/Santa Rosa Island/reproduction/spawning/reproductive cycle/Menidia peninsulae/seasonal variations/ASW/USA/Florida/Santa Rosa I./CSA Life Sciences Collection.

1349. Small LF, Huh CA (Performer: Oregon State Univ., Corvallis. School of Oceanography. Funder: Department of Energy, Washington, DC.) DOE (Department of Energy) West Coast Basin Program, California Basin Study: Progress Report 4, (July 1986-June 1987). ; 1987. Report No.: DOEER603403. 54p. Portions of this document are illegible in microfiche products. PC A04/MF A01 Contract: FG0585ER60340.
The overall objective of our research is to understand the transport pathways and mass balances of selected metabolically active and inactive chemical species in the Santa Monica/San Pedro Basins. One focus is to examine the role of zooplankton and micronekton in the cycling and remineralization of chemical materials in the Southern California Bight, with particular reference to C, N and certain radionuclides and trace metals. A second focus is to examine these same radionuclides and trace metals in other reservoirs besides the zooplankton (i.e., in seawater, sediment trap material and bottom sediments). Knowledge of the rates, routes and reservoirs of these nuclides and metals should lead to a cogent model for these elements in Santa Monica/San Pedro Basins. 28 refs., 13 figs., 7 tabs. (ERA citation 13:025095).
California/Baseline Ecology/Biomass/Buildup/Crustaceans/Environmental Transport/Feces/Lead 210/Metals/Mineral Cycling/Mineralization/Mineralogy/Nitrogen Cycle/Nutrients/Progress Report/Radioisotopes/Sediments/Spatial Distribution/Thorium 228/Thorium 234/Carbon Cycle/Coastal

Waters/Zooplankton/ERDA/520500/Path of pollutants/Southern California Bight/NTIS.

1350. SMITH PE. THE EFFECTS OF INTERNAL WAVES ON FISH SCHOOL MAPPING WITH SONAR IN THE CALIFORNIA CURRENT AREA. INTERNATIONAL COUNCIL FOR THE EXPLORATION OF THE SEA. RAPPORTS ET PROCES-VERBAUX DES REUNIONS, 170: 223-231, FEB. 1977 1977 NMFS, SOUTHWEST FISHERIES CENTER, LA JOLLA, CA 92037.
CALIFORNIA COAST/SOUND PROFILES/CALIFORNIA CURRENT/SOUND VELOCITY/ MAPPING/SONAR/FISH SCHOOLS/INTERNAL WAVES/FISH SCHOOL MAPPING/OceanAbstracts.

1351. Moore JP. The polychaetous annelids dredged by the U.S.S. Albatross off the coast of Southern California in 1904. I. Syllidae, Sphaerodoridae, Hesionidae and Phyllodocidae. Proceedings Academy of National Science, Philadelphia 1909;61:321-351
Sandy Subtidal Invertebrates, Annelids, Santa Barbara Island.

1352. BAILEY KM. RECENT CHANGES IN THE DISTRIBUTION OF HAKE LARVAE: CAUSES AND CONSEQUENCES. REPORT CALIF. COOP. OCEANIC FISH. INVEST. 21 1980:167-171 * PISCES ** SUPERCLASS GNATHOSTOMATA *** CLASS TELEOSTOMI **** DIVISION TELEOSTEI ***** SUPERORDER PARACANTHOPTERYGII ****** GADIFORMES ******* SUBORDER GADOIDEI ******** MERLUCCIIDAE ********* MERLUCCIUS PRODUCTUS.
ECOLOGY/POPULATION STUDY/POPULATION DYNAMICS/POPULATION DENSITY/LAR VAE, DECREASED ABUNDANCE, OVERFISHING, CALIFORNIA CURRENT/PACIFIC OCEAN/NORTHERN PACIFIC/CALIFORNIA CURRENT/DECREASED LARVAL ABUNDANCE & OFFSHORE DISTRIBUTION/Zoological Index.

1353. Baber DW, Coblentz BE. Density, home range, habitat use, and reproduction in feral pigs on Santa Catalina Island, California, USA. J. Mammal. 1986;67(3):512-525
Address: BEAK CONSULTANTS, INC., 317 SW ALDER, PORTLAND, OREG. 97204. A feral pig population on Santa Catalina Island, California, was studied for 17 months beginning in July 1980. A total of 136 pigs was marked and 188 recaptured during capture-recapture studies at two sites. Density was estimated to be 21 to 34 pigs/km2 (95% confidence interval). Dry season home ranges determined from radio-telemetry data were small and differed significantly between boars (2.04 .+-. 0.20 km2-95% ellipse; 2.44 .+-. 0.30 km2-harmonic mean method) and sows (0.90 .+-. 0.23 km2-95% ellipse; 1.46 .+-. 0.14 km2-harmonic mean method). During the dry season, pigs preferred cool moist canyon bottom, the result of both a physiological need for free water and behavioral responses to high environmental temperatures. Patterns of utilization during the wet season appeared to be primarily a function of food availability. Seasonality in time of birth was evident, with piglets born in winter and spring (1980) or spring and summer (1981). Litter size as measured by fetal counts was 5.00 .+-. 0.36 and sows averaged 0.86 .+-. 0.17 litters over a 12-month period. Most sows were older than 1 year when they first conceived, and litter size increased from puberty and peaked at 2-3 years of age. Intrauterine mortality of fetuses averaged 25% and piglet mortality was estimated to be 58% prior to weaning. Mortality rates appeared to be higher for piglets born in summer than in winter or spring.
seasonality/behavior/mortality/radio-telemetry/population biology/reproductive biology/feral populations/population density/habitat utilization/reproduction/Sus scofa/feral pig/Santa Catalina Island/terrestrial biology/mammalogy.

1354. Sawbridge JR. Tiaja insula, a new megophthalmine leafhopper from the Santa Barbara Channel Islands (Homoptera: Cicadellidae). Pan Pac Entomol, Oct 1975 1975;51(4):p.268-270

Article.
California/Santa Barbara Channel
Islands/Homoptera/Cicadellidae/AGRICOLA.

1355. Moser HG, Smith PE, Eber LE. Larval fish assemblages in the California Current region, 1954-1960, a period of dynamic environmental change. REP. CCOFI 1987;28:97-127.
Analysis of nearly 200 taxa of fish larvae from CalCOFI surveys in 1954-60 placed 30 taxa into nine recurrent groups. Two complexes of four recurrent groups each were formed by extensive interlinking among the group. A "northern" complex represents the subarctic-transitional fauna and the coastal pelagic fauna and its associates. A "southern" complex incorporates transitional, warm-water cosmopolite and eastern tropical Pacific taxa. One recurrent group was associated with the extensive continental shelf area of Bahia Sebastian Viscaino and the Punta Abreojos-Cabo San Lazaro Bight. There was much variability in the constitution of the recurrent groups within the complexes and some change in the degree of overlapping species distributions among the complexes over the seven-year period from 1954 to 1960. The northern-southern complex structure was similar to that described in a previous analysis of data from 1975.
fish larvae/ichthyoplankton surveys/ecological aggregations/environmental conditions/INE/California Current/ISE/California Current/IE/California Current/ASFA.

1356. Lamar DL, Merifield PM. Application of ERTS images to study of active and potentially active faults, Santa Barbara area, California. Geol. Soc. Am., Abstr. Programs. 1975;7(3):p.339
Calif. Earth Sci. Corp., Santa Monica, Calif., United-States The Geological Society of America, Cordilleran Section, 71st annual meeting, Los Angeles, Calif., March 25-27, 1975 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).
Santa Barbara County/California/geophysical surveys/remote sensing/San Andreas Fault/Big Pine Fault/Santa Ynez Fault/More Ranch Fault/Santa Cruz Island Fault/Santa Rosa Island Fault/United States/imagery/satellite/ERTS/applications/faults/movement/extent /active faults/GEOREF.

1357. Middaugh D, Hemmer M. Influence of environmental temperature on sex-ratios in the tidewater silverside, Menidia peninsulae (Pisces: Atherinidae). COPEIA.; no. 4 1987;:958-964.
Sex-ratios of Menidia peninsulae from Santa Rosa Island, Florida were studied during a 13 mo survey. Monthly samples revealed significant deviations from the expected sex-ratio of 1:1. During May-Oct., young-of-year (YOY) females comprised 70-94% of the individuals collected in the 32.5-62.4 mm standard length (SL) size-class. These females were the presumptive progeny of reproduction at cold to cool fluctuating temperatures (14.1-24.2 C), during Feb.-April. In contrast, collections of YOY Menidia during Nov.-April yielded 35-60% females. These individuals were the presumptive progeny of reproductive activity and sexual differentiation in May-Aug. at warm fluctuating water temperature of 23.5-31.5 C. Sex-ratios for combined (13 mo) collections of YOY were identical (69% females) to sex-ratios in older Menidia .
sex ratio/temperature/USA/Florida/Santa Rosa Island/sex determination/temperature effects/Menidia peninsulae/ASW/USA/Florida/Santa Rosa I./CSA Life Sciences Collection.

1358. (Performer: Oregon State Univ., Corvallis. Funder: Department of Energy, Washington, DC.) Role of Zooplankton and

Micronektron in the Cycling and Remineralization of Chemical Materials in the Southern California Bight: Progress Report, November 1985-June 1986. ; 1986. Report No.: DOEER603402. 14p. Portions of this document are illegible in microfiche products. PC A03/MF A01 Contract: FG0585ER60340.
A Progress Report on Grant FG05-85ER60340 has already been submitted to DOE, and is appended here. The appended report covers much of the work completed during the current contract period. Work on the just-completed May 1986 cruise samples is just beginning at the time of writing. Sediment traps deployed at two locations in Santa Monica Basin in October 1985 were recovered in February 1986. The traps have sequentially rotating cups set to collect material for 14 days each during the deployment period. We have finished radiochemical analyses on the sediment trap samples collected on the February 1986 Cruise. Pellet production rates for salps and euphausiids were reported earlier. The February cruise was principally a hydrographic and trap recovery cruise, and there was no time for pellet production rate experiments. Thus, all the February hauls are being analyzed to assess diel biomass estimates of selected size classes of zooplankton in the vicinity of the traps. 5 tabs. (ERA citation 13:025260).
California/Coastal Waters/Mineral Cycling/Mineralization/Oceanography/Pacific Ocean/Progress Report/Radioecological Concentration/Radium 228/Sampling/Sediment Water Interfaces/Traps/Lead 210/Particulates/Plutonium 239/Plutonium 240/Polonium 210/Sediments/Thorium 234/Thorium 238/Zooplankton/ERDA/580500/ERDA/520500/NTIS.

1359. Joergensen BB, Zawacki LX, Jannasch HW. Thermophilic bacterial sulfate reduction in deep-sea sediments at the Guaymas Basin hydrothermal vent site (Gulf of California). DEEP-SEA RES. (A OCEANOGR. RES. PAP. 1990;VOL. 37, NO. 4A:pp. 695-710
Dep. Ecol. and Genet., Univ. Aarhus, Ny Munkegade, 8000 Aarhus C, Denmark. Sulfate reduction was studied by radiotracer methods in geothermally heated mud retrieved from an area near black smokers in the southern trough of the Guaymas Basin at 2,000 m water depth. Sediment cores were taken by the submersible Alvin from three closely spaced sites. Steep hydrothermal gradients from 2.7 degree C at the surface up to 126 degree C at 74 cm depth were measured in the sediments. Extensive conversion of sulfate to H sub(2)S, with 4 mM SO sub(4)@)u2 super(-) and 15 mM H sub(2)S at 5 cm depth, indicated thermogenic reduction at depth in the upwards percolating hot pore fluid. Pyrite concentrations were high, 200 mu mol S cm super(-3), while FeS was low near detection limit. Bacterial sulfate reduction showed maximum rates of 30-140 nmol SO sub(4)@)u2 super(-) cm super(-3) d super(-1). While mesophilic sulfate reduction occurred near the cold (2-3 degree C) sediment surface, extremely thermophilic activity was observed in deeper, hot layers, the actual depth dependent on the temperature profile of the particular core. In the subsurface sediment at 10-45 cm depth, optimum temperatures for sulfate reduction increased from 63 to 83 degree C, with corresponding maximum temperatures of 66-90 degree C.
sulfate reduction/hydrothermal springs/sediment chemistry/bacteria/ ISE, California Gulf, Guaymas Basin/Oceanic Abstracts.

1360. BLASCO D. RED TIDE IN THE UPWELLING REGION OF BAJA CALIFORNIA. LIMNOLOGY AND OCEANOGRAPHY, 22(2): 255-263, MAR. 1977 1977
BIEGELOW LAB. FOR OCEAN SCIENCES, MCKOWN PR., W. BOOTHBAY HARBOR, ME 04575. CERATIUM/UPWELLING/RED TIDE/MEXICO WEST COAST/CALIFORNIA CURRENT/ GYMNODINIUM/DINOFLAGELLATES/BAJA CALIFORNIA COAST/GONYAULAX/ PLANKTON BLOOMS/C/FURCA/G/POLYEDRA/OceanAbstracts.

1361. Moore JP. The polychaetous annelids dredged by the U.S.S. Albatross off the coast of Southern California in 1904. IV. Spionidae to Sabellariidae. Proceedings Academy of National Science, Philadelphia 1923;65:179-259 Sandy Subtidal Invertebrates, Annelids, Santa Rosa Island, Santa Cruz Island.

1362. ANDERSON DW, GRESS F, MAIS KF, KELLY PR. BROWN PELICANS AS ANCHOVY STOCK INDICATORS AND THEIR RELATIONSHIPS TO COMMERCIAL FISHING. REPORT CALIF. COOP. OCEANIC FISH. INVEST. 21 1980: 54-61, ILLUSTR.
* PISCES ** SUPERCLASS GNATHOSTOMATA *** CLASS TELEOSTOMI **** DIVISION TELEOSTEI ***** SUPERORDER CLUPEOMORPHA ****** CLUPEIFORMES ******* SUBORDER CLUPEOIDEI ******** ENGRAULIDAE ********* ENGRAULIS MORDAX.
TECHNIQUES/ECOLOGICAL TECHNIQUES/POPULATION DENSITY MEASUREMENT/DEDU CTION FROM AVIAN PREDATOR POPULATION SIZE, CALIFORNIA/FEEDING/CARNIVO ROUS FEEDING/PREDATION/PREDATORS/PELECANUS OCCIDENTALIS CALIFORNICUS (AVES)/POPULATION RELATIONSHIPS/PACIFIC OCEAN/NORTHERN PACIFIC/CALI FORNIA CURRENT/POPULATION SIZE INDICATED BY AVIAN PREDATORS/Zoological Index.

1363. Baber DW, Coblentz BE. Diet, nutrition, and conception in feral pigs on Santa Catalina Island, California, USA. J. Wildl. Manage. 1987;51(2):306-317 Address: BEAK CONSULTANTS INC., 317 S W ALDER, PORTLAND, OREG. 97204. Dietary preference, nutrition, and their effect on animal condition and conception were examined in a feral pig (Sus scrofa) population on Santa Catalina Island, California. Diets were primarily herbaceous and varied seasonally. Fruits and forbs were the most preferred foods in dry season diets, whereas fruits, grasses, and forbs were most preferred during the wet season. Seasonal differences in diets reflected changes in availability or phenology of plants. Abrupt dietary shifts to annual grasses and forbs in winter were strongly influenced by precipitation patterns. Seasonal trends were apparent in acid detergent fiber (ADF), cellulose (CEL), and crude protein (CP) levels in the diet but not in acid detergent lignin (ADL), phosphorus (PHOS), gross energy (GE), and digestible energy (DE). Diets were characterized as high in fiber, low in energy, and seasonally deficient in protein. Kidney fat (KFI) and femur marrow fat (FMF) indices indicated pig body condition declined in summer and fall and improved in winter and spring. Optimal performance of pigs on Catalina appeared to be linked to the quantity of the oak (Quercus spp.) crop in early fall and the timing and duration of fall-winter rains. A seasonal pattern in breeding was evident, with conception apparently related to both nutrition and photoperiod. Fertility declined in late spring and summer as. photoperiod increased; onset of estrus and breeding in fall or winter were regulated by nutritional status of sows.
acid detergent lignin/fiber/cellulose/crude protein//phosphorus/energy/fat/season/estrus/fertility/feral populations/feral animals/diet/nutritional status/conception/feral pig/Sus scrofa/oak/Quercus spp./Santa Catalina Island/terrestrial biology/mammalogy.

1364. Brownell RL,J, Eber L, Longhurst AR, Perrin WF, Smith PE. A preliminary description of the California Current ecosystem including marine mammals. 1976;
TEXT/CROSS/ALLEN/FISH/ecosystem/interrelationships/MINERALS MANAGEMENT SERVICE.

1365. Yeaton RI. An ecological analysis of chaparral and

pine forest bird com munities on Santa Cruz Island and mainland California. Ecology Durham, Late Summer 1974 1974;55(5):p.959-973 Article.
California/AGRICOLA.

1366. Wolf P, Smith PE, Scannell CL. The relative magnitude of the 1986 Pacific sardine spawning biomass off California. REP. CCOFI 1987;28:21-29. The spawning biomass of the Pacific sardine off southern California during 1986 remains at or above 20,000 short tons. This determination was made using an egg production area method, which estimates the area over which eggs of a specified spawning biomass (20,000 short tons) would be expected to occur. The area method was developed from the egg production method, which estimates adult biomass from measurements of egg production in the spawning area and from the egg production rate of the adult population. The August 1986 survey extended from Point Conception to San Diego and ranged from the 10-fathom isobath to offshore approximately 25 miles. A total of 226 sardine eggs was collected at 59 of 330 stations. Spawning extended from Santa Barbara to Dana Pt. and out to the Santa Barbara Channel Is. and Santa Catalina I., and covered an estimated 955 n.mi super(2). This spawning area is 43% larger than the spawning area observed in 1985.
spawning populations/sardinops Caerulea/Clupeidae/biomass/INE/USA/California/ASFA.

1367. Junger A. Some thoughts on the structure of the continental borderland, southern California. Geol. Soc. Am., Abstr. Programs. 1975;7(3):p.331 U. S. Geol. Surv., Santa Barbara, Calif., United-States The Geological Society of America, Cordilleran Section, 71st annual meeting, Los Angeles, Calif., March 25-27, 1975 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).
California/structural geology/tectonics/south/continental borderland/Tertiary/United States/basins/upper Tertiary/Miocene/Pliocene/structure/faults/movement/epeirogeny/shortening/GEOREF.

1368. Beasley ME, Batteen ML, Mooers CN (Performer: Naval Postgraduate School, Monterey, CA). Changes in the California Current System Observed off Northern California during July-August 1986. Master's thesis. ; 1987. Report No.: NPS6888002. 73p. PC A04/MF A01.
Changes in the flow pattern of the California Current System (CCS) in a relatively short time period (approx. one week) are investigated. The offshore flow pattern changed orientation from southwestward to southward on a cool filament seen previously was no longer discernible. The nearshore flow pattern changed from a predominantly southward to a northward flow. The changes occurred between two OPTOMA cruises conducted in the summer of 1986. Two possible causes are investigated for these changes: 1) a change in a poleward undercurrent of the CCS, and 2) a change in the coastal winds. Analysis of cross sections of the poleward undercurrent indicate that it remained subsurface throughout the cruises. Analysis of wind data indicate that southward winds were the dominant wind pattern throughout the first cruise. Wind data from a moored buoy off Point Arena indicate northward winds (i.e., wind reversals) following the first cruise, which could be associated with the changes in the flow patterns of the CCS.
California/Coastal regions/Cooling/Cross sections/Directional/Filaments/Flow/Inshore areas/Meteorological data/North Direction/Offshore/Patterns/Reversible/Short range Time/Theses/Upwelling/Water flow/Wind/Summer/Ocean currents/Air

water interactions/Wind direction/California current/Undercurrents Oceanography/NTIS.

1369. Priede IG, Smith KL,, Amrstrong JD. Foraging behavior of abyssal grenadier fish: Inferences from acoustic tagging and tracking in the North Pacific Ocean. DEEP-SEA RES. (A OCEANOGR. RES. PAP. 1990;VOL. 37, NO. 1A:pp. 81-101 Univ. Aberdeen, Dep. Zool., Tillydrone Ave., Aberdeen AB9 2TN, UK. Abyssal grenadier fish Coryphaenoides yaquinae were Coryphaenoides armatus and observed arriving at baits deployed within view of a free-fall video vehicle (FVV) camera on the sea floor at two stations in the North Pacific, Sta. F32 degree 50'N, 124 degree W, 4400 m deep in the vicinity of the California current and Sta. CNP 31 degree N, 159 degree W, a 5900 m deep oligotrophic station. The number of fish within view of the camera increased to a mean maximum of 4.7 at 60 min at Sta. F and 11.8 by 400 min at Sta. CNP, a paradox in view of presumed lower fish population density at Sta. CNP. Fish that ingested transmitters moved away at radial velocities between 1 and 15 cm s super(-1), reaching a mean radius of 233 m by 370 min at Sta. F and 622 min at Sta. CNP. Fish appear to be active foragers with no evidence for a "sit and wait" foraging strategy. Grenadiers generally remained near the sea floor as they dispersed. Only one vertical movement to an altitude of ca 25 m was recorded and this comprised less than 0.2% of tracking time.
feeding behavior/abyssobenthic zone/sonic tags/tracking/acoustic data/Coryphaenoides armatus/I, North Pacific/OCEANIC ABSTRACTS.

1370. ANONYMOUS. RESEARCH ON THE MARINE FOOD CHAIN. PROGRESS REPORT, JULY 1974--JUNE 1975. PT. I. INTRODUCTION AND ACCOUNT OF WORK IN PROGRESS. PT. II. MANUSCRIPT REPORTS OF WORK CONCLUDED. PT. III. CRUISE SUMMARIES. U.S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION. ERDA ENERGY RESEARCH ABSTRACTS, 1(2): 232, FEB. 1976 1976
ANONYMOUS.
LIGHT/RESEARCH VESSELS/PRIMARY PRODUCTIVITY/ENVIRONMENTAL IMPACT/ MICROBIOLOGY/SEDIMENTS/NUCLEAR POWER PLANTS/THERMAL POLLUTION/ COOLING WATERS/PHYTOPLANKTON/PACIFIC OCEAN NORTH/POPULATION DYNAMICS/PLANKTON/FOOD CHAINS/ABSTRACT ONLY/SOUTHERN CALIFORNIA BIGHT/1971-74/PHOTOBIOLOGY/SAN ONOFRE/OceanAbstracts.

1371. Moore JP. The polychaetous annelids dredged by the U.S.S. Albatross off the coast of Southern California in 1904. III. Euphrosinidae to Goniadidae. Proceedings Academy of National Science, Philadelphia 1911;63:234-318 Sandy Subtidal Invertebrates, Annelids, Santa Rosa Island, Santa Barbara Island.

1372. ALVARINO A. THE RELATION BETWEEN THE DISTRIBUTION OF ZOOPLANKTON PREDATORS AND ANCHOVY LARVAE. REPORT CALIF. COOP. OCEANIC FISH. INVEST. 1980;21:150-160
* PISCES ** SUPERCLASS GNATHOSTOMATA *** CLASS TELEOSTOMI **** DIVISION TELEOSTEI ***** SUPERORDER CLUPEOMORPHA ****** CLUPEIFORMES ******* SUBORDER CLUPEOIDEI ******** ENGRAULIDAE ********* ENGRAULIS MORDAX.
FEEDING/CARNIVOROUS FEEDING/PREDATION/PREDATORS/ZOOPLANKTON, COMPOSITION SIZE & DISTRIBUTION, CALIFORNIA CURRENT/ECOLOGY/POPULATIO N STUDY/POPULATION DYNAMICS/LARVAL ABUNDANCE IN RELATION TO ZOOPLANKTON PREDATORS/CALIFORNIA CURRENT/PACIFIC OCEAN/NORTHERN PACIFIC/ZOOPLANKTON PREDATORS DISTRIBUTION IN RELATION TO LARVAL ABUNDANCE/Zoological Index.

1373. Baber DW. Ecology of feral pigs on Santa Catalina Island [dissertation]. : Oregon State University; 1085. 101. A feral pig population on Santa Catalina Island, California,

was studied for 17 months beginning in July 1980. Density was estimated to be 21 to 34 pigs/km('2) (95% confidence interval) using capture-recapture techniques. Dry season home ranges determined from radio-telemetry data were small and differed significantly between boars and sows. Patterns of habitat use according to vegetative community, topographic position, slope, aspect, elevation, vertical distance to water, and horizontal distance to water were examined. During the dry season, pigs preferred cool moist canyon bottoms, the result of both a physiological need for free water and behavioral responses to high environmental temperatures. Patterns of utilization during the wet season appeared to be primarily a function of food availability. Diets were primarily herbaceous, although small amounts of insects and vertebrate matter were eaten, and varied seasonally. Fruits and forbs were the most preferred foods in the dry season, while fruits, grasses and forbs were most preferred during the wet season. Seasonal differences in diets reflected changes in availability and phenology of plants. Seasonal trends were apparent in acid detergent fiber, cellulose, and crude protein levels in the diet, but not in acid detergent fiber, phosphorus, gross energy, digestible energy, protein digestibility and cellulose digestibility. Diets were characterized as high in fiber, low in energy and seasonally deficient in protein. Kidney fat and femur. marrow fat indices indicated pigs declined in body condition in summer and fall, and improved in winter and spring. Optimal performance of pigs on Catalina appeared to be linked to the quantity of the acorn crop in early fall and the timing and duration of fall-winter rains. A seasonal pattern in breeding was evident, with conception apparently linked to both nutrition and photoperiod. Fertility declined in late spring and summer as photoperiod increased; onset of estrus and breeding in fall or winter were regulated by nutritional status of sows. Liter size as measured by fetal counts was 5.00 (+OR-) 0.36 S.E., and sows averaged 0.86 (+OR-) 0.17 S.E. litters over a 12 month period. Most sows were older than 1 year when they first conceived, and litter size increased from puberty and peaked at 2-3 years of age. Intrauterine mortality of fetuses averaged 25% and piglet mortality was estimated to be 58% prior to weaning. Mortality rates appeared to be higher for piglets born in summer than in winter or spring.
exotics/feral pigs/diet/breeding/fertility/feral pigs/Santa Catalina Island/terrestrial biology.

1374. Miller DR. Mealybugs of San Clemente Island, California (Homoptera : coccoidea: Pseudococcidae). Panpac Entomol, Apr 1974 1974;50(2):p. 193-202 Article.
California/AGRICOLA.

1375. Roesler CS, Chelton DB. Zooplankton variability in the California Current, 1951-1982. REP. CCOFI 1987;28:59-96.
Seasonal and nonseasonal variations in zooplankton biomass in the California Current system are examined from CalCOFI measurements over the period 1951-82. Seasonal signals indicate that total biomass and degree of seasonality are greater in the northern regions, and springtime blooming is initiated in the northern nearshore regions up to two months earlier than in the southern and far offshore regions. Nonseasonal zooplankton biomass variability is examined using empirical orthogonal function (EOF) analysis. The timing of zooplankton biomass variations relative to variations in southward advection suggests that nonseasonal zooplankton biomass variations are controlled by two processes: (1) the response to local zooplankton populations to advection of zooplankton biomass--

the dominant process in the north--and (2) the response of local zooplankton populations to nutrient advection or the development of more favorable environmental conditions caused by changes in advection. Examination of the biogeographic boundaries of 15 of the dominant zooplankton species in the survey area during periods of strong current variations also indicate that these mechanisms control the low-frequency zooplankton variability. zooplankton/seasonal variations/biomass/environmental conditions/geographical distribution/INE/California Current/ISE/California Current/IE/California Current/ASFA.

1376. Howell DG. The East Santa Cruz Basin Fault, southern California continental borderland. Geol. Soc. Am., Abstr. Programs. 1975;7(3):p.327 U. S. Geol. Surv., Menlo Park, Calif., United-States The Geological Society of America, Cordilleran Section, 71st annual meeting, Los Angeles, Calif., March 25-27, 1975 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present). California/structural geology/faults/south/Santa Cruz Basin/Santa Cruz Island/East Santa Cruz Basin Fault/displacements/strike slip faults/extent/Cenozoic/United States/paleogeography/lithofacies/Eocene/Miocene/middle Miocene/Tertiary/upper Tertiary/basins/sedimentation/environment/paleocurrents/GEOREF.

1377. Sholes O, Beatty S. Influence of host phenology and vegetation on the abundance of Tamalia coweni galls (Homoptera: Aphididae) on Arctostaphylos insularis (Ericaceae). AM. MIDL. NAT 1987;118(1):198-204.
Tamalia coweni formed galls on immature leaves of Arctostaphylos insularis during the wet season on Santa Cruz Island, California. Because immature leaves were absent from twigs with fruit, the more nonfruiting twigs on a shrub, the more aphid galls on its leaves. Plant species richness, host plant size, host plant abundance, and proximity of neighboring host shrubs were not significantly related to gall abundance. Thus, a resource concentration effect was evident for the exploited host organ (immature leaves), but not for whole host plants. galls/host plants/phenology/Tamalia coweni/Arctostaphylos insularis/Aphididae/abundance/CSA Life Sciences Collection.

1378. Stabeno PJ, Smith RL (Performer: Oregon State Univ., Corvallis. School of Oceanography). Deep Sea Currents Off Northern California. ; 1987. 18p. Pub. in Jnl. of Geophysical Research, v92 nC1 p755-771, 15 Jan 87. PC A03/MF A01 Contract: N0001484C0218.
Current meters records from 14 moorings in the deep-sea basin (3000-4500 m deep) south of the Mendocino Fracture Zone are analyzed. All moorings had current meters between 200 m and 500 m above the bottom, and some extended to within 150 m of the surface. There were high vertical correlations between measurements on the same mooring within 1500 m of the bottom and within 800 m of the surface but almost no significant correlation in the horizontal. In the basin the presence of eddies appears strongest at depths below 1200 m. Several of the records exceed 3 years in length, and one extended for 5 years. Spectral analysis of these shows that most of the kinetic energy below 3000 m is in the temporal mesoscale (periods of 31 to 120 days), while the spectral estimates in the upper 1000 m are dominated by longer time scales. Only in the deep records is there a significant southward mean flow. Neither a mean California Current nor a poleward undercurrent is apparent in the shallower data (above 1250 m). The currents in the upper 500 m nearest the continental margin are influenced by the presence of cold filaments originating near Point Arena.

California/Deep oceans/Estimates/Filaments/Water flow/Fracture Mechanics/Low temperature/Mean/Measuring instruments/Mooring/North Direction/Records/Reprints/Scale/Spectra/Spectrum analysis/Time/Flowmeters/Correlation/Oceanographic data/Vertical orientation/Horizontal orientation/Directional/Kinetic energy/Ocean currents/Eddies Fluid mechanics/Ocean basins/NTIS.

1379. Silber GK, Newcomer MW, Perez-Cortes M H. Killer whales (Orcinus orca) attack and kill a Bryde's whale (Balaenoptera edeni). CAN. J. ZOOL./J. CAN. ZOOL 1990;VOL. 68, NO. 7:pp. 1603-1606
Inst. Mar. Sci., Univ. California, Santa Cruz, CA 95064, USA. On 3 May 1988, we observed a group of killer whales that pursued, killed, and partially consumed a Bryde's whale in the northern Gulf of California, Mexico (31 degree 01'N, 114 degree 15'W). The attack was observed from 06:54 to 08:53 while circling in a single-engine aircraft at an altitude of 160 m. The group comprised about 15 killer whales, including two adult males and at least two calves. Females and (or) subadult males pressed the attack most intently. The killer whales tore skin and blubber from the right flank of the Bryde's whale, and on 11 occasions the killer whales swam onto the head or back of the Bryde's whale, which hindered its breathing. The respiration intervals of the Bryde's whale were short and irregular, and blow rates differed significantly from those of undisturbed Bryde's whales. Fatiguing the whale may have facilitated an easier kill by asphyxiation. After the death of the Bryde's whale, the two adult male killer whales surfaced slowly about 200-300 m away from the remainder of the group, which presumably fed on the submerged Bryde's whale carcass.
Orcinus orca/Balaenoptera edeni/aggressive behavior/predation/feeding behavior/mortality/ISE, California Gulf/Oceanic Abstracts.

1380. HAURY LR. A COMPARISON OF ZOOPLANKTON PATTERNS IN THE CALIFORNIA CURRENT AND NORTH PACIFIC CENTRAL GYRE. MARINE BIOLOGY, 37(2): 159-167, AUG. 31, 1976 1976
WHOI, MAIN ST., WOODS HOLE, MA 02543.
PACIFIC OCEAN NORTH/HORIZONTAL DISTRIBUTION/SPATIAL DISTRIBUTION/ CALIFORNIA CURRENT/ZOOPLANKTON/NORTH PACIFIC CENTRAL GYRE/COMMUNITY STRUCTURE/SMALL SCALE/OceanAbstracts.

1381. Moore JP. The polychaetous annelids dredged by the U.S.S. Albatross off the coast of Southern California in 1904. I Polynoidae, Aphroditidae, and Segaleonidae. Proceedings Academy of National Science, Philadelphia 1910;62:328-402
Sandy Subtidal Invertebrates, Annelids, Santa Barbara Island, Santa Rosa Island, Santa Cruz Island.

1382. GORDON M, KNAUER GA, MARTIN JH. MYTILUS CALIFORNIANUS AS A BIOINDICATOR OF TRACE METAL POLLUTION: VARIABILITY AND STATISTICAL CONSIDERATIONS. MARINE POLLUT. BULL. 11(7) 1980: 195-198, ILLUSTR.
* MOLLUSCA ** BIVALVIA *** PTERIOMORPHIA **** ORDER MYTILOIDA ***** MYTILACEA ****** MYTILUS CALIFORNIANUS.
ANIMALS & MAN/POLLUTION/CHEMICAL POLLUTION/TRACE METALS, BIOINDICATOR, CALIFORNIA (MARINE)/BIOCHEMISTRY/CHEMICAL COMPOSITION/ POLLUTANT CONTENT/ENVIRONMENTAL FACTORS/CHEMICAL ENVIRONMENT/INORGAN IC CHEMICALS/PACIFIC OCEAN/NORTHERN PACIFIC/SOUTHERN CALIFORNIA BIGHT/TRACE METAL POLLUTANT BIOINDICATOR/Zoological Index.

1383. Bachman WR. Paleogene conglomerates from Point Arena, California, through Valle de las Palmas, Baja California [dissertation]. San Diego, CA: San Diego State University; 1984.

253.
sedimentation/paleogeography/stratigraphy/Paleogene/provenance indicators/rhyodacite porphyry/volcanic belts/reconstruction conglomerate/Baja California/Southern California/Point Arena/Valle de las Palmas/San Nicolas Island/Sierra Madre Basin/Piru Basin/Point Reyes/Point Lobos/Garcia Mountain/stratigraphy/historical geology.

1384. Cox JL. DDT in marine plankton and fish in the California current. Calif Coop Oceanic Fish Invest Rep, June 1972 (Pub. 1973) 1973;16:p.107-111 Article.
California/California Current/AGRICOLA.

1385. Spies RB, Bauer JE, Hardin D. Stable isotope study of sedimentary carbon utilization by Capitella spp.: Effects of two carbon sources and geochemical conditions during their diagenesis. MAR. BIOL 1989;101(1):69-74. Two experiments were conducted to determine the effect of the type of sediment organic matter and geochemical conditions during diagenesis on the stable carbon isotope ratio delta super(13)C of the deposit-feeding polychaete worms Capitella spp. Laboratory experiments showed delta super(13)C values of -13.5 to -13.9 ppt for worms grown on fresh and aged kelp, Macrocystis pyrifera . Field experiments on worms in the Santa Barbara Channel, California (USA), in 1986 revealed more negative delta super(13)C values (to -19 ppt) when oil and kelp were added to sediments.
animal nutrition/diets/Polychaeta/Capitella/sediment composition/organic carbon/geochemistry/diagenesis/kelps/carbon cycle/INE/Santa Barbara Channel/oil seepages/ASFA.

1386. Hawkins JW, Divis AF. Petrology and geochemistry of mid Miocene volcanism on San Clemente and Santa Catalina islands and adjacent areas of the southern California borderland. Geol. Soc. Am., Abstr. Programs. 1975;7(3):p.323-324
Scripps Inst. Oceanogr., Geol. Res. Div., La Jolla, Calif., United-States; Univ. Calif., Dep. Geol. Sci. The Geological Society of America, Cordilleran Section, 71st annual meeting, Los Angeles, Calif., March 25-27, 1975 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).
California/petrology/igneous rocks/volcanic/Miocene/south/San Clemente/Santa Catalina/United States/volcanic rocks/middle Miocene/andesite/dacite/rhyolite/tholeiite/geochemistry/genesis/crystallization /textures/phenocrysts/GEOREF.

1387. Smith R, Bidigare R, Prezelin B, Baker K, Brooks J. Optical characterization of primary productivity across a coastal front. MAR. BIOL 1987;96(4):575-591.
This study details the primary productivity and optical properties of a frontal region in July 1985 along 35 degree 50'N in the Southern California Bight which is shown to be consistent with the concurrent high-performance liquid-chromatography pigment-analysis. The authors describe here a "quasi-synoptic" shipboard bio-optical sampling strategy across a frontal region as an example of time-corrected data for assessing phytoplankton production in highly variable ocean regions.
coastal waters/phytoplankton/primary production/measuring techniques/optical properties/vertical distribution/Southern California Bright/USA/ California/CSA Life Sciences Collection.

1388. Johnson JE, Wittmann PA, Mooers CN (Performer: Naval Postgraduate School, Monterey, CA). Hydrographic Data from the OPTOMA (Ocean Prediction Through Observation, Modeling and

Analysis) Program: OPTOMA23, 9-19 November 1986. Progress rept. Nov 86-Sep 87. ; 1988. Report No.: NPS6888001. 95p. The OPTOMA (Ocean Prediction Through Observation, Modeling and Analysis) Program, seeks to understand the mesoscale (fronts, eddies, and jets) variability and dynamics of the California Current System (CCS) and to determine the scientific limits to practical mesoscale ocean forecasting. OPTOMA 23 is the last of the OPTOMA surveys and it is unique in that this was the first effort to integrate concurrent satellite, drifting buoy, ship, and aircraft data in a comprehensive oceanographic, meteorological, and acoustical study of the CCS. Specific goals of the airborne surveys were to: provide synoptic data for objective analysis of various parameters (e.g., SST from AXBT and PRT-5, mixed layer depth, thermal structure); provide initialization, boundary condition updating, and verification fields for dynamical model forecasts; and coordinate the observational strategy of the R/V POINT SUR by using near real time analyses to vector the ship into areas of interesting mesoscale activity.
Predictions/Acoustic data/Aerial reconnaissance/Boundaries/Buoys/California/Depth/Drift/Fluid dynamics/Forecasting/Mixed layer Marine/Oceans/Predictions/Real time/Thermal properties/Meteorological data/Data acquisition/Spaceborne/Airborne/Shipboard/Fronts Oceanography/Eddies Fluid mechanics/Jet flow/Salinity/Sea water/Ocean models/Ocean currents/Oceanographic data/Ocean temperature/OPTOMA project/California current/Mesoscale ocean forecasting/NTIS.

1389. HAURY LR. SMALL-SCALE PATTERN OF A CALIFORNIA CURRENT ZOOPLANKTON ASSEMBLAGE. MARINE BIOLOGY, 37(2): 137-157, AUG. 31, 1976 1976 WHOI, MAIN ST., WOODS HOLE, MA 02543.
SAMPLING METHODS/ZOOPLANKTON/CALIFORNIA CURRENT/GUADELUPE ISLAND/ BAJA CALIFORNIA COAST/VERTICAL DISTRIBUTION/HORIZONTAL DISTRIBUTION/OceanAbstracts.

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INvertebrates, Sandy subtidal Santa Barbara Santa Catalina, Santa Rosa Islands, Santa Cruz Island.

1391. HEINBOKEL JF. EVALUATION OF TINTINNID GRAZING IN THE SOUTHERN CALIFORNIAN BIGHT. PROCEEDINGS INT. CONGR. PROTOZOOL. 5 1977: 362. ABSTR.
* PROTOZOA ** PHYLUM CILIOPHORA *** POLYHYMENOPHOREA **** SUBCLASS SPIROTRICHIA ***** OLIGOTRICHIDA ****** TINTINNIDA.
FEEDING/HERBIVOROUS FEEDING/GRAZING/QUANTITATIVE ESTIMATION, SOUTHERN CALIFORNIA BIGHT/DIGESTION & NUTRITION/NUTRITION/DIET/QUAN TITY OF FOOD CONSUMED/GRAZING EVALUATION, SOUTHERN CALIFORNIA BIGHT/E COLOGY/ECOLOGICAL ENERGETICS/ENERGY FLOW/GRAZING EVALUATION, SOUTH CALIFORNIA BIGHT/PACIFIC OCEAN/NORTHERN PACIFIC/SOUTHERN CALIFORNIA BIGHT/GRAZING EVALUATION/Zoological Index.

1392. Miller DR. Mealybugs of San Miguel Island, California (Homoptera: Coccoidea: Pseudococcidae). Panpac Entomol, July 1973 1973;49(3):p.264-269 Article.
California/Coccoidea/San Miguel Island/AGRICOLA.

1393. Tegner MJ, Breen PA, Lennert CE. Population biology of red abalones, Haliotis rufescens , in southern California and management of the red and pink, H. corrugata , abalone fisheries.

FISH. BULL 1989;87(2):313-339. Population dynamics of red abalones, Haliotis rufescens Swainson, were studied at Johnsons Lee, Santa Rosa Island, California from 1978 through 1982 and in 1984. Tagging studies were used to calculate the von Bertalanffy growth parameters. Size-frequency distributions were used to assess settlement rate and fishable stock, and to estimate the natural mortality rate. These results were employed in yield-per-recruit and egg-per-recruit analyses; similar calculations were made for pink abalones, H. corrugata Gray, using values from the literature. Analyses suggest that present sport and commercial minimum legal sizes allow for adequate egg production to maintain stock sizes; simple recruitment overfishing is not a satisfactory explanation for the sharp and continuing decline in landings of both species.
mollusk fisheries/fishery management/fishery biology/Haliotis rufescens/Haliotis corrugata/fisheries/Haliotis/USA/California/Santa Rosa Island/management/INE/USA/California/Santa Rosa Island/population dynamics/ASFA.

1394. Cole MR. Poway clasts, sandstone petrology, and palinspastic reconstruction of the southern California borderland. Geol. Soc. Am., Abstr. Programs. 1975;7(3):p.305
Texaco Inc., Los Angeles, Calif., United-States The Geological Society of America, Cordilleran Section, 71st annual meeting, Los Angeles, Calif., March 25-27, 1975 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).
Poway Formation/California/sedimentary petrology/sedimentary rocks/sandstone/Tertiary/south/Santa Ana Mountains/Santa Monica Mountains/Simi Hills/Peninsular Ranges/clastic rocks/terrigenous/composition/petrography/clasts/environmental analysis/paleogeography/United States/Eocene/Oligocene/reconstruction/palinspastic maps/lower Tertiary/GEOREF.

1395. Prezelin B, Bidigare R, Matlick H, Putt M, Ver HB. Diurnal patterns of size-fractioned primary productivity across a coastal front. MAR. BIOL 1987;96(4):563-574.
In July 1985, diurnal patterns of photosynthesis and pigmentation were characterized for whole water (> 0.4 mu m) and size-fractioned (> 5 mu m and 0.4 to 5 mu m) communities from three light depths sampled across a coastal thermal front in the Southern California Bight. Variations in chlorophyll a and accessory pigment-to-chlorophyll a ratios showed no obvious diurnal trends. Timing of peak photosynthetic potential (P sub(max)) and its coincidence with variations in light-limited rates of photosynthesis (alpha), as well as diurnal amplitudes in P sub(max) and alpha, often differed between size fractions sampled within the same community. Primary productivity was 20-fold greater on the cold water side, where > 5 mu m diatoms dominated the mixed layer and accounted for 80% of daytime productivity.
coastal waters/primary production/phytoplankton/photosynthesis/USA/California/pigments/Southern California Bright/diurnal variations/size/fractionation/content/CSA Life Sciences Collection.

1396. Fiedler PC (Performer: Naval Ocean Systems Center, San Diego, CA). Relationships between Remotely-Sensed Surface Properties and Subsurface Structure in the Ocean. Final rept. ; 1988. 50p.
The analyses of historical temperature-depth data from the California Current and recent surface and Expendable Bathythermograph(XBT) data from the Gulf of California have demonstrated that surface variables measurable by remote sensors do

provide information about subsurface structure. However, estimates of subsurface structure based on empirical relationships are valid only regionally (coastal areas of 100's of km) and are of limited reliability. A vertical model like the one developed here can be a powerful tool in studying the physical and biological mechanisms that produce empirical surface-subsurface relationships. Ultimately, such a model could serve as the basis for a scheme to maintain continuously-updated estimates of subsurface structure. The estimates would be nowcasted by the model using surface variables (e.g. surface temperature and color) and physical driving variables (e.g. winds, back radiation and cloudiness) monitored continuously by remote sensing.
California/Cloud cover/Coastal regions/Gulfs/Models/Oceans/Physical properties/Reliability/Subsurface/Surface temperature/Surfaces/Theses/Variables/Vertical orientation/Wind/Artificial satellites/Marine biology/Infrared radiation/Thermoclines/Ocean currents/Remote detectors/Ocean surface/Bathythermograph data/Physical oceanography/NTIS.

1397. O'Malley Wade S. California and its adjacent federal waters. Oceans '89OCEANS '89: THE GLOBAL OCEAN. VOLUME 1: FISHERIES, GLOBAL OCEAN STUDIES, MARINE POLICY AND EDUCATION, OCEANOGRAPHIC STUDIES 1989:pp. 103-111 Environ. Aff. Agency, State California, CA, USA.
California's stake in its adjacent federal waters potentially affects every facet of State business including legal, trade, economic, social, technological, environmental, and scientific interests. While it is too early for California to be making claims to the extended territorial sea or to be writing comprehensive ocean management plans for its adjacent federal waters, clearly the State does need to provide a means to incorporate its interests in those waters. California should, therefore, commend a task force to provide a clear accounting of California's interests in its adjacent territorial sea and EEZ, to evaluate its legal, fiscal, and institutional capabilities to manage those interests, and to recommend options for a State framework for effective management of its interests offshore.
Exclusive Economic Zone/ocean policy/resource development/environmen t management/coastal states/INE, USA, California/legal aspects/coas tal zone management/territorial waters/Oceanic Abstracts.

1398. HEWITT RP. DEVELOPMENT AND USE OF SONAR MAPPING FOR PELAGIC STOCK ASSESSMENT IN THE CALIFORNIA CURRENT AREA. NATIONAL MARINE FISHERIES SERVICE. FISHERY BULLETIN, 74(2): 281-300, APR. 1976 1976
NMFS, SOUTHWEST FISHERIES CENTER, LA JOLLA LAB., P.O. BOX 271, LA JOLLA, CA 92038. STOCK ASSESSMENT/PELAGIC FAUNA/MAPPING/CALIFORNIA CURRENT/ACOUSTIC SURVEYS/DATA PROCESSING/DATA ACQUISITION/SAMPLING METHODS/FISH SCHOOLS/SONAR/MEASURING METHODS/ACOUSTIC PROPERTIES/SONAR MAPPING/LOS ANGELES BIGHT/OceanAbstracts.

1399. Osburn RO. Bryozoa of the Pacific Coast of America, Part I. Cheilostomata - Anasca. . Allan Hancock Pacific Expedition 1950;14(1):1-270 Invertebrates, Sandy subtidal, Anacapa Island, Santa Rosa Island, Santa Cruz Island, Santa Barbara Island.

1400. Bardgette JJ. A deep-water platform in the Santa Barbara Channel. J. Pet. Technol. 1978;30(4):498-506
Address: Exxon Co.
This paper describes the construction, transportation, connection, launch, and erection of a deep-water platform in 850 ft of water in the Hondo field of the Santa Barbara Channel. All phases of

construction and the problems that were overcome are discussed. deep water platforms/construction/petroleum/offshore drilling/Santa Barbara Channel/Hondo Field/petroleum/engineering.

1401. Page HM, Hubbard DM. Temporal and spatial patterns of growth in mussels Mytilus edulis on an offshore platform: Relationships to water temperature and food availability. J. EXP. MAR. BIOL. ECOL 1987;111(2):159-179. Temporal and spatial (depth) patterns of shell growth were studied in the mussel Mytilus edulis in relation to water temperature and potential food availability, at an offshore oil platform, Holly (ARCO), in the Santa Barbara Channel, California. Length-specific growth rates were highest from late May to July and at a depth of 9 m. The time to achieve a length of 50 mm from recruitment was estimated at 6-8 months. Growth rates were not correlated with water temperature, using multiple regression and correlation analysis. Temporal variation in the growth of 20- and 35-mm mussels correlated with chlorophyll a concentration at time legs of 2 and 4 wk, respectively. food availability/temporal variations/spatial distribution/USA/California/Santa Barbara Channel/growth/temperature effects/Mytilus edulis/geographical distribution/INE/USA/California/Santa Barbara Channel/water temperature/ASFA.

1402. Campbell RH, Wolf SC, Hunter RE, Lee WHK, Ellsworth WL, Wagner HC, VeDder JG, Junger A. The Santa Barbara Channel region, a review. Geol. Soc. Am., Abstr. Programs. 1975;7(3):p.301-302
U. S. Geol. Surv., Menlo Park, Santa Barbara, Calif., United-States The Geological Society of America, Cordilleran Section, 71st annual meeting, Los Angeles, Calif., March 25-27, 1975 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present). California/oceanography/marine geology/Santa Barbara Channel/Channel Islands/Ventura Basin/Pacific Ocean/United States/basins/channels/interpretation/topography/structure/seismic surveys/continental shelf/sediments/fracture zones/GEOREF.

1403. Roos M. Possible climate change and its impact on water supply in California. Oceans '89OCEANS '89: THE GLOBAL OCEAN. VOLUME 1: FISHERIES, GLOBAL OCEAN STUDIES, MARINE POLICY AND EDUCATION, OCEANOGRAPHIC STUDIES 1989:pp. 247-249 Hydrol. Branch, California Dep. Water Resour., 1416 Ninth St., P.O. Box 942836, Sacramento, CA 94236-0001, USA.
Forecasts of historically large climate changes are being made by global climate modelers with warming of 3 to 8 degrees Fahrenheit (1.5 to 4.5 degree Celsius) by the middle of the next century. These changes, if they occur, would have profound impact on California's water resources. A substantial shift in runoff patterns would be expected, with loss of a large fraction of spring snowmelt. This shift will make it difficult or impossible to fill major multipurpose reservoirs once the flood control season is past, with losses in current water project water yields and hydroelectric power. The predicted rise in sea level would cause problems in the Sacramento-San Joaquin Delta, the hub of major water transfer in the state. There would be increased risk of levee failures in the Delta and a potential increase in salinity intrusion from the ocean which could affect water supplies of the central and southern portions of the state. climatic changes/hydrology/water supply/interactions/water resources/USA, California/greenhouse effect/runoff/reservoirs (water)/hydroelectric power/sea level/flooding/saline intrusion/Oceanic Abstracts.

1404. ALEXANDER GV. TRACE METALS IN SOUTHERN CALIFORNIAN MUSSELS. MARINE POLLUTION BULLETIN, 7(1): 7-9, JAN. 1976 1976 UNIV. OF CALIFORNIA AT LOS ANGELES, LAB. OF NUCLEAR MEDICINE AND RADIATION BIOLOGY, WESTWOOD, CA 90020.
TRACE ELEMENTS/METAL UPTAKE/DIGESTIVE ORGANS/CALIFORNIA COAST/ MUSSELS/WATER POLLUTION/MYTILUS/TRACE METALS/M/CALIFORNIANUS/AG/ZN/SOUTHERN CALIFORNIA BIGHT/CR/ CU/NI/PB/OceanAbstracts.

1405. Osburn RO. Bryozoa of the Pacific coast of North America Part 2. Cheilostomata-Ascophora . Allan Hancock Pacific Expeditions 1952;14(2):271-611

1406. HUI CA. UNDERSEA TOPOGRAPHY AND DISTRIBUTION OF DOLPHINS OF THE GENUS DELPHINUS IN THE SOUTHERN CALIFORNIA BIGHT. JOURNAL MAMMAL. 60(3) 1979: 521-527, ILLUSTR.
* MAMMALIA ** CETACEA *** ODONTOCETI **** DELPHINIDAE ***** DELPHINUS. FEEDING/FOOD AVAILABILITY/DISTRIBUTION WITHIN HABITAT, RELATIONSHIPS, CALIFORNIA (MARINE)/ENVIRONMENTAL FACTORS/PHYSICAL ENVIRONMENT/UNDER WATER TOPOGRAPHY, DISTRIBUTION, RELATIONSHIPS, CALIFORNIA (MARINE)/ECO LOGY/POPULATION STUDY/POPULATION DYNAMICS/POPULATION SIZE/AGGREGATI ON SIZE, INFLUENCING FACTORS, CALIFORNIA (MARINE)/HABITAT/DISTRIBUTIO N WITHIN HABITAT/INFLUENCING FACTORS, CALIFORNIA (MARINE)/PACIFIC OCEAN/NORTHERN PACIFIC/SOUTHERN CALIFORNIA BIGHT/AGGREGATION SIZE, DEPTH & LOCAL DISTRIBUTION, INFLUENCING FACTORS/Zoological Index.

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Neutralizing antibodies to Tillamook calicivirus (TCV) were found in sera collected from California sea lions (Zalophus c. californianus Lesson) in 1983 and 1984 and in sera collected from Steller sea lions (Eumetopias jubatus Schreber) in 1976 and 1985. The combined prevalence of antibodies for these two species was 10/228 = 4.38%. Titers ranged from 1:20 (five animals), to 1:40 (four animals), to 1:80 (one animal) by standard microtiter neutralization assay. The seropositive pinnipeds were dispersed widely along the margins of the eastern Pacific rim, from the Bering Sea to the Santa Barbara Channel. Antibodies to TCV were not found in sera collected from northern fur seals (Callorhinus ursinus L.), Pacific walruses (Odobenus rosmarus divergens Illiger), seals of the family Phocidae, or several cetacean species. Tillamook calicivirus was isolated originally in 1981 from dairy calves in Oregon; the finding of neutralizing antibodies in two widely distributed species of sea lions suggests the possibility of a marine origin for this agent. California sea lions/Zalophus californianus/Steller sea lions/Eumetopias jubatus/pinnipeds/northern fur seals/Callorhinus ursinus /Pacific walruses/Odobenus rosmarus divergens Illiger/seals/Phocidae/cetaceans/Bering Sea to the Santa Barbara Channel/marine biology/mammalogy/virology.

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INE/USA/California Undercurrent/turbulence measurement/kinetic energy/energy dissipation/bottom topography effects/coastal currents/physical oceanography/INE/USA/California/San Diego Trough/dynamical oceanography/ASFA.

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California/oceanography/geophysical surveys/structural geology/Santa Barbara Channel/Santa Ynez Range/Gaviota/El Capitan/Molino/South Elwood/continental shelf/United States/sediments/seismic surveys/profiles/folds/faults/Cenozoic/Miocene/Pliocene/Pleistocene/Holocene/st ructure/GEOREF.

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Tephritidae/new records/geographical distribution/host plants/USA/California/Santa Cruz I./CSA Life Sciences Collection.

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Acoustic detectors/Bibliographies/California/Cores/Drift/Drills/Heat transfer/Laboratories/Magnetic anomalies/Magnetic properties/Navy/Ocean bottom/Oceans/Operation/Rock/Sediments/Tectonics/Underwater acoustics/Seismic waves/Bottom bounce/Refraction/Magnetometers/Alaska/Sumatra/Marine geophysics/Symposia/Squid magnetometers/Paleomagnetism/Seismic refraction/Raitt R W/Vacquier V/NTIS.

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LIFE CYCLE & DEVELOPMENT/LIFE CYCLE/LARVA/GROWTH RATE, CALIFORNIA (MARINE)/DEVELOPMENT/GROWTH/GROWTH RATE/LARVAE, CALIFORNIA (MARINE)/PACIFIC OCEAN/NORTHERN PACIFIC/SOUTHERN CALIFORNIA BIGHT/L ARVAL GROWTH RATE/Zoological Index.

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Compact underwater color video, decompression computers, surface-supplied diving systems with communications, and microcomputers, are the tools currently being used by research scientists for Channel Islands National Park. Channel Islands National Park

(CINP), off the coast of southern California, encompasses five islands and the submerged lands out to 1.6 kilometers surrounding each of these islands. The islands include Santa Barbara, Anacapa, Santa Cruz, Santa Rosa, and San Miguel -- a total of 246,980 acres. Part of this mandate required the National Park Service to provide a series of biennial reports (through 1990) which would include: an inventory of all terrestrial and marine species, indicating their population dynamics, and probable trends as to future numbers and welfare, and recommendations as to what actions should be considered for adoption to better protect the natural resources of the park.
marine parks/marine resources/environmental surveys/marine technology underwater color video/decompression computers/Channel Islands National park/environnmental surveys/underwater research/California Channel Islands/Channel Islands National Park/Santa Barbara Island/Anacapa Island/Santa Cruz Island/Santa Rosa Island/San Miguel Island/engineering/marine biology/marine technology.

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carbon 13/INE/USA/Washington/INE/Santa Catalina Basin/chemical oceanography/ocean floor/sediment-water interface/benthic environment/dissolved oxygen/fossil foraminifera/carbon isotope ratio/layers/ASFA.

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California/stratigraphy/Holocene/modern/paleoclimatology/sediment ation/Santa Barbara Basin/United States/patterns/temperature/precipitation/rain/sedimentary structures/laminations/varves/thickness/tree rings/growth rings/data/19th century/20th century/planar bedding structures/environmental analysis/climate/Pacific Ocean/GEOREF.

1423. Roden GI, Fredericks WJ (Performer: Washington Univ., Seattle. School of Oceanography). North Pacific Ocean. Tradewind Region East of Hawaii, R/V Thomas G. Thompson: 25 September - 1 November 1972. STD Data Report. ; 1987. Report No.: CONTRIB1719. 619p.
PC A99/MF A01 Contracts: N0001467A0103, N0001484C0111.
During September and October 1972, scientists aboard the R/V Thomas G. Thompson studied the thermohaline and density structures in the

tradewind region east of the Hawaiian Islands. An additional hydrographic section was made from the working area to San Diego, Ca. A total of 300 stations were taken. The primary objectives of the field study in the tradewind region east of Hawaii were: 1) to investigate the mesoscale thermohaline and density structures in 2700 km high resolution sections across the tradewind region. 2) to determine the subtropical and doldrum fronts occuring at the boundaries of this region. 3) to study the mesoscale dynamic height and baroclinic flow perturbations in the tradewind region. 4) to assess the mesoscale and baroclinic flow structures across the California current between the subtropical gyre and the coast.
Autumn/California/Density/Depth/East Direction/Fronts Oceanography/Hawaii/Hydrography/Ocean currents/Salinity/Sea water/Structural properties/Temperature/Wind/High resolution/Coastal regions/Stratification/Marine meteorology/Fronts Meteorology/Thermal properties/North pacific ocean/Oceanographic data/Trade winds/Baroclinic flow/California current/Doldrums/Gyres Oceanography/NTIS.

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Computer Science Corp., Stennis Space Center, MS 39529-6000, USA.
The performances of a Rotronic humidity sensor and an Impulsphysik visibility sensor were evaluated in a marine environment. The main analysis focused on the Rotronic humidity sensor and Impulsphysik visibility sensor installed at the National Data Buoy Center's (NDBC) Coastal-Marine Automated Network (C-MAN) station at Pt. Arguello, California (PTGC1). A statistical evaluation was done for Aug. 1988 data that compared the dewpoint and visibility values at PTGC1 with surface observations from nearby Vandenberg Air Force Base (VBG). Results show that the Rotronic humidity sensor accurately depicted the marine environment. The mean dewpoint difference between the two sites was 1.5 degree C. The sensor performed quite well in fog, and importantly, sensor hysteresis was not evident. Rotronic humidity sensors installed at 11 NDBC stations (8 moored buoys and 3 C-MAN sites) were monitored for up to 9 months. The overall results were favorable, although there were isolated sensor failures. The Impulsphysik visibility sensor responded well in fog, and the data showed good correlation with the collocated relative humidity sensor. The visibility sensor operated in the field for 11 months without failure.
humidity/visibility/meteorological instruments/data buoys/sensors/ performance assessment/OCEANIC ABSTRACTS.

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SALINITY ANOMALIES/CALIFORNIA CURRENT/ANNUAL VARIATIONS/TEMPERATURE ANOMALIES/ABSTRACT ONLY/GEOPOTENTIAL ANOMALY/OceanAbstracts.

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Invertebrates, Sandy Subtidal, Anacapa Island, Ecology.

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FORAMINIFERANS AND PTEROPODS INFERRED FROM STUDIES ON LIVING FORMS IN THE GULF OF MEXICO AND ADJACENT WATERS. TRANSACTIONS GULF CST ASS. GEOL. SOCS 29 1979: 216-223, ILLUSTR. * MOLLUSCA ** GASTROPODA *** OPISTHOBRANCHIA **** ORDER THECOSOMATA. FEEDING/ECOLOGICAL NICHE, MICROPLANKTON, NORTH WEST ATLANTIC & EASTERN PACIFIC/DIGESTION & NUTRITION/NUTRITION/DIET/ECOLOGY/COMMUNITY/EC OLOGICAL NICHE/MICROPLANKTON, NORTH WEST ATLANTIC & EASTERN PACIFIC/L IFE HABIT/AQUATIC HABIT/PLANKTON/ECOLOGICAL NICHE, NORTH WEST ATLANTIC & EASTERN PACIFIC/ATLANTIC OCEAN/NORTH ATLANTIC/NORTH WEST ATLANTIC/GULF STREAM & SARGASSO SEA/ECOLOGICAL NICHES, MICROPLANKTON/ GULF OF MEXICO/PACIFIC OCEAN/EASTERN PACIFIC/CALIFORNIA CURRENT/Zoological Index.

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sedimentation/paleogeography/sedimentary petrology/environment Cretaceous/structural geology/submarine fans/Upper Cretaceous submarine environment/tectonics/continental shelf/sedimentary rocks/Mesozoic/sedimentary basins/tectonic controls/San Miguel Island/San Diego County/ geology/sedimentary petrology.

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Oil pollution of rivers, harbors, etc/Bibliography/Water/Pollution/Santa Barbara Channel/Bibliography/AGRICOLA.

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The OPTOMA (Ocean Prediction Through Observation, Modeling and Analysis) Program, seeks to understand the mesoscale (fronts, eddies, and jets) variability and dynamics of the California Current System (CCS) and to determine the scientific limits to practical mesoscale ocean forecasting. Specific goals of the airborne surveys were to: provide synoptic data for objective analysis of various parameters (e.g., SST from AXBT and PRT-5, mixed layer depth, thermal structure); provide initialization, boundary condition updating, and verification fields for dynamical model forecasts; and coordinate the observational strategy of the R/V Point Sur by using near real time analyses to vector the ship into areas of interesting mesoscale activity.
INE/California Current/hydrographic surveys/ocean currents/mesoscale features/oceanic eddies/oceanic fronts/jets/airborne sensing/OPTOMA/ASFA.

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Discussion and reply; for reference to paper by Truex, J. N., see Am. Assoc. Pet. Geol., Bull., Vol. 60, p. 65, 1976. B;
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Santa Barbara County/Los Angeles County/Orange

County/California/stratigraphy/Oligocene/paleogeography/south/Santa Monica Mountains/Santa Ana Mountains/Santa Barbara Basin/United States/interpretation/GEOREF.

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PC A22/MF A01 Contracts: N0001467A0103, N0001484C0111.
During Nov and Dec 1969 scientists aboard the R/V Thomas G. Thompson studied the thermohaline and density structures in the transition zones between the California current, the tradewind circulation, the outflow from the Gulf of California, and the north equatorial current. Most of the investigations were concentrated off Baja California, the Revilla Gigedos Island region, and across the mouth of the Gulf of California. Of the 254 STD stations planned, 249 were completed; four were lost and one was omitted, because the water in lee of Isla Clarion, Mexico was too shallow. The primary objectives of the field study were: 1) to investigate the mesoscale thermohaline and density structures in the transition zones associated with the outer boundaries of the California current. 2) to study the frontal structures in the Revilla Gigedos islands region, where the California current, the outflow from the Gulf of California, and the north equatorial current intermingle. 3) to determine the mesoscale thermohaline and baroclinic flow structure across the mouth of the Gulf of California by very high resolution hydrographic sections.
Autumn/Boundaries/California/Density/Depth/Equatorial regions/Mexico/North Direction/Pacific ocean/Salinity/Sea water/Structural properties/Temperature/Transitions/Water/Wind/High resolution/Hydrography/Thermal properties/Stratification/Fronts Oceanography/North Pacific Ocean/Ocean currents/Oceanographic data/California Gulf/Northeast Pacific Ocean/Trade winds/Ocean circulation/Baja California/Baroclinic flow/NTIS.

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* CILIOPHORA ** POLYHYMENOPHORA *** SUBCLASS SPIROTRICHA **** OLIGOTRICHIDA ***** TINTINNINA.
ECOLOGY/ECOLOGICAL ENERGETICS/TROPHIC STRUCTURE/GRAZING IMPACT, CALIFORNIA (MARINE)/COMMUNITY/COMMUNITY STRUCTURE/CALIFORNIA

(MARINE)/PACIFIC OCEAN/NORTHERN PACIFIC/SOUTHERN CALIFORNIA BIGHT/C
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U.S.A., San Francisco, CA, USA; San Diego State Univ. Conference:
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sedimentation/sedimentary rocks/processes/environmental
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Cretaceous/Cretaceous/clastic rocks/Santa Barbara County/San Miguel
Island/geology/sedimentary petrology.

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water/temporal/variations/surface motion/wind transport/alaska
current/zooplankton/Pieper/MINERALS MANAGEMENT SERVICE.

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text/chemical oceanography/Eganhouse/Venkatesan/diatomic
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sampling/California ocean/environments/spatial
distribution/nitrates/MINERALS MANAGEMENT SERVICE.

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CURRENT/DATA
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San Clemente Island/California/Santa Barbara Channel/AGRICOLA.

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The genus Triphoturus includes two known species: Triphoturus
nigrescens (Brauer, 1904) and Triphoturus mexicanus (Gilbert,
1890). For the latter species, a southern population and a northern
population may be distinguished on the basis of gill-raker counts.
Phenotypic variation in serial meristic data may be environmentally
induced in the northern population, accounting for differences
between specimens from the California Current region and from the
Gulf of California. The two species are described, together with
comments on their distributions, including the first records of
Triphoturus nigrescens in the Atlantic Ocean; here this species
possesses an Agulhas Subpattern of distribution. animal
morphology/Triphoturus nigrescens/Triphoturus
mexicanus/distribution records/Triphoturus/taxonomy/ASFA.

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1443. Olivier DA. Numerical Simulations of the California Current: Filament Formation as Related to Baroclinic Instability. Master's thesis. [dissertation] ; 1987. 70p.
Performer: Naval Postgraduate School, Monterey, CA
The California Current System, CCS, consists of four separate currents that are spatially and seasonally distributed of the west coast of the United States. They are: 1) the California Current, a southward flowing surface jet; 2) the California Undercurrent, a northward flowing sub-surface jet; 3) the Davidson Current, a poleward flowing surface jet north of Point Conception; and 4) the Southern California Countercurrent, a northward flowing surface current south of Point Conception in the California Bight. Offshore jets or filaments are a well observed phenomenon in the CCS. Their surface and subsurface structures as well as their spatial and temporal variability are well documented. The methods by which these filaments are formed is not as well understood as their structural form. The most common generation theories are: 1) variations in wind stress coupled with topographic irregularities, 2) dynamic instability, and 3) geostrophic turbulence. This thesis attempts to identify the factor(s) responsible for filament formation south of Cape Mendocino by numerically simulating the CCS using a two-layer, non-linear, primitive equation model. It is shown that baroclinic instability is the primary method by which filaments are formed in this region and that other factors such as barotropic instability, friction and nonlinearities can alter the characteristics of the fastest growing baroclinically unstable wave. Barometric pressure/California/Coastal regions/Dynamics/Equations/Fluids/Friction/Geostrophic currents/Jet flow/Mathematical models/Numerical analysis/South Direction/Stability/Stratification/Stresses/Structures/Subsurface /Theory/Theses /Topography/Turbulence/United states/Ocean waves/West Direction/Wind/Eddies Fluid mechanics/Layers/Nonlinear analysis/Ocean surface/Spatial distribution/Seasonal variations/Directional/Computerized simulation/Air water interactions/Structural properties/Filaments/Ocean currents/Ocean models/CCS California Current System/Instability/Baroclinic instability/Undercurrents Ocean currents/Countercurrents Ocean currents/NTIS.

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The ocean's response to atmospheric forcing and to forcing along the coast by Kelvin waves is examined in light of nearshore seasonal variability and the major 1982-1983 El Nino. In addition to driving the northeast Pacific gyre and local currents, the wind modifies the depth to the main thermocline, changing the apparent westward phase speed of Rossby waves excited by passing Kelvin waves. The amplitude of the passing Kelvin wave determines whether the Rossby wave depresses or raises the thermocline while propagating westward. Along the northeast Pacific coast from Oregon to Washington, model results that the wind raises the main thermocline during the 1982-1983 El Nino. Generally, the coastal response off Oregon and Washington appears to be strongly driven by the large-scale atmosphere, while along the California coast and south to the equator, the dominant El Nino signal has an oceanic origin.

El Nino phenomena/Kelvin waves/thermocline/wind pressure/INE/atmos
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structure/temperate zones/OCEANIC ABSTRACTS.

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HUXLEYI ***** DINOFLAGELLIDA ****** GYMNODINIUM SPLENDENS,
PERIDINIUM TROCHOIDEUM.
TECHNIQUES/PHYSIOLOGICAL TECHNIQUES/FLUORESCENCE RESPONSE
MEASUREMENT/MARINE PLANKTON PHOTOSYNTHETIC ANALYSIS/ECOLOGICAL
TECHNIQUES/DIGESTION & NUTRITION/NUTRITION/ENERGY SOURCES/PHOTOSYNT
HESIS/FLUORESCENCE RESPONSE MEASUREMENT TECHNIQUE/PACIFIC
OCEAN/NORT HERN PACIFIC/SOUTHERN CALIFORNIA BIGHT/PLANKTON
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USA/California/Santa Cruz Island/feral populations/grazing/plant communities/environmental degradation/sheep/CSA Life Sciences Collection.

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under Support of DOE, Office of Marine Environment: Final Report, 1967-December 1985. ; 1987. Report No.: DOEEV70134T11. 18p. Portions of this document are illegible in microfiche products. PC A03/MF A01 Contract: AS0376EV70134.
The studies have been basically aimed at a better understanding of the processes occurring at the sediment-water interface, the carbon budget in the ocean, the flux of the light elements, and the diagenetic changes of the sedimentary components. Recent research endeavors have focused on environmental problems relating to anthropogenic pollution of the southern California Bight as a result of petroleum exploration and production and shelf edge exchange processes and transport of carbon in the Atlantic shelf, slope and the rise. Brief summaries of research findings relating to southern California nearshore and offshore studies and to the Atlantic Shelf from this laboratory are presented with emphasis on the data generated within the last eight years. (ERA citation 13:006476). California/Carbon Cycle/Continental Shelf/Diagenesis/Environmental Impacts/Geochemistry/Organic Compounds/Research Programs/Sediment Water Interfaces/Coastal Waters/Sediments/Water Pollution/ERDA/520200/ERDA/580500/NTIS.

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The bathypelagic mysid, Gnathophausia ingens Dohrn, lives aerobically at oxygen partial pressures as low as 6 torr in the oxygen minimum layer off southern California. This study is concerned with the O sub(2) binding properties of this mysid's hemocyanin and the function of the pigment in O sub(2) uptake at low P sub(O2). The effect of temperature on in vivo hemolymph pH (Delta pH/ Delta t = -0.018) was measured from 2.5 to 12.5 degree C. Hemocyanin concentration was estimated to be 24 mg/l, corresponding to an O sub(2) binding capacity of about 0.3 mmol O sub(2)/l. Freezing of hemolymph samples significantly decreased the affinity and cooperativity of HcO sub(2) binding, necessitating the use of fresh hemolymph. The HcO sub(2) affinity was high (P sub(50) of 1.4 torr at 5.5 degree C, pH 7.87), allowing the loading of O sub(2) even at 6 torr. The cooperativity of HcO sub(2) binding was also high (n sub(50) = 3.5 at 5.5 degree C, pH 7.87); presumably allowing the pigment to function effectively as an O sub(2) transporter within the small P sub(O2) difference between the environment and the tissues. oxygen minimum layer/hemocyanins/oxygenation/bathypelagic zone/Gnat hophausia ingens/OCEANIC ABSTRACTS.

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1492. Bonnell M, Ford R. California sea lion distribution: A statistical analysis of aerial transect data. J. WILDL. MANAGE 1987;51(1):13-20. Sightings of California sea lions (Zalophus californianus) recorded on 23 aerial transect surveys of the Southern California Bight were pooled by 30' x 30' grid cells. California sea lions concentrate near their rookery islands and at specific open-water locations in summer. The center of their distribution shifts to the northwest in autumn and to the southeast in winter and spring, probably in response to prey availability.
USA/California/Southern California Bight/spatial distribution/habitat/food availability/Zalophus

californianus/INE/USA/California/Southern California Bight/distribution/seasonal variations/seasonal distribution/CSA Life Sciences Collection.

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Knowledge of the vertical distribution of eggs and larvae of the northern anchovy, Engraulis mordax, is needed for conducting research cruises designed to estimate the spawning biomass of that species. Ahlstrom's (1959) study of the vertical distribution of ichthyoplankton species off southern California and Baja California provided information on eggs and larvae of anchovy but was based on only 22 Leavitt net series taken from 1941 to 1955. None of these studies has used the more advanced multiple opening and closing net systems (Wiebe et al., 1976. Because of this the authors conducted a cruise during March-April 1980 aboard the Scripps Institution of Oceanography research vessel Ellen B. Scripps, using the MESSHAI system (Pommeranz et al., 1979) as the primary sampler. The report presents a detailed listing of data collected on that cruise. A separate paper providing an analysis of these data is in preparation.
Reproduction Biology/Nets/Sampling/Eggs/Larvae/Distribution Property/Samplers/Depth/Age/Tables Data/Biomass/Marine fishes/Oceanographic surveys/Southern California Bight/Northern anchovy/Engraulis mordax/NTIS.

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Cent. Invest. Biol. Baja California Sur, A.C. Apdo. Postal No. 128, La Paz, Baja California Sur 23060, Mexico.
The length of coastline colonized in the last 15 years by Sargassum muticum in the Mexican Pacific, is half of that reported for the same species during the decade 1963 to 1973, along the Pacific coast of North American. Given the higher mean seawater temperatures in the south of the alga's range, a better performance was expected. The year-round reproduction of S. muticum in the middle of the Baja California peninsula, as well as its ability to grow and reproduce at very wave-exposed sites, may promote further successful colonization southwards. coastal waters/Sargassum muticum/water temperature/sexual reproduction/ecological distribution/introduced species/ISE, Mexico/ distribution records/geographical distribution/colonization/exposed habitats/temperature effects/seaweeds/OCEANIC ABSTRACTS.

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regions/Hydrography/Entrainment/Layers/Mixing/Phytoplankton/South Direction/Chemicals/Flux Rate/Aquatic biology/Mean/Position Location/Ecosystems/Plankton/Distribution/Transmittance/Mixed layer Marine/Reprints/Temperature/Two dimensional/Wind/Ocean currents/Upwelling/Fronts Oceanography/Sea water/California Current/Wind stress/NTIS.

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Invertebrates, sandy, subtidal, intertidal, Ecology distribution, San Miguel Island, Santa Cruz Island.

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ON/PREDATORS/PISCES/MICROPLANKTON DENSITY RELATIONSHIP, CALIFORNIA CURRENT/ECOLOGY/POPULATION STUDY/POPULATION DYNAMICS/POPULATION DENSITY/PACIFIC OCEAN/NORTHERN PACIFIC/CALIFORNIA CURRENT/MICROPLAN
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San Clemente Basin. Diffusion was the predominant mode of transport for radiotracers in the short-term in situ experiments. The observed mobility of radiotracers was compared to that predicted with parameters determined in the laboratory. radioisotopes/sediment-water exchanges/diffusion/INE/San Clemente Basin/IS/Equatorial Pacific/deep water/geochemical cycle/ASFA.

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U. S. Geol. Surv., Menlo Park, Calif., United-States Analytic; Serial Discussion and reply; for reference to paper by Truex, J. N., see Am. Assoc. Pet. Geol., Bull., Vol. 60, No. 1, 1976. B; Bibliography and Index of Geology (1969-present). Los Angeles County/Ventura County/Orange County/California/structural geology/tectonics/structure/south/Santa Monica Mountains/Santa Ana Mountains/Santa Barbara Basin/faults/interpretation/igneous rocks/volcanic/sedimentary rocks/petroleum/Miocene/United States/GEOREF.

1528. Godden D, Hanna S, Scire J, Strimaitis D (Performer: ERT, Newbury Park, CA. Performer: Sigma Research Corp., Lexington, MA.
Funder: California State Air Resources Board, Sacramento.) Overwater Plume Dispersion Study. Final rept. ; 1987. Report No.: ERTPD569140, ARBR87306. 73p. See also Appendix, PB87-222386. Prepared in cooperation with Sigma Research Corp., Lexington, MA. Sponsored by California State Air Resources Board, Sacramento. PC A04/MF A01 Contract: ARBA416532.
The purpose of the study was to develop an air quality modeling methodology to simulate the impact of emissions from oil exploration and production activities in California coastal waters. The study included the collection of data in a field program, and the analysis of the data to determine a relationship between Gaussian dispersion coefficients and overwater transport distance and meteorological variable observed near the source and the shoreline. A plume of sulfur hexafluoride (SF6) and visible 'smoke' was released from an offshore location in the Santa Barbara Channel during onshore flow conditions, and the dispersion of the plume was documented by measuring SF6 concentrations at various distances downwind and by taking a variety of photographs. Experiments were conducted in the Santa Barbara Channel during two one-week period in 1986.
Flow visualization/Emission/Air pollution/Continental shelf/Santa Barbara Channel/Mathematical models/Sulfur fluorides/Air quality/California/Offshore drilling/Plumes/Atmospheric dispersion/NTIS.

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FIELD POPULATIONS. MARINE BIOL., BERL. 47(2) 1978: 191-197, ILLUSTR.
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FEEDING/PARTICULATE FEEDING/FEEDING RATES/DIGESTION & NUTRITION/NUTRITION/DIET/QUANTITY OF FOOD CONSUMED/FEEDING RATES, NORTHERN PACIFIC/ECOLOGY/ECOSYSTEM ENERGETICS/COMMUNITY ENERGETICS/PACIFIC OCEAN/NORTHERN PACIFIC/SOUTHERN CALIFORNIA BIGHT/Zoological Index.

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1533. Paduan JD. Response to wind stress and heating in the North Pacific surface layer. DISS. ABST. INT. PT. B - SCI. & ENG 1988;49(4). Upper ocean field data from two Fall experiments (STREX, 1980; MILDEX, 1983) are used to infer the oceanic response to wind stress and heating in the Northeast Pacific Ocean. STREX examined a region near Ocean Station P (50 degree N, 140 degree W) from thermistor chain moorings; MILDEX examined a region of the California Current System (33.5 degree N, 127 degree W). The budgets of heat and turbulent kinetic energy (TKE) reveal a strong role for advection in the STREX region. The budgets of heat and momentum reveal a similarly strong role for advection in the MILDEX region. Model currents show that the ocean responds to small-scale (tens of kilometers) variability in the winds.
vertical advection/wind stress/INE/INE/California Current/surface water/solar radiation/geostrophic flow/Ekman transport/numerical analysis/dynamical oceanography/ASFA.

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Pacific Ocean/geochemistry/organic materials/sediments/North Pacific/Santa Barbara Basin/composition/isotopes/nitrogen/N 15/ratios/N 15/N 14/pore water/ammonia/abundance/measurement/occurrence/GEOREF.

1535. Godden D, Hanna S, Scire J, Strimaitis D (Performer: ERT, Newbury Park, CA. Performer: Sigma Research Corp., Lexington, MA.
Funder: California State Air Resources Board, Sacramento.) Overwater Plume Dispersion Study: Appendix. Final rept. ; 1987. Report No.: ERTPD569140A, ARBR87307. 178p.
See also PB87-222378. Prepared in cooperation with Sigma Research Corp., Lexington, MA. Sponsored by California State Air Resources Board, Sacramento. PC A09/MF A01 Contract: ARBA416532.
The purpose of the study was to develop an air quality modeling methodology to simulate the impact of emissions from oil exploration and production activities in California coastal waters. The study included the collection of data in a field program, and the analysis of the data to determine a relationship between Gaussian dispersion coefficients and overwater transport distance and meteorological variable observed near the source and the

shoreline. The report is appendix and contains data taken during the study.
Air pollution/Emission/Continental shelf/Mathematical models/Flow visualization/Sulfur fluorides/Santa Barbara Channel/Air quality/California/Offshore drilling/Plumes/Atmospheric dispersion/NTIS.

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Distance from port and depth provided de facto refugia from harvest during the first century of modern exploitation, but recently few California nearshore demersal fisheries have been able to sustain high yields using traditional species-specific management strategies. Designated harvest refugia, or fisheries reserves, should now be evaluated as management tools to enhance or sustain these coastal fisheries. In other parts of the world, designated harvest refugia provide recruits to adjacent harvest zones, protect the genetic diversity of wild stocks, and serve as experimental controls for determinations of potential yield. This concept could be adapted to California's coastal ecosystems by applying accepted theories from ecology and conservation biology.
fishery management/marine fisheries/marine parks/INE, USA, California/Oceanic Abstracts.

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WASTE WATERS/SEWAGE/PHYTOPLANKTON/OUTFALLS/CALIFORNIA COAST/ NUTRIENTS/GROWTH RATES/FLUORESCENCE/COASTAL WATERS/SOUTHERN CALIFORNIA BIGHT/OceanAbstracts.

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ANIMALS & MAN/POLLUTION/CHEMICAL POLLUTION/TRACE METALS & CHLORINATE HYDROCARBONS, SOUTHERN CALIFORNIA BIGHT/BIOCHEMISTRY/CHEMICAL COMPOSITION/POLLUTANT CONTENT/PACIFIC OCEAN/NORTHERN PACIFIC/SOUTHE RN CALIFORNIA BIGHT/TRACE METAL & CHLORINATED HYDROCARBON CYCLING/Zoological Index.

1540. Basch LV, Engle JM. Aspects of the ecology and behavior of the stomatopod Hemisquilla ensigera californiensis (Gonodactyloidea: Hemisquillidae. Boll. Zool. In press
ecology/behavior Gonodactyloidea/Hemisquillidae/Hemisquilla ensigera/Santa Catalina Island/California Channel Islands/marine biology.

1541. Niiler PP, Poulain PM, Haury LR. Synoptic three-dimensional circulation in an onshore-flowing filament of the California Current. DEEP-SEA RES 1989;36(3A):385-405.
Hydrographic (CTD and XBT casts) and Lagrangian particle drift

(satellite-tracked mixed layer drifter) measurements taken off Southern California and northern Baja California in July 1985 are in the region where, historically, a stable, broad onshore flow is indicated in the 0/500 db relative dynamic topography. A 50 km wide onshore-flowing filament of cold and low-salinity water is resolved by the new measurements. Water mass properties (temperature, salinity ans spiciness) are used to trace the different water masses and describe the circulation in the surveyed region.
ocean circulation/oceanic divergences/INE/California Current/ISE/ California Current/XBTs/CTD observations/Lagrangian current measurement/water masses/oceanic eddies/geostrophic flow/hydrographic surveys/ASFA.

1542. MacDonald KB, Janes SD, Howden WJ, Jordan PD. Shell assemblages and biogenic sedimentary structures from the Santa Barbara Basin, California Borderland. Geol. Soc. Am., Abstr. Programs. 1976;8(6):p.990-991 Univ. Calif., Santa Barbara, Calif., United-States Analytic; Serial; Abstract B; Bibliography and Index of Geology (1969-present).
California/sedimentary petrology/sedimentary structures/Santa Barbara Basin/biogenic structures/lebensspuren/tubes/burrows/environmental analysis/interpretation/shell assemblages/Invertebrata/Mollusca/Brachiopoda/algae/fungi/United States/GEOREF.

1543. O'Hara JF. Comparison of Satellite-Derived Ocean Velocities with Observations in the California Coastal Region. [dissertation] ; 1987. 42p. Performer: Naval Postgraduate School, Monterey, CA
Satellite derived ocean surface velocity vectors in the California Current System (CCS) are compared with in situ hydrographic and Doppler data. The insitu data were acquired during the April 1981 phase of the Coastal Ocean Dynamics Experiment (CODE) experiment. In general, the satellite derived velocities agreed with the in situ data. Due to the baroclinic nature of the study region, the satellite vectors were found to be representative of the subsurface geostrophic flow. Although the number and concentration of the satellite vectors was small, these vectors were capable of resolving the mesoscale features located in the study region. Comparison of colocated data revealed that the in situ Doppler velocity measurements were approximately 1.5 times larger than the satellite derived velocity vectors. These results agree with a similar study conducted in an offshore region. Keywords: Remote sensing; Ocean currents; California current system; California coastal region; Theses.
California/Coastal regions/Fluid dynamics/Oceans/Remote detectors/Artificial satellites/Velocity/Theses/Doppler systems/Offshore/Geostrophic currents/Geostrophic wind/Subsurface/Satellite photography/Vector analysis/Flow fields/Cycles/Infrared photography/Error analysis/Measurement/Coastal regions/Ocean currents/Flow rate/Hydrographic surveying/NTIS.

1544. BLASKOVICH DD. A DRIFT CARD STUDY IN MONTEREY BAY, CALIFORNIA: SEPTEMBER 1971 TO APRIL 1973. MASS LANDING MARINE LABORATORIES. TECHNICAL PUBLICATION 73-04, 1973. 87 PP 1973 CALIFORNIA STATE UNIV., SAN JOSE, DEPT. OF NATURAL SCIENCES, 125 S. SEVENTH ST., SAN JOSE, CA 95114.
CURRENT DATA/CALIFORNIA CURRENT/DIURNAL VARIATIONS/WIND DRIFT CURRENTS/SEASONAL VARIATIONS/MONTEREY BAY/DRIFT MEASUREMENTS/DRIFT CARDS/OceanAbstracts.

1545. Wicksten M. Mainland and insular assemblages of benthic decapod crustaceans of southern California. D. M. Power. The California Islands: proceedings of a multidisiplinary symposium; Santa Barbara, CA. Santa Barbara, CA: Santa Barbara Museum of Natural History; 1980. p. p 357-368.

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Address: DEP. INVERTEBRATE ZOOL., NATL. MUS. NAT. HIST., SMITHSONIAN INST., WASHINGTON, D.C. 20560.
Color patterns of the shallow-water shrimps H. pictus and H. paludicola are formed by chromatosomes (usually termed chromatophores) located beneath the translucent exoskeleton. Development of color patterns is related to size (age) and sex. The color expressed is determined by the chromatosome pigment dispersion, arrangement and density. In populations with well-developed coloration (H. pictus from Cayucos, California [USA], 1976-1978, H. paludicola from Argyle Channel, San Juan Island, Washington, June-July, 1978), prominent coloration was a characteristic of maturing females, breeding females and some of the larger males. In the Morro Bay, California, population of H. paludicola (sampled 1976-1978), color patterns were poorly developed except in a few large females. In both species, most shrimp lose color at night because of pigment retraction in certain chromatosomes. In both species, there are 5 basic morphs: 1 transparent and 4 colored morphs. In the colored morphs, the color patterns are composed of bands, stripes and spots which appear to disrupt the body outline. Each color morph also has a common environmental color in its color pattern, e.g., the green of green algae, the whites and pinks of dead and living coralline algae, and various shades of tidepool litter. These shrimps are apparently under heavy predation pressure by fish. The color patterns probably. are camouflage against such visually-hunting predators.
fish predation/age/sex/chromatosome/pigments/camouflage/chromatophores /shrimps/Carid ea/Hippolytidae/Heptacarpus pictus/Heptacarpus paludicola/Cayucos/California /Argyle Channel/San Juan Island/Washington/Morro Bay/ California/marine biology.

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new species/Limidae/Limaria valdiviesae/Limatula macleani/Limatula californica/Plicacesta nasca/Limatuletta coani/ISE/taxonomy/ASFA.

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A 10-year study of the Avalon Hairstreak Strymon avalona is presented, including adult behavior, larval hostplant ecology, phenology, an predators and parasites. Despite the restricted distribution of S. avalona and its occasional sympatry with Strymon melinus on Santa Catalina Island, this study revealed few threats to either its biological integrity or habitat. Ecological data from other California Channel Islands and several mainland California localities is also included, as are some thoughts on the Avalon Hairstreak's possible evolutionary origin. Strymon avalona/ecology/USA/California/Santa Catalina Island/Lycaenidae/endemic species/CSA Life Sciences Collection.

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Acquisition/Basins Geographic/Marine climatology/Layers/Mixing/Mathematical models/Ocean currents/Image processing/California/Arrays/Mercury/Processing equipment/North Pacific Ocean/Minicomputers/Mixed layer Marine/Eddies Fluid mechanics/Interactions/Waves/Synthetic aperture radar/Wind/Oceans/Ocean models/Oceanography/Ocean waves/VAX II/750 computers/Satellite altimetry/SOMARS/Scripps Ocean Modeling and Remote Sensing/Remote sensing/NTIS.

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influencing the distribution, decomposition, and vertical flux of materials in the coastal ocean. We have been studying: (1) whether bacteria play a significant role in the decomposition of the organic particles sinking into the ocean's interior; (2) how important are bacteria in assimilating dissolved organic matter (DOM) into the particulate phase (particulate organic matter, POM); (3) by what biochemical strategies do bacteria solubilize the particulate organic matter, both in the upper mixed layer and in the ocean's interior; and (4) whether bacterial activity in the upper mixed layer influences the variability of new production. (Contract FG05-85ER60337. Portions of this document are illegible in microfiche products.).
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CALIFORNIA COAST/COASTAL CURRENTS/DISPERSION/PACIFIC OCEAN NORTHEAST/RIVER DISCHARGES/SATELLITE OBSERVATIONS/SURFACE WATERS/SUSPENDED PARTICLES/ABSTRACT ONLY/CALIFORNIA CURRENT/DAVIDSON CURRENT/EROSION/ERTS-1/ GYRES/MASS MOVEMENT/NEARSHORE WATERS/OceanAbstracts.

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offshore platforms/earthquakes/design/wave forces/structural dynamics Eastern Gulf of Alaska/Southern California/Santa Barbara Channel/Address: Woodward-Clyde Consultants, Houston, TX, USA.

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California/radiolarians/ecology/oceanography/continentalmargin/NorthAmericanPac ific/oceancurrents/El Nino/CaliforniaContinentalBorderland/PacificCoast/speciesdiversity/California Current/Spongaster/biomass/nutrients/planktonic taxa/Hickey/physical oceanography/MINERALS MANAGEMENT SERVICE.

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USA/California/Chaetoceros/Nitzschia/algal blooms/flocculation/seasonal variations/coastal waters/INE/USA/California/aggregates/formation/ASFA.

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Vaqueros Formation/San Onofre Breccia/Rincon Formation/California/sedimentary petrology/sedimentary rocks/conglomerate/breccia/sedimentation/Miocene/south/Channel Islands/Santa Cruz Island/Santa Rosa Island/San Miguel Island/controls/structural controls/tectonics/uplifts/lithofacies/provenance/United States/clastic rocks/terrigenous/GEOREF.

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Conference: The Geological Society of America, 99th annual meeting. San Antonio, TX, Nov. 10-13, 1986.
metamorphism/prograde metamorphism/P-T conditions/Catalina Schist/subduction zones/terranes/blueschist facies/greenschist facies/amphibolite facies/veins/metagabbro/metaigneous rocks/eclogite facies/Santa Catalina Island/geology/igneous petrology/metamorphic petrology.

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Ammonium excretion rates of eleven macroinvertebrate and five fish taxa were determined from a total of 324 in situ incubations conducted between October 1984 and August 1985 at 14 to 17 m depths

off Santa Catalina Island, California. Total ammonium excretion ranged from over 100 mu mol/h by the kelp bass Paralabrax clathratus to less than 0.1 mu mol/h by the gastropod Conus californicus . Weight-specific ammonium excretion generally ranged from 0.5 to 4 mu mol/g/h in invertebrates and from 3 to 7 mu mol/g/h in fishes.
excretion/population density/Paralabrax clathratus/Conus californicus/dry weight/size/diurnal variations/INE/USA/California/ammonia/ASFA.

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California/sedimentary petrology/sedimentation/Pliocene/Pleistocene/offshore/south/Santa Barbara Basin/United States/tectonics/changes of level/controls/structural controls/environment/marine/shelf/submarine canyons/submarine fans/provenance/deposition/cyclic/petroleum/GEOREF.

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The purpose of the paper is to characterize the major challenges to governments and to the public that are posed by the accelerated pace in oil development now taking place offshore California. In recent years, huge oil discoveries have been made off the South/Central Coast of California in the Santa Barbara Channel and in the Santa Maria Basin. A number of oil development proposals are now being considered by relevant federal, state, and local authorities. The article first characterizes the magnitude of the current oil build-up, placing it in historical perspective. Next, it describes the major issues posed by accelerated development, and the complex of federal, state, and local laws that govern offshore oil extraction.
Coasts/History/National government/State government/Local government/Law Jurisprudence/Geophysical prospecting/Sales/Leasing/Constraints/Land use/Drilling platforms/Petroleum industry/Maps/Reprints/Offshore drilling/Crude oil/Government policies/Economic development/California/Announcement bulletins/Oil recovery/NTIS.

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sensed surface wave imagery. The similarities and differences between refraction patterns produced by double vortices and by eddies is outlined. The double vortex and its generation by an episodic or tidal flow is investigated using Kashiwai's (1984) approach. An example of the related generation of a single vortex in the Alboran Sea by tidal flow in the Strait of Gibraltar is briefly discussed.
vortices/INE, Santa Barbara Channel/satellite sensing/infrared imagery/oceanic eddies/swell/wave energy/mesoscale features/MED, Alboran Sea/MED, Gibraltar Strait/nearshore dynamics/mathematical models/Oceanic Abstracts.

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CALIFORNIA CURRENT/ISOHALINE/ISOTHERMS/T-S DATA/UNDERCURRENTS/ABSTRACT ONLY/OceanAbstracts.

1571. Behrents KC. The comparative ecology and interactions between two sympatric gobies (Lythrypnus dalli and Lythrypnus zebra) [dissertation]. California, USA: University of Southern California; 1983. Unknown. The ecology of two sympatric gobies, Lythrypnus dalli and Lythrypnus zebra, at Santa Catalina Island, California was compared and the potential for interactions tested experimentally. Factors affecting the distribution and abundance of species were examined at three sites over two years. Abundance of fish was dependent upon the number of shelters available and not correlated to temperature, depth, or density of congeners. Densities of both species fluctuated seasonally in response to recruitment events and annual turnover of adult fish after spawning. Temporal separation was maintained between species by a two month lag in the initiation of spawning and recruitment. Both species occur in rocky subtidal habitats, however subtle differences in spatial preference within habitats were apparent. Lythrypnus dalli orient right-side up on horizontal surfaces, while L. zebra orient vertically or upside-down on the undersides of horizontal surfaces. Preference remained unchanged in the absence of the congener. Field experiments utilizing artificial habitats indicated no direct interference for habitat space between adult fish. Intraspecific interactions between adult and juvenile L. dalli occurred only when habitat space was limited. Dietary differences in type, number, size, and weight of prey reflect differential utilization of foraging areas between. species. Lythrypnus dalli fed primarily on zooplankton in the water column, while L. zebra picked prey from the benthic turf. Differences did not result from the active interference of one species by the other. In fact, L. dalli responded to the presence of its congener by increased utilization of benthic prey. This result, together with data collected from laboratory growth experiments, suggest that the potential fitness of L. dalli may be enhanced by the presence of L. zebra. The prediction that competition should be most intense among morphologically similar species is not supported by the results of this study. Interspecific differences in timing of spawning and settlement, habitat and prey utilization are maintained even in the absence of the suspected competitor. These ecological differences serve to minimize the potential for negative interactions between species, while evidence exists to suggest that L. dalli may benefit from its association with L. zebra. (Copies available exclusively from Micrographics Department, Doheny Library, USC, Los Angeles, CA 90089.).

sympatric species/shelters/spawning/recruitment/intraspecific competition/gobies/goby/Lythrypnus dalli/Lythrypnus/zebra/Santa Catalina Island/marine biology.

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I/Pacific/benthic boundary layer/radon isotopes/water analysis/water column/molecular diffusion/INE/Pacific/San Clemente Basin/radium/manganese/geochemistry/ASFA.

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California/petrology/igneous rocks/volcanic/sedimentary rocks/Miocene/Santa Cruz Island/United States/volcanism/sedimentation/pyroclastics/correlation/Blanca Formation/clastic rocks/terrigenous/volcanic ash/lithofacies/indicators/faults/displacements/basalt/andesite/dacite/textures /mineral composition/strike slip/composition/Santa Cruz Island Fault/GEOREF.

1574. Briggs K, Chu E. Trophic relationships and food requirements of California seabirds: Updating models of trophic impact. SEABIRDS. FEEDING ECOLOGY AND ROLE IN MARINE ECOSYSTEMS.; 1987; pp. 279-304
The California Current system comprises some of the world's most productive marine waters. From an oceanographic and fisheries standpoint this region is perhaps the best studied in the world, but the role of seabirds and other predators is only now emerging. In this chapter the authors apply new approaches to a familiar bioenergetics model to assess the impact of California coastal seabirds on marine prey populations. The model is based on comprehensive population studies done from mid-1975 through early 1978 in southern California, and 1980 through 1982 in central and northern California, (Briggs et al., 1981 a,b, 1984), as part of our work focusing on all seabird and marine mammal populations in habitats targeted for oil and gas leasing.
trophic relationships/food consumption/coastal waters/USA/California/bioenergetics/Aves/INE/California Current/ISE/California Current/CSA Life Sciences Collection.

1575. Jones ML, Swartz SL (Performer: Cetacean Research Associates, San Diego, CA. Funder: National Oceanic and Atmospheric Administration, Washington, DC.) Radio Telemetric Study and Aerial Census of Gray Whales during Their Southward Migration in the Channel Islands National Marine Sanctuary, January 1986. Final rept. ; 1987. 142p.

Sponsored by National Oceanic and Atmospheric Administration, Washington, DC. PC A07/MF A01 Contract: 50ABNF600067.
The Channel Islands National Marine Sanctuary (CIMMS) is a tract of ocean, about 1,252 n sq. m, encompassing the waters within 6nm of San Miguel, Santa Rosa, Santa Cruz. This island system is uniquely positioned in the Southern California Bight, being the first islands south of Point Conception where the mainland coast turns east toward Santa Barbara. From January 18 to February 4, 1986, a pilot study was conducted in the CINMS with the overall goal of producing baseline information on gray whales (Eschrichtius robustus) during the peak period of their southward migration. Strip-surveys were flown to determine the abundance, distribution, behavior, and resource use of gray whales in the CINMS.
Animal migrations/Census/Animal behavior/Spatial distribution/Abundance/Populations/Radio tracking/California/Coasts/Cetacae/Whales/Aerial surveys/Channel Islands/Gray whales/Baseline studies/Eschrichtius robustus/NTIS.

1576. Poulain PM, Niiler PP. Statistical analysis of the surface circulation in the California Current System using satellite-tracked drifters. J. PHYS. OCEANOGR 1989;VOL. 19, NO. 10:pp. 1588-1603
Scripps Inst. Oceanogr., Mail Code A-030, La Jolla, CA 92093, USA.
A kinematic description of the surface circulation in the southern California Current System is presented using the statistics of the 7-11 month long trajectories of 29 satellite-tracked mixed layer drifters. The drifters were released north of 30 degree N and traveled southward at an average speed of 3-4 cm/s along Baja California through an inhomogeneous field of mesoscale eddies of 15 cm/s rms variability. Lagrangian and Eulerian statistics of the variations about this mean southward drift are computed. Particle-pair statistics are used to study the relative dispersion of particles. The relative diffusivities depend on the initial separation and on the duration of drift.
INE, California Current/physical oceanography/ocean circulation/ocea n currents/current observations/drifting data buoys/Eulerian current measurement/Lagrangian current measurement/statistical analysis/Oceanic Abstracts.

1577. SMITH PE. SEASONAL AND GEOGRAPHIC CHARACTERISTICS OF FISHERY RESOURCES: CALIFORNIA CURRENT REGION -- VIII. ZOOPLANKTON. COMMERCIAL FISHERIES REVIEW. WASHINGTON, D.C., 34(5-6): 33-40, MAY-JUNE 1972 1972 NMFS, FISHERY-OCEANOGRAPHY CENTER, LA JOLLA, CA.
ZOOPLANKTON/ANNUAL CYCLES/BIOMASS/TEMPERATURE VARIATIONS/CALIFORNIA CURRENT/PLANKTON VOLUME VARIATIONS/OceanAbstracts.

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Legislation/Wildlife preservation/Santa Monica Mountains/California Channel Islands/conservation/resource management/policy.

1579. CDM I. Sludge disposal in the marine environment: A summary of experiences and effects as they pertain to the Southern California Bight. Prep. for South. Calif. Coastal Water Res. Proj., Long Beach, CA. Prep. by CDM, Inc., Pasadena, CA 1972;
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1580. Center for Coastal Marine Studies. Summary report 1975-78, marine mammals and seabird surveys of the Southern California Bight area. Executive summary. Years I-III. POCS Tech. Pap. No. 81-9. Prep. for U.S. Dep. Interior, Minerals Management Service, Pacific OCS Region, Los Angeles, CA. Prep. by Center for Coastal Marine Studies, Santa Cruz, CA 1981;:40.

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1581. Center for Marine Studies UoCSC. Marine mammal and seabird survey of the Southern California Bight area. Principal investigator's reports. Book 2. Seabirds. Final Rep. 1978C;III:313.
mammals/seabird/MINERALS MANAGEMENT SERVICE.

1582. Page M. Temporal variation in growth rate, body and gonad weight in a population of Mytilus edulis in the Santa Barbara Channel. J. SHELLFISH RES 1988;7(1):p. 129.
This study examined relationships between temporal variation in growth rate, body and gonad weight of Mytilus edulis and variation in water temperature and chlorophyll a concentration at an oil production platform located 3 km offshore of Goleta, California. Populations of 20 mm length mussels were enclosed monthly in cages at a depth of 2 m and bimonthly at depths of 9 m and 18 m. Growth rate of 20 mm mussels varied over time ranging from a low of 5.5 mm/mo in December 1984 to a high of > 9.0 mm/mo in late May 1985. Mussels grew from 20 to 50 mm in 3.7 to 7.0 mos. Growth rate was greatest at a depth of 9 m. Temporal variation in growth rate was positively associated with variation in chlorophyll a levels, but not water temperature. The results indicated that growth, reproduction, and nutritional condition of M. edulis may be enhanced in the area of higher phytoplankton biomass near Pt. Conception, California.
reproduction/chlorophylls/Mytilus edulis/growth/variability/INE/Santa Barbara Channel/environmental conditions/ASFA.

1583. McLean H. Block fault model of Santa Cruz Island. Am. Assoc. Pet. Geol., Pac. Sect., Misc. Publ. (24). Aspects of the geol. hist. of the Calif. Cont. Borderland. 1976:p.560-561
U. S. Geol. Surv., Menlo Park, Calif., United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
California/structural geology/faults/systems/southwest/Channel Islands/Santa Cruz Island/block/United States/GEOREF.

1584. Fishery Bulletin 1986;84(3)
See also PB86-225372. PC A12/MF A01.
Performer: National Marine Fisheries Service, Seattle, WA
Contents: Longevity and age validation of a tag-recaptured Atlantic sailfish, Istiophorus platypterus, using dorsal spines and otoliths; Age dependent fecundity, number of spawnings per year, sex ratio, and maturation stages in northern anchovy, Engraulis mordax; Some statistical techniques for estimating abundance indices from trawl surveys; Rates of increase in dolphin population size; Discrete-time difference model for simulating interacting fish population dynamics; Fecundity of northern shrimp, Pandalus borealis, (Crustacea, Decapoda) in areas of the Northwest Atlantic; Incidental dolphin mortality in the eastern tropical Pacific tuna fishery, 1973 through 1978; Distribution and reproductive biology of the golden king crab, Lithodes aequispina, in the eastern Bering Sea; A model of the drift of northern anchovy, Engraulis mordax, larvae in the California Current; Parasites of benthic amphipods: dinoflagellates. Age determination/Marking/Populations/Statistical analysis/Dolphins Mammals/Mathematical models/Shrimps/Crustacea/Fecundity/Crabs/Reproduction Biology/Parasites/Food habits/Pacific Ocean/Bering Sea/Marine fishes/Fisheries/Announcement bulletins/NTIS.

1585. Bakun A. Global climate change and intensification of coastal ocean upwelling. SCIENCE (WASH. 1990;VOL. 247, NO. 4939:pp.

198-201 Pacific Fish. Environ. Group, Southwest Fish. Cent., NMFS, NOAA, P.O. Box 831, Monterey, CA 93942, USA.
A mechanism exists whereby global greenhouse warming could, by intensifying the alongshore wind stress on the ocean surface, lead to acceleration of coastal upwelling. Evidence from several different regions suggests that the major coastal upwelling systems of the world have been growing in upwelling intensity as greenhouse gases have accumulated in the earth's atmosphere. Thus the cool foggy summer conditions that typify the coastlands of northern California and other similar upwelling regions might, under global warming, become even more pronounced. Effects of enhanced upwelling on the marine ecosystem are uncertain but potentially dramatic.
climatic changes/greenhouse effect/coastal upwelling/wind stress/IN E, USA, California/environmental impact/energy flow/nutrient cycles/ fog/air temperature/Oceanic Abstracts.

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CALIFORNIA CURRENT/CALIFORNIA COAST/CLIMATIC CHANGES/ATMOSPHERIC CIRCULATION/MASS TRANSPORT/SAN DIEGO/OceanAbstracts.

1587. Belfield WC, Helwig J, La Pointe PR, Dahleen WK. Monterey fractured reservoir, Santa Barbara Channel, California. AAPG annual convention with divisions SEPM/EMD/DPA. AAPG Bulletin 1983;76(3):421-422
Address: Arco Oil and Gas Co., Dallas, TX Conference: AAPG annual convention with divisions SEPM/EMD/DPA Dallas, TX, April 17-20, 1983.
oil fields/gas fields/reservoir properties/Monterey Formation/Monterey fractured reservoir/South Elwood Field/traps/structural traps/faults/offshore/fractures/breccia/clastic rocks/silica/stratigraphic breccia/coalescent-fracture breccia/fault breccia/pore pressure/brecciation/tar/Santa Barbara Channel/economic geology/energy sources/petroleum.

1588. Greene HG. Late Cenozoic geology of the Ventura Basin, California. Am. Assoc. Pet. Geol., Pac. Sect., Misc. Publ. (24). Aspects of the geol. hist. of the Calif. Cont. Borderland. 1976:p.499-529
U. S. Geol. Surv., Menlo Park, Calif., United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
Ventura County/California/areal geology/structural geology/stratigraphy/geophysical surveys/southwest/Ventura/Oxnard/Port Hueneme/offshore/Santa Barbara Channel/Anacapa Islands/folds/systems/synclinoria/style/anticlinal/faults/displac ements/thrust/ age/Miocene/Holocene/seismic surveys/United States/marine/reflection/tectonics/structure/evolution/Cenozoic/u nconformities/ geologic history/lithostratigraphy/Pliocene/GEOREF.

1589. Haury LR, Poulain PM, Mantyla AW, Venrick EL, Niiler PP (Performer: Scripps Institution of Oceanography, La Jolla, CA). FRONTS CRUISE: Leg I: 11 July 1985, Leg II: 12-23 July 1985. Data rept. ; 1986. Report No.: SIOREF8623. 135p. PC A07/MF A01
Contract: N0001485C0104.
The data in this report were collected from 1 to 23 July 1985 on the two legs of the FRONTS cruise aboard RV New Horizon of the Scripps Institution of Oceanography. The data were collected and processed by personnel of the Ocean Research Division (ORD), the Marine Life Research Group(MLRG), the Instituto Nacional de

Pesca(INP), the Secretaria de Marina, and the Centro de Investigacion Cientifica y de Educacion Superior de Ensenada (CICESE). The purpose of the cruise was to describe the vertical and horizontal structure and dynamics of the physical, chemical, and biological properties associated with a persistent, seasonally-recurring front in the California Current southwest of San Diego, California.
Data acquisition/Statistical data/Tables Data/Hydrography/Chemical properties/Physical properties/Oceanographic data/Cold fronts/FRONTS Cruise/Macrozooplankton/Biological Properties/NTIS.

1590. Koch H. Desiccation resistance of the supralittoral amphipod Traskorchestia traskiana (Stimpson, 1987). CRUSTACEANA 1989;VOL. 56, NO. 2:pp. 162-175
Coll. Educ., Univ. Maine, Orono, ME 04469, USA.
The present study concerns Traskorchestia traskiana , a nonsubstrate modifying talitrid amphipod inhabiting the supralittoral zone of rocky to muddy beaches from the Aleutians and western Alaska to northern Baja California. The purpose of this study was to investigate the desiccation resistance of T. traskiana over a wide range of temperatures, humidities and saturation deficits, to determine its activity and orientation behavior in a humidity gradient, and to correlate these results with some general observations on the animal's behavior in the field.
desiccation/Traskorchestia traskiana/intertidal environment/zoobenth os/beaches/ecophysiology/water balance/INE, North America/OCEANIC ABSTRACTS.

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FISH SCHOOLS/ECHOES/ACOUSTIC STRUCTURE/CALIFORNIA CURRENT/RESONANT SCATTERING/SWIMBLADDERS/OceanAbstracts.

1592. Belfield WC, Helwig J, La Pointe P, Dahleen WK. South Ellwood oil field, Santa Barbara Channel, California, a Monterey Formation fractured reservoir. C.M. Issacs, R.E. Garrison. Petroleum generation and occurrence in the Miocene Monterey Formation, California. ; 1983. 213-221.
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oil and gas fields/Monterey Formation/Sisquoc Formation/South Ellwood Field/offshore/petroleum/Miocene/Neogene/Tertiary/fractures/breccia/clastic rocks/chert/chemically precipitated rocks/dolostone/carbonate rocks/porcellanite/structural traps/traps/permeability/geopressure/reservoir rocks/X-ray data/opal/silica minerals/framework silicates/silicates/Santa Barbara Channel/economic geology/energy sources/petroleum.

1593. Tielking TA. Wind forcing of eddies and jets in the California Current system. 1988;
A high-resolution, multi-level, primitive equation ocean model is used to examine the response to wind forcing of an idealized flatbottomed oceanic regime along an eastern ocean boundary. A band of steady winds, either with or without a curl, is used as forcing on both an f-plane and a beta-plane. In addition, a stability analysis is made to determine if the necessary and sufficient conditions for instability processes to occur are satisfied. It is seen that when the wind driven coastal jet and undercurrent are

unstable (which occurs in the cases of wind with no curl), eddies and jets are generated. In the case of wind with curl, since the Davidson Current develops rather than the coastal jet and undercurrent, no eddies develop. A comparison of model results with available observations shows that both the time-averaged and instantaneous model simulations of the coastal jet, undercurrent and eddies are consistent with available observational data.
oceanic eddies/coastal jets/wind stress/ocean currents/coastal currents/nearshore dynamics/models/INE/California Current/ISE/California Current/ASFA.

1594. Junger A. Tectonics of the southern California Borderland. Am. Assoc. Pet. Geol., Pac. Sect., Misc. Publ. (24). Aspects of the geol. hist. of the Calif. Cont. Borderland. 1976:p.486-498
U. S. Geol. Surv., Menlo Park, Calif., United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
California/tectonophysics/plate tectonics/southwest/Santa Ines Mountains/Santa Monica Mountains/Santa Ana Mountains/offshore/United States/field studies/microplates/shear zones/experimental studies/models/claycake/faults/wrench/convergent/displacements/right lateral/effects/ridges/maps/tectonic/topographic/tectonics/structure/evolution/ Miocene/Pliocene/GEOREF.

1595. Love M, Axell B, Morris P, Collins R, Brooks A. Life history and fishery of the California scorpionfish, Scorpaena guttata , within the Southern California Bight. FISH. BULL 1987;85(1):99-116.
The life history of the California scorpionfish (S. guttata) in the Southern California Bight has been examined. Based on sportfish creel census data, the species was most abundant in the southern part of the Bight, particularly around Catalina, San Clemente, and the Coronado Islands. Trawl studies from 1974 to 1984 indicated that California scorpionfish populations varied considerably in abundance, with numbers peaking in 1982. Though the species usually associates with hard substrata, it was abundant over mud about the Palos Verdes Peninsula, site of a major sewage outfall. This anomalous abundance may have been due to the presence of large numbers of a prey species, the ridgeback prawn, Sicyonia ingentis , which was attracted to the nutrient-rich substrata. Female California scorpionfish lived to 21 years, males to 15. Females grew faster than males. Pacific Ocean/Southern California Bight/sport fishing statistics/fishery biology/Scorpaena guttata/life history/INE/USA/Southern California Bight/CSA Life Sciences Collection.

1596. Chen C. Topographic Influences in the California Current System. Master's thesis [dissertation]. ; 1986. 50p.
Performer: Naval Postgraduate School, Monterey, CA
A ten-level primitive equation numerical model is used to study the influence of the ocean bottom topography in the California Current System. Five different numerical experiments were integrated for 40 days after being initialized with a baroclinic along shore coastal jet representative of the observed coastal jet. By comparison with a flat bottom case, in Experiments 1 and 3, in which the topographic slopes face westward or northward, the topography appears to have stabilizing influences on the mean flow. In experiments 2 and 4, in which the topographic slopes face southward, the topographic beta-effect appears to be strong enough so that these two cases have already reached a quasi-steady state by 40 days. This is because in Experiment 2 and 4 the long,

nondispersive topographic Rossby waves are effective at transporting the eddy energy away from the source region near the coast. The resulting new mean flow appears to be stable.
California/Cliffs/Currents/Shores/Flow/Mean/Ocean models/Rossby waves/Topography/Water flow/Equations/Mathematical models/Jet flow/Numerical methods and procedures/Theses/North pacific ocean/Ocean currents/Ocean bottom topography/California Current/NTIS.

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BIOSTRATIGRAPHY/CALIFORNIA CURRENT/DEEP SEA CORES/FAUNA/LATE QUATERNARY/OceanAbstracts.

1598. Bennett AF, Dawson WR, Putnam RW. Thermal environment and tolerance of embryonic Western Gulls Larus occidentalis wymani. Physiol. Zool. 1981;54(1):146-154
Address: SCH. OF BIOL. SCI., UNIV. OF CALIFORNIA, IRVINE, CA. 92717. Thermal environment and tolerance of eggs and embryos of western gulls (L. occidentalis wymani) on San Nicolas Island, California [USA], were determined. Incubated egg temperature measured by telemetry ranged between 30-36.degree. C and averaged 33.4-34.2.degree. C for 2 different nests; the former underwent pronounced cycles of heating during day and cooling at night. Exposed eggs underwent a daily thermal excursion between 6-50.degree. C. Embryos could maintain heartbeat between 11-46.degree. C. Eggs which were exposed to solar radiation heated slowly (about 5.degree. C/h). Diurnal exposure during parental absence did not result in embryonic mortality unless exposure persisted for several hours. Embryos recovered completely after overnight exposure to relatively cool temperatures. Short-term exposure did not constitute an immediate threat to embryonic survival. Adult gulls in this colony did not closely defend their nests and left them exposed in the presence of an intruder. The behavior of the parent gull and physiological tolerance of the embryos in reference to the thermal environment formed an adaptive suite of characters contrasting with those of other gulls nesting under hot and arid conditions.
heart rate/heat/behavior/mortality/bioclimatology/thermoregulation/Charadriiformes/We stern Gull/Larus occidentalis/wymani/San Nicolas Island/terrestrial biology/ornithology.

1599. McCabe C. Giant fields set to boost California, Alaska output. OCEAN IND 1987;22(10):27-33.
Operators prepare to reap benefits of aggressive leasing and drilling programs in late '70s and early '80s, but foundering exploration efforts and low prices jeopardize future contributions from America's offshore frontiers. Development and production projects dominated oil industry activity in Western U.S. offshore frontier areas this year (1987) as operators pressed in both California and Alaska to bring on-stream discoveries that stretch back a decade or more. Most of the California activity stems from discoveries made in tracts leased at OCS Sale 53 in May 1981 and Sale 48 in June 1979. The following report outlines development progress in California's offshore Santa Maria basin and Santa Barbara Channel areas, and also at Endicott field in the Beaufort Sea off Alaska. The few highlights of limited industry exploration activity off California and Alaska are also summarized.
offshore operations/oil fields/oil and gas exploration/oil production/leases/INE/USA/Alaska/INE/USA/California/PNW/USA/Alaska/economics/PN W/Beaufort Sea/INE/USA/California/Santa Maria

Basin/INE/Santa Barbara Channel/ASFA.

1600. Yeats RS. Extension versus strike slip origin of the southern California Borderland. Am. Assoc. Pet. Geol., Pac. Sect., Misc. Publ. (24). Aspects of the geol. hist. of the Calif. Cont. Borderland. 1976:p.455 Ohio Univ., Dep. Geol., Athens, Ohio, United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
Los Angeles County/Ventura County/Sespe Formation/San Onofre Breccia/Vaqueros Formation/Rincon Formation/California/structural geology/faults/displacements/southwest/Channel Islands/Santa Cruz Island/Santa Rosa Island/Santa Monica Mountains/Los Angeles/Ventura/horizontal/extension/effects/sedimentary rocks/distribution/Eocene/Miocene/United States/paleogeography/Tertiary/reconstruction/palinspastic/GEOREF.

1601. Wittmann PA, Ciandro ML, Bird AA, Mooers CN (Performer: Naval Postgraduate School, Monterey, CA). Hydrographic Data from the OPTOMA (Ocean Prediction through Observation, Modeling and Analysis) Program OPTOMA21, 7-20 July 1986. Progress rept. May-Jul 86. ; 1987. 65p.
The OPTOMA (Ocean Prediction Through Observation, Modeling and Analysis) program, a joint NPS/Harvard program sponsored by ONR, seeks to understand the mesoscale (fronts, eddies, and jets) variability and dynamics of the California current systems and to determine the scientific limits to practical mesoscale ocean forecasting. To help carry out the aims of this project a series of cruises has been planned two subdomains, nocal and cencal. Optoma21 was a multidisciplinary study which took place from 7 to 20 July 1986 aboard the R/V Point Sur in the nocal domain. In addition to conducting a quasi-synoptic CTD/XBT mapping of a cool anomaly, meandering jet, and eddy system, measurements were made to determine: 1) the fine scale variability of the upper ocean mass and velocity fields; 2) the upper ocean nutrient, optical and phytoplankton fields; and 3) the structure of the zooplankton population. In this report, the CTD/XBT data are presented.
Dynamics/Scale/Oceans/Predictions/Population/Zooplankton/Anomalies/Cooling/Hydr ography/Optical properties/Mass/Velocity/Fronts Oceanography/Electrical conductivity/Temperature/Density/Bathythermograph data/Forecasting/Ocean currents/Eddies Fluid mechanics/Sea water/Nutrients/Phytoplankton/California current/OPTOMA project/Mesoscale forecasting/NTIS.

1602. Hunt JW, Anderson BS. Sublethal effects of zinc and municipal effluents on larvae of the red abalone Haliotis rufescens. MAR. BIOL 1989;VOL. 101, NO. 4:pp. 545-552
Mar. Pollut. Stud. Lab., Coast Route 1, Granite Canyon, Monterey, CA 93940, USA. Experiments were conducted to develop a sensitive sublethal toxicity test protocol to determine the toxicity of municipal wastewater effluents to larvae of the red abalone Haliotis rufescens . In multiple tests, fertilized abalone embryos were exposed for 48 h to dilutions of a reference toxicant, zinc sulfate, and to dilutions of primary- and secondary-treated effluents. The resulting veliger larvae were examined microscopically for larval shell abnormalities. "No observed effect concentrations" (NOECs) for zinc were 39 plus or minus 2.1 mu g l super(-1) in three 48 h exposures, and 19 mu g l super(-1) for the 9 d exposure through metamorphosis. Median effect concentrations (EC sub(50)s) were 68 plus or minus 6.9 mu g l super(-1) h test and 50 mu g l super(-1) in the 9 d test. Abalone larvae were affected at lower concentrations of primary than of secondary effluent.
sublethal effects/zinc/toxicity tests/urban runoff/waste water/vel

igers/abnormalities/shells/Gastropoda/Haliotis rufescens/INE, USA, California/Oceanic Abstracts.

1603. MALONE TC. THE RELATIVE IMPORTANCE OF NANNOPLANKTON AND NETPLANKTON AS PRIMARY PRODUCERS IN THE CALIFORNIA CURRENT SYSTEM. U.S. NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION. NATIONAL MARINE FISHERIES SERVICE. FISHERY BULLETIN, 69(4): 799-820, OCT. 1971 1971
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NANNOPLANKTON/PRIMARY PRODUCTIVITY/STANDING CROP/CALIFORNIA CURRENT/OceanAbstracts.

1604. Jones GF, Thompson BE. The distribution and abundance of Chloeia pinnata Moore, 1911 (Polychaeta: Amphinomidae) on the Southern California borderland. PACIFIC SCIENCE 1987;41(1-4):122-131.
The amphinomid polychaete Chloeia pinnata Moore (1911) is a widely distributed member of the benthos of the southern California borderland where it is a prominent faunal element of every major habitat including the deep basins. In this wide range of environments it lives with a large number of other taxa which differ markedly from one location to another.
ecological distribution/population density/USA/California/autecology/Chloeia pinnata/INE/USA/California/Southern California Borderland/distribution/abundance/variations/ecological associations/ASFA.

1605. Howell DG. Late Miocene counterclockwise rotation of the south half of Santa Cruz Island. Am. Assoc. Pet. Geol., Pac. Sect., Misc. Publ. (24). Aspects of the geol. hist. of the Calif. Cont. Borderland. 1976:p.449-454 U. S. Geol. Surv., Menlo Park, Calif., United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
California/tectonophysics/plate tectonics/southwest/Channel Islands/Santa Cruz Island/United States/movement/rotation/counterclockwise/Miocene/upper Miocene/foliation/interpretation/strike/faults/displacements/right slip/East Santa Cruz basin fault/GEOREF.

1606. Ciandro ML, Whittmann PA, Bird AA, Mooers CN (Performer: Naval Postgraduate School, Monterey, CA). Hydrographic Data from the OPTOMA (Ocean Prediction through Observation, Modeling and Analysis) Program OPTOMA22, 27 July-5 August 1986. Progress rept. Jul-Aug 86. ; 1986. Report No.: NPS6886012. 48p.
The OPTOMA (Ocean Prediction Through Observation, Modeling and Analysis) Program, a joint NPS/Harvard program sponsored by ONR, seeks to understand the mesoscale (fronts, eddies, and jets) variability and dynamics of the California Current System and to determine the scientific limits to practical mesoscale ocean forecasting. To help carry out the aims of this project, a series of cruises has been planned in two subdomains, NOCAL and CENCAL. The cruise, OPTOMA22, was undertaken during the period 27 July to 5 August 1986, on the USNS De STEIGUER, and sampled a domain approximately 240km square centered about 280km off the coast between Pt. Arena and Cape Mendocino. Oceanographic stations were occupied during the period 27 July to 5 August at approximately 18km along each track.
California/Hydrography/Oceanography/Stations/Dynamics/Oceans/Predictions/Bathyt hermograph data/Temperature/Electrical conductivity/Density/Fronts Oceanography/Forecasting/Sea water/Ocean currents/Eddies Fluid mechanics/Mesoscale forecasting/NTIS.

1607. Mulcahy M. Sub connector problems solved through collaborative efforts. SEA TECHNOL 1989;VOL. 30, NO. 4:pp. 41-46
Michael Mulcahy & Associates, USA.
In the summer of 1988, U.S. Naval Sea Systems Command (NavSea) Code PMS-390 recommended replacing existing metal-shell, three-pin connectors used in submarine sonar transducers with connectors fabricated of glass reinforced epoxy (GRE), culminating some five years of problem-solving development work by Brantner & Associates/SEA CON of El Cajon, California, and other participants in the Navy's Submarine Transducer Reliability Improvement Program (STRIP). A major thrust for the companies involved was to assist the Navy in preventing water leakage in two different metal-shell submarine sonar connectors.
USA, California, El Cajon/acoustic equipment/sonar transducers/conne ctors/shipboard equipment/submarines/materials technology/Brantner & Associates/SEA CON/USN/glass-reinforced epoxy/Oceanic Abstracts.

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Address: ORANGE COUNTY VECTOR CONTROL DISTRICT, 13001 GARDEN GROVE BLVD., GARDEN GROVE, CALIF. 92643,.
new records/feeding behavior/biting midges/Diptera/Ceratopogonidae/Culicoides cactecolus/Culicoides sitiens/Culicoides freeborni/Culicoides baueri/Culicoides ryckmani/Santa Catalina Island/terrestrial biology/entomology.

1609. Chekotillo KA. Features of the circulation of intermediate waters in the north Pacific. Oceanographic Research by the Vityaz in the North Pacific Under the I.G.Y. Program. National Science Foundation, Special Foreign Currency Science Information Program 1969;:110-119.
Pacific ocean north/salinity/topography/water transport/temperatures/circulation/california current/intermediate waters/vityaz 29th voyage/zooplankton/Pieper/MINERALS MANAGEMENT SERVICE.

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1611. Chelton DB. CalCOFI-a 33-year oceanographic survey of the southern California Current System. Time Series of Ocean Measurement 1983;1(24):9-13. oceanographic surveys/time series/fishery oceanography/pelagic fisheries/INE/California Current/ISE/California Current/Hickey/physical oceanography/zooplankton/Pieper/MINERALS MANAGEMENT SERVICE.

1612. Chelton DB, Roesler CS. Zooplankton variability in the California current, 1951-1982. Calif. Coop. Oceanic Fish. Invest. Rep. 1987;28:59-96. algae/MINERALS MANAGEMENT SERVICE.

1613. Love MS, Stephens JSJ, Morris PA, Singer MM, Sandhu M, Sciarrotta TC. Inshore soft substrata fishes in the Southern California Bight. REP. CCOFI 1986;27:84-106.
A series of bimonthly trawls was made at stations off three area (Ormond Beach, Redondo Beach, and San Onofre) in the Southern California Bight. Three depths (6.1, 12.2, and 18.3 m) were sampled from 1982 to 1984. At all three areas, queenfish (Seriphus politus), white croaker (Genyonemus lineatus), and northern anchovy

(Engraulis mordax) dominated the 6.1-m stations. Off the Ormond area, queenfish and white croaker were the important species out to 18.3 m. However, off Redondo and San Onofre, these two species became less dominant in deeper water, giving way to an assortment of flatfishes (particularly speckled sanddab, Citharichthy stigmaeus ; hornyhead turbot, Pleuronichthys verticalis ; and fantail sole, Xystreurys liolepis). Fish abundances off Redondo and San Onofre decreased with depth, but remained constant at Ormond. Though recruitment of some species such as speckled sanddab and walleye surfperch (Hyperprosopon argenteum) declined from 1982 to 1984, a number of species appeared relatively unaffected or even enhanced during the El Nino event.
fishery surveys/Seriphus politus/Genyonemus lineatus/Engraulis mordax/Citharichthys stigmaeus/Pleuronichthys verticalis/Xystreurys liolepis/coastal zone/species diversity/INE/USA/California/El Nino phenomena/ASFA.

1614. Henyey TL. Heat flow and tectonic patterns on the southern California Borderland. Am. Assoc. Pet. Geol., Pac. Sect., Misc. Publ. (24). Aspects of the geol. hist. of the Calif. Cont. Borderland. 1976:p.427-440
Univ. South. Calif., Dep. Geol. Sci., Los Ang., Calif., United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present). California/tectonophysics/heat flow/plate tectonics/south/United States/southwest/Sierra Nevada/coast Ranges/Basin and Range Province/Mexico/north/Baja California/interpretation/triple junction/migration/GEOREF.

1615. Simpson JJ, Koblinsky CJ, Pelaez J, Haury LR, Wiesenhahn D (Performer: Scripps Institution of Oceanography, La Jolla, CA). Temperature Plant Pigment-Optical Relations in a Recurrent Offshore Mesocale Eddy Near Point Conception, California. ; 1986. 24p.
Pub. in Jnl. of Geophysical Research, v91 nc11 p12919-12936, 15 Nov 86. PC A02/MF A01 Contract: N0001486K0752.
The temperature-plant pigment-optical structure of a mesoscale anticyclonic eddy consistently found in shipboard surveys and satellite-sensed data several hundred kilometers southwest of Point Conception, CA, is described on three different time scales (100-day mesoscale, annual, and several-year). The satellite coastal zone color scanner (CZCS) ocean color imagery detected the near-surface chlorophyll structure of the eddy, but in situ optical and plant pigment data suggest that such imagery does not provide a good estimate of the integrated chlorophyll field of the eddy. Temperature and plant pigment boundaries of the eddy, as determined from two-dimensional gradients of advanced very high resolution radiometer (AVHRR) and CZCS imagery, do not coincide spatially. This and in situ temperature, plant pigment, and optical structure provide additional evidence that some eddy systems in the California Current are not isolated vortex systems but rather continuously entrain waters of nonlocal origin laterally into their upper layers. Within the California Current a ratio of AVHRR/CZCS data is useful for separating inshore from oceanic water masses and following their surface entrainment by offshore vortices. (Reprints).
California/Eddy currents/Structural properties/Surfaces/Offshore/Vortices/Optical properties/Isolation/Water masses/Optical data/Pigments/Colors/Ratios/Ocean surface/Organic pigments/Coastal regions/Radiometers/High resolution/Oceanographic data/Scale/Time/Layers/Gradients/Two dimensional/Water/Sea water/Eddies Fluid mechanics/Ocean currents/Chlorophylls/California current/NTIS.

1616. Spiesberger JL, Bushong PJ, Metzger K, Birdsall TG. Basin-scale tomography: Synoptic measurements of a 4000-km length section in the Pacific. J. PHYS. OCEANOGR 1989;VOL. 19, NO. 8:pp. 1073-1090
Woods Hole Oceanogr. Inst., Woods Hole, MA 02543, USA.
Pulse-like acoustic transmissions (133 Hz, 60 ms resolution), between a bottom-mounted source near Oahu, Hawaii, and a bottom-mounted receiver at about 400 km range near the coast of Northern California, USA, are recorded during a 5-day interval in 1983 and a 21-day interval in 1987. Measurements of the acoustic travel-time change, based on the acoustic phase, are made every two minutes to a precision of about 135 mu s. The 1983 dataset is used to demonstrate that the travel times along different ray paths oscillate in phase with each other at periods near the prominent nontidal periods of 15 and 20 hours. This observation leads to the conclusion that the ocean process is either barotropic or it consists of the first or the second baroclinic mode with a horizontal scale of at least 50 km.
INE, USA, California/ISE, Hawaii, Oahu/acoustic tomography/sound transmission/sound spectra/spectral analysis/oscillations/internal waves/physical oceanography/Oceanic Abstracts.

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UNKNOWN.
EUPHAUSIA/SHRIMPS/PESTICIDE RESIDUES/CALIFORNIA CURRENT/DDT/E/PACIFICA/OceanAbstracts.

1618. Bennett SG. Medically important and other ectoparasitic acarines on vertebrates from Santa Catalina Island, California, USA. Bull. Soc. Vector Ecol. 1987;12(2):534-538
Address: ORANGE COUNTY VECTOR CONTROL DISTRICT, 13001 GARDEN GROVE BLVD.,GARDEN GROVE, CALIF. 92643.
vertebrate parasites Arthropods/Acarina/Dermacentor albipictus/Ixodes brunneus/Ixodes pacificus/Ornithonyssus bacoti/Ornithonyssus sylviarum/Ophionyssus natricis/Pellonysus passeri/Dermanyssus gallinae/Eutrombicula belkini/Euschoengastia ambocalis/Euschoengastia numerosa/Kayella lacerata/Acomatacarus arizonensis/euschoengastoides neotomae/pteracarus chalinologus/Santa Catalina Island/terrestrial biology/parasitology.

1619. Chen C. Topographic influences in the California Current system. Master's Thesis, Naval Postgraduate School, Monterey, CA 1987;:50. ocean currents/ocean bottom topography/California/cliffs/currents/shores/flow/mean/ocean models/rossby waves/topography/water flow/equations/mathematical models/jet flow/numerical methods and procedures/theses/north Pacific Ocean/Hickey/physical oceanography/MINERALS MANAGEMENT SERVICE.

1620. Chen YQ. The vertical distribution of some pelagic copepods in the eastern Tropical Pacific. REP. CCOFI 1986;27:205-227.
This study was based on zooplankton samples collected with standard, opening-closing bongo nets through eight depth intervals to 600 m or 800 m at 10 stations along a transect from 23 degree N to 3 degree S in the eastern tropical Pacific during May-Jun. 1974. The investigation covered four environments: (1) the mouth of the Gulf of California, where some California Current species occurred

at their southern limits: (2) the oxygen-deficient region (0 sub(2) <0.1 ml/l); (3) the North Equatorial Countercurrent; and (4) the Equatorial Undercurrent. More than 60 species of calanoid copepods were identified and counted. The numerically dominant species -- Eucalanus subtenuis), Eucalanus subcrassus , and Rhincalanus nasutus -- constituted respectively 33.5%, 12.8%, and 9.5% of the total numbers. The quantitative, geographical, and vertical distributions of the most common and abundant species are described.
vertical distribution/zooplankton/distribution records/check lists/Calanoida/Eucalanus subtenuis/Eucalanus subcrassus/Rhincalanus nasutus/pelagic environment/ISE/ASFA.

1621. Junger A. Offshore structure between Santa Cruz and Santa Rosa islands. Am. Assoc. Pet. Geol., Pac. Sect., Misc. Publ. (24). Aspects of the geol. hist. of the Calif. Cont. Borderland. 1976:p.418-426
U. S. Geol. Surv., Menlo Park, Calif., United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
California/structural geology/faults/southwest/Channel Islands/Santa Cruz Island/Santa Rosa Island/offshore/Santa Rosa Island Fault/Santa Cruz Island Fault/Carrington Basin/extent/geophysical surveys/seismic surveys/effects/basins/United States/GEOREF.

1622. Ciandro ML, Wittman PA, Bird AA, Mooers CN (Performer: Naval Postgraduate School, Monterey, CA). Hydrographic Data from the OPTOMA (Ocean Prediction through Observation, Modeling and Analysis) Program OPTOMA20, 16 March-6 May 1986. Progress rept. Mar-May 86. ; 1986. Report No.: NPS6886008. 187p.

THe OPTOMA (Ocean Prediction Through Observation, Modeling, and Analysis) Program a joint NPS/Harvard program sponsored by ONR, seeks to understand the mesoscale (fronts, eddies, and jets) variability and dynamics of the California Current System and to determine the scientific limits to practical mesoscale ocean forecasting. To help carry out the aims of this project, a series of cruises has been planned in two subdomains, NOCAL and CENCAL, Three cruises were undertaken during March, April and May 1986: two (Legs Ml and Mll) on the NOAA ship Mc AUTHOR, one (Leg D) on the USNS DE STEIGUER. In addition, one P-3 overflight (Leg P) was made one week before the first cruise. Leg P, on 16 March, sampled a domain approximately 240km square centered about 280 km off the coast between Pt. Arena and Cape Mendocino, with additional transects from and to San Francisco, Leg Ml was carried out from 24 March to 3 April (Figure 8), Leg Mll from 7 to 15 April (Figure 20), and Leg D from 25 April to 6 May (Figure 32). Each cruise sampled the same domain as Leg P. On these cruises, oceanographic stations were occupied at approximately 18km along each track.
Dynamics/Hydrography/Ocean currents/Oceanography/Oceans/Predictions/Stations/Data reduction/Graphs/Temperature/Salinity/Bathythermograph data/Optoma Program/OPTOMA Ocean Prediction Through Observation Modeling and Analysis/California Current/NTIS.

1623. BYSHEV VI. TEMPORAL VARIABILITY OF CIRCULATION IN THE NORTHEASTERN PACIFIC OCEAN. OCEANOLOGY, 11(2): 177-182, NOV. 1971 1971
UNKNOWN.
PACIFIC OCEAN NORTH/CALIFORNIA CURRENT/CIRCULATION WATER/TEMPORAL VARIATIONS/SURFACE MOTION/WIND TRANSPORT/ALASKA CURRENT/OceanAbstracts.

1624. Bennett V, DePaolo DJ. Tectonic implications of Nd isotopes in the Pelona, Rand, Orocopia and Catalina schists, Southern California. 95th annual meeting, The Geological Society of America. Abstracts with Programs - Geological Society of America 1982;14(7):442
Address: Univ. Calif., Dep. Earth and Space Sci., Los Angeles, CA
Conference: 95th annual meeting, The Geological Society of America. New Orleans, LA, Oct. 18-21, 1982.
isotopes/neodymium/tectonics/Nd-144 Nd-143/Pelona Schist/Rand Schist/Orocopia Schist/Catalina Schist/geochemistry/Precambrian/San Andreas Fault/Garlock Fault/Chocolate Mountains Schist/Mesozoic/Phanerozoic/Cenozoic/displacements/metasedimentary rocks/metabasalt/metaigneous rocks/partial melting/Santa Catalina Island/San Gabriel Mountains/structural geology.

1625. Power JH. A model of the drift of northern anchovy, Engraulis mordax , larvae in the California Current. FISH. BULL 1986;84(3):585-603. The drift of northern anchovy, Engraulis mordax , larvae in the California Current to unfavorable offshore areas may be an important factor contributing to larval mortality, and hence it may affect recruitment and subsequent adult population size. A simulation model based on a finite-difference approximation to the advection-diffusion equation was developed to aid in the study of larval anchovy drift. Offshore transport was minimal in most simulations. Simulations of drift starting from the location of peak spawning showed strongest seasonal effects, with currents during the season of peak northern anchovy spawning (March) resulting in reduced offshore dispersal when compared with currents at other times of the year.
fish larvae/drift/Engraulis mordax/INE/California Current/models/finite difference method/ASFA.

1626. Howell DG, McLean H, Vedder JG. Cenozoic tectonism on Santa Cruz Island. Am. Assoc. Pet. Geol., Pac. Sect., Misc. Publ. (24). Aspects of the geol. hist. of the Calif. Cont. Borderland. 1976:p.392-416
U. S. Geol. Surv., Menlo Park, Calif., United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
California/structural geology/tectonics/evolution/southeast/Channel Islands/Santa Cruz Island/Santa Cruz Island Fault/Cenozoic/United States/faults/GEOREF.

1627. Pepin P. Influence of alternative prey abundance on pelagic fish predation of larval fish: A model. CAN. J. FISH. AQUAT. SCI 1987;44(1):222-227. In this model of predation on larval fish by pelagic fish, the author postulates that variations in the abundance of the more numerous alternative prey population can determine the time required by a predator to attain its maximum ration. The model predicts that larval fish mortality should be a direct function of the abundance of their predator scaled relative to alternative prey abundance. A test of the model using data from the California Current reveals that mortality of larval northern anchovy (Engraulis mordax) shows a significant relationship with the predator-to-prey ratio (pelagic fish biomass/zooplankton biomass). Other possible interpretations of this result and problems of model parameterization are discussed.
prey selection/fish larvae/food availability/prey/abundance/predation/Pisces/Engraulis mordax/models/INE/California Current/marine fish/mathematical models/pelagic environment/larvae/CSA Life Sciences Collection.

1628. Renaud PG. Wind Forcing Experiments in the California Current System. Master's thesis [dissertation]. ; 1986.

Performer: Naval Postgraduate School, Monterey, CA
A high-resolution, multi-level, primitive equation ocean model is used to examine the response of an idealized, flat-bottom, oceanic regime off northern California to steady, equatorward, local wind-forcing during the upwelling season. The model has open boundaries on all but the eastern coastal boundary on which either free-slip or zero-slip boundary conditions are imposed. Time-invariant winds, either with or without a component of wind stress curl, are used as model forcing to spin-up a classical two-dimensional, upwelling-induced coastal jet and undercurrent. Since no eddies are generated, a stability analysis of the mean flow is conducted which explores both the necessary conditions of mixed (barotropic and baroclinic) instability, through calculations of potential vorticity, and the sufficient conditions for baroclinic instability, through an application of a simple two-layer stability model. Comparisons of model results with observations of the coastal jet in the California Current System indicate that the location and the horizontal and vertical current shear associated with the model coastal jet compare favorably with observations; however the modeled jet is stronger, deeper and wider than the observed jet. Finally, the inclusion of wind stress curl and the zero-slip boundary condition are demonstrated to be important elements in model simulations of the coastal jet.
Boundaries/Coastal regions/Computations/Equations/Invariance/Mathematical models/Mean/North Direction/Oceans/Seasons/Simulation/Stability/Stratification/Stresses/Time/Upwe lling/Jet flow/Vortices/Ocean bottom/Water flow/Directional/Shear stresses/Theses/Ocean currents/Ocean models/Wind/Boundary Currents/Wind Stress Curl/Wind Forcing/Barotropic Instability/Baroclinic Instability/Primitive Equations/California Current/NTIS.

1629. Le Boeuf BJ, Condit R, Reiter J. Parental investment and the secondary sex ratio in northern elephant seals. BEHAV. ECOL. SOCIOBIOL 1989;VOL. 25, NO. 2:pp. 109-117
Dep. Biol., Univ. California, Santa Cruz, CA 95064, USA.
Data on northern elephant seals, Mirounga angustirostris , bearing on sex ratio theory were collected at Ano Nuevo, California, and other Californian and Mexican Islands, during 1967-1988. The mass of males exceeded that of females by 7-8% at birth and at weaning. The sex ratio was biased to males at birth (51.2%) and was near unity at weaning (49.6% males). The sex ratio varied as a function of maternal age or maternal mass only in 6-year-old females, who produced significantly more males. Although sons cost more to rear in energetic terms than daughters, and mothers were more successful weaning the latter, the sex of the pup reared exerted no significant effect on the mother's reproductive performance the following year or on her subsequent survival. These data suggest that parents invest equally in sons and daughters when investment is measured in terms of future reproduction and provide no support for the theory of adaptive shifts in sex ratio.
parental behavior/sex ratio/Mirounga angustirostris/reproductive behavior/bioenergetics/marine mammals/INE, USA, California/ISE, Mexico/Oceanic Abstracts.

1630. MALONE TC. DIURNAL RHYTHMS IN NETPLANKTON AND NANNOPLANKTON ASSIMILATION RATIOS. MARINE BIOLOGY, BERLIN, 10(4): 284-289, SEPT. 1971 1971 UNKNOWN.
CHLOROPHYLL A/PHOTOSYNTHESIS/NANNOPLANKTON/CALIFORNIA CURRENT/ ASSIMILATION/ASSIMILATION RATIOS/NETPLANKTON/DIURNAL RHYTHMS/OceanAbstracts.

1631. Benson III JA. Physical disturbance, competition for space, and the epibiotic community attached to the brown alga, Cystoseira neglecta [dissertation]. Los Angeles, California, USA: University of California; 1984. 176.

Factors affecting the distribution and diversity of algal and invertebrate epibionts on Cystoseira neglecta at Santa Catalina Island, California were investigated. The most important factors included surface area and longevity of the substrate plant, epibiont overgrowth abilities, and spatial heterogeneity of physical disturbance. Observations of tagged C. neglecta in the field and of collected plants revealed that stipes grew only 3.3 cm/yr and without a consistent seasonal pattern. Branch growth, branch shedding, reproduction, and plant mortality were strongly seasonal. Branches grew rapidly in winter, producing receptacles and approximately 10 times more surface area per plant than during summer. Most plants did not become reproductive until they were at least 3 years old. Branch loss and plant mortality were most frequent during summer and fall. Maximum lifespan probably exceeds 10 years. Competition for space among epibionts was investigated by observing the overgrowth interactions of colonies or individuals encrusting C. neglecta collected in the study site. The pattern of relative overgrowth success among species was largely hierarchical. No competitive networks were found. The pattern was not strictly hierarchical,. however, since some species pairs were classified as "competitive equivalents", and overgrowth success sometimes varied between habitats subject to low and high disturbance. This latter finding suggested the large potential importance of small-scale habitat heterogeneity in overgrowth interactions. Analysis of epibiont distribution, abundance, and diversity on collected C. neglecta indicated that branch growth and physical disturbance had substantial effects on epibiont community structure. The most important physical disturbance was the abrasion caused by mutual lashing of plants exposed to surge. Field experimental manipulations of abrasion levels demonstrated that, in the presence of a dominant competitor, increasing abrasion can produce an increase, then a decrease, in epibiont species richness. These results support the general relevance of the intermediate disturbance hypothesis to communities of sessile organisms. epibionts/overgrowth/physical disturbance/competition for space/ competitive networks/dominant competitor/species richness/intermediate disturbance hypothesis/Cystoseira neglecta/marine biology/botany/phycology.

1632. Atkinson CA. Discrete-time difference model for simulating interacting fish population dynamics. FISH. BULL 1986;84(3):535-548. The dynamics of interacting fish populations are modeled using a coupled set of discrete-time difference equations. The basic equations describe predator-prey and competitive relationships analagous to the first-order expressions used in standard differential equation models. Population births and aging are represented using a modified Leslie matrix. A spatial representation is also incorporated and consists of a number of separate compartments, each containing interacting population groups which can be interchanged between compartments during a given time period. The potential applicability of the discretetime formulation is demonstrated via a simulation of the multispecies fish populations within the California Current during the sardine population collapse of 1930-60. population dynamics/mathematical models/Pisces/discrete-time difference model/ASFA.

1633. Howell DG. Inferred Eocene and Miocene cross sections of the southern California Borderland. Am. Assoc. Pet. Geol., Pac. Sect., Misc. Publ. (24). Aspects of the geol. hist. of the Calif. Cont. Borderland. 1976:p.363-364 U. S. Geol. Surv., Menlo Park, Calif., United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
California/tectonophysics/crust/Eocene/Miocene/southwest/coastal/offshore/Catalina Ridge/Patton Ridge/United States/geologic history/tectonics/volcanism/structure/upper Eocene/middle Miocene/oceanic/GEOREF.

1634. Cheok GS, Stone WC (Performer: National Bureau of Standards (NEL), Gaithersburg, MD. Center for Building Technology. Funder: National Science Foundation, Washington, DC. Funder: Federal Highway Administration, Washington, DC. Funder: California State Dept. of Transportation, Sacramento.) Behavior of 1/6-Scale Model Bridge Columns Subjected to Cyclic Inelastic Loading. ; 1986. Report No.: NBSIR863494. 292p. Sponsored by National Science Foundation, Washington, DC., Federal Highway Administration, Washington, DC., and California State Dept. of Transportation, Sacramento. PC A13/MF A01.
Circular, spirally reinforced concrete bridge columns were subjected to cyclic inelastic loading in the laboratory. The bridge columns were one-sixth scale models of prototype columns designed in accordance with current California Department of Transportation specifications. A total of six models were tested; three were constructed with microconcrete, and three with ready-mix concrete using pea gravel. Variables included the aspect ratio, magnitude of axial load, and the use of microconcrete versus ready-mix. The models were subjected to slow reversed cyclic loading with the axial load held constant. Results from the tests are presented in the form of energy absorption, load-displacement curves, longitudinal steel strains, and displacement profiles. Comparisons of the ultimate moment capacities, measured displacement ductilities, plastic hinge lengths, and the failure mode for the six models are discussed. Comparisons with previous studies are presented. A series of graphics-based computer programs are discussed. Source code is provided.
Cyclic loads/Elastic properties/Model tests/Reinforced concrete/Ready mixed concrete/Gravel/Aspect ratio/Axial stress/Computer programs/Energy absorption/Displacement/Strains/Graphs Charts/Columns Support/Bridges Structures/Microconcrete/Computer graphics/NTIS.

1635. Miller JH, Lynch JF, Chiu CS. Preliminary results from the 1988 Monterey Bay Acoustic Tomography Experiment. 117. Meet. of the Acoustical Society of AmericaJ. ACOUST. SOC. AM. (SUPPL. 1989;VOL. 85, NO. suppl. 1:p. S18 Dep. Electr. Comp. Eng., Code 62Mr, Nav. Postgrad. Sch., Monterey, CA 93943, USA. An ocean acoustic tomography experiment was held 12-16 December 1988 near Monterey, California. The objectives of this experiment were to test a tomographic system to analyze the effects of ocean surface waves, internal waves, and complex three-dimensional bathymetry on long-range acoustic propagation. An acoustic source with a center frequency of 224 Hz and source level of 177 dB was placed on a seamount 30 km off Point Sur. Seven modified sonobuoys (with anchor, bottom-mounted hydrophones, large capacity batteries, and large floats) were placed in Monterey Bay to receive the acoustic signals at ranges of 35 to 60 km from the source. The sonobuoy rf signals were received, demodulated, and the acoustic data were recorded on shore. Oceanographic measurements were taken (for comparison with the acoustically derived results) with a surface wave frequency-directional spectra buoy, surface wave frequency

spectra buoys, CTD yo-yo's for internal wave spectra, ADCP, and conventional hydrographic survey for sound-speed profiles. Preliminary analyses and comparison of the acoustic and oceanographic measurements are presented.
acoustic tomography/INE, USA, California, Monterey Bay/surface water waves/internal waves/bathymetry/sound propagation/bottom topography effects/sound sources/sonobuoys/wave spectra/Oceanic Abstracts.

1636. LASKER R. LABORATORY STUDIES OF PREDATION BY MARINE COPEPODS ON FISH LARVAE. U.S. NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION. NATIONAL MARINE FISHERIES SERVICE. FISHERY BULLETIN, 69(3): 655-667, JULY 1971 1971 UNKNOWN.
COPEPODS/CALIFORNIA CURRENT/FISH LARVAE/PREDATION/OceanAbstracts.

1637. Benson MR. A demographic study of Dictyopteris undulata Holmes (Dictyotales: Phaeophyta) at Santa Catalina Island, California, USA. Phycologia 1986;25(4):448-454
Address: DEP. BIOL. SCI., UNIV. SOUTHERN CALIF., LOS ANGELES, CALIF. 90007. The demography of Dictyopteris undulata Holmes was studied between 1979 and 1982 at Isthmus Reef, Santa Catalina Island, California (USA), at depths ranging from 4.6 to 10.7 m below mean lower low water. Maximum density of plants of taggable size (6 cm) occurred at about 6.1 m. Maximum plant height increased significantly with depth. The species was an annual. Reproductive plants were first observed 6-8 months after recruitment and were most abundant in autumn. Once plants became reproductive, they lived for an average of 1.7 months. Recruitment was most common in winter and early spring. Recruitment varied significantly with depth, reaching a maximum at 6.1-7.6 m, essentially the same depth as maximum density. The plants were recruited into cleared spaces; once they became established, vegetative reproduction seemed to be an important means by which the population was maintained. Plants at the deepest depth studied (10.7 m) had the highest survival rate. Plant loss was due either to detachment of the holdfast from the substrate or to breaking of the stipe. Plants could recover from extensive damage by regrowth from the midribs.
plant density/reproduction/survival rate/regrowth/water depth/abundance/life history/recruitment/growth/demography/Dictyopteris undulata/Isthmus Reef/Santa Catalina Island/marine biology/phycology/botany.

1638. Chow TJ, Orphan V, Rainbridge A, Bruland K, Martin J. Southern California baseline study and analysis (1975/1976). Volume 3. Principal investigator work element reports. Report sections 4.1-4.4, 5.1, 5.2; book 10. 1978;:474.
crude-oil/ecology/marine biology/water pollution/Southern California Bight/Eganhouse/chemical oceanography/hydrocarbons/metals/concentration composition/aquatic plants/aquatic animals/abundance/distribution property/chromatographic analysis/Bray/algae/spermatophytes/ anthropogenic/anderson/MINERALS MANAGEMENT SERVICE.

1639. Dohl TP, Bonnell ML, Ford RG. Distribution and abundance of common dolphin, Delphinus delphis , in the Southern California Bight: A quantitative assessment based upon aerial transect data. FISH. BULL 1986;84(2):333-343. On 35 aerial transect surveys of the Southern California Bight, 157 sightings of common dolphin, Delphinus delphis , schools were observed and mapped for distributional analysis. Mean seasonal population estimates were 15,448 for winter-spring and 57,270 for summer-autumn. During the warmer water months, the common dolphin population expands its use of the Southern California Bight. They enter from the south,

apparently following the major undersea ridges and escarpments, and flow though the Southern California Bight in a generalized counterclockwise fashion. Observational evidence suggests that there is mixing the both the nearshore and pelagic forms of this species in the offshore waters over the Santa Rosa-Cortes Ridge and Patton Escarpment.
abundance/distribution records/aerial surveys/Delphinus delphis/ISE/ California Bight/ASFA.

1640. Jones DL, Rangin C, Blake MCJ. The four Jurassic belts of northern California and their significance to the geology of the southern California Borderland. Am. Assoc. Pet. Geol., Pac. Sect., Misc. Publ. (24). Aspects of the geol. hist. of the Calif. Cont. Borderland. 1976:p.343-362
U. S. Geol. Surv., Menlo Park, Calif., United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
California/tectonophysics/plate tectonics/Mesozoic/north/south/Mexico/Baja California/Jurassic/United States/structural complexes/evolution/continental margin/island arcs/collision/subduction/faults/transform/rotation/subduction zones/Cretaceous/tectonics/belts/GEOREF.

1641. Kaplan IR (Performer: California Univ., Los Angeles. Inst. of Geophysics and Planetary Physics.
Funder: Department of Energy, Washington, DC.) Distribution and Fate of Biogenic and Petroleum Derived Substances in Marine Sediments: Final Report. ; 1986. Report No.: DOEEV70134T10. 16p.
Portions of this document are illegible in microfiche products. PC A02/MF A01 Contract: AS0376EV70134.
The studies were aimed at a better understanding of the processes occurring at the sediment-water interface, the carbon budget in the ocean, the flux of the light elements, and the diagenetic changes of the sedimentary components. Recent research focused on environmental problems relating to anthropogenic pollution of the southern California Bight as a result of petroleum exploration and production and shelf edge exchange processes and transport of carbon in the Atlantic shelf, slope and the rise. Inorganic geochemical, organic geochemical and stable isotopic mass spectrometer studies conducted to achieve the above-mentioned goals have resulted in the development of several techniques for the study of e.g., trace, elements by atomic absorption spectroscopy; gases through separation on vacuum lines and identification by gas chromatography; stable isotopes by use of dual-collecting mass spectrometers on specially-prepared environmental samples and characterization of several organic compounds by gas chromatography and mass spectrometry after optimized sample preparations. (ERA citation 12:009983). Atlantic Ocean/Carbon Cycle/Diagenesis/Environmental Transport/Hydrocarbons/Pacific Ocean/Research Programs/Sediment Water Interfaces/Continental Shelf/Sediments/ERDA/520200/ERDA/580500/NTIS.

1642. Barber R. Deep ocean research using computer controlled ROVs. SEA TECHNOL 1989;VOL. 30, NO. 8:pp. 47-49
Monterey Bay Aquarium, Cannery Row, Monterey, CA, USA.
Waters of California's Monterey Bay--reaching to 6,000 feet deep--are a perfect setting for study of the deep-sea environment and biota. The institute is taking advantage of this environment and adding computer technology with dedication to studying the physical, chemical, geological and biological dynamics of Monterey Bay, Monterey Canyon, and the contiguous ocean waters. A network of Hewlett-Packard computers forms the backbone of the research

efforts. The elaborate system begins on the ROV itself--a Model ATP-1850 from International Submarine Engineering--and an HP Vectra personal computer that controls the onboard camera.
oceanography/fiber optics/remote control/oceanographic equipment/un manned vehicles/underwater equipment/computers/automation/INE, California, Monterey/Oceanic Abstracts.

1643. SMITH PE. SEASONAL AND GEOGRAPHIC CHARACTERISTICS OF FISHERY RESOURCES: CALIFORNIA CURRENT REGION - VII. PACIFIC SARDINE. COMMERCIAL FISHERIES REVIEW, 33(10): 7-11, OCT. 1971 1971 UNKNOWN.
SARDINES/SARDINOPS/GEOGRAPHIC DISTRIBUTION/FISHERIES RESOURCES/ CALIFORNIA CURRENT/SEASONAL CHARACTERISTICS/S/CAERULEUS/PACIFIC SARDINES/OceanAbstracts.

1644. Bentz AP, Jadamec JR, Hiltabrand RR, Anderson CP, Hendrick MS. Feasibility studies for identification of Santa Barbara natural seep and platform oils. Final Report. : Coast Guard Research and Development Center, Groton, CT. CGR/DC-11/84; CG-D-28-84; 1984. 78.
The objective of this project was to "develop a capability to identify an oil spill source (seep or specific well) in the Santa Barbara area". Samples of available natural seeps, as well as a series of samples from various platforms representing numerous producing zones, were examined very thoroughly using state-of-the-art analytical techniques. We demonstrated that oils from natural seeps could be distinguished from platform oils by any of several methods in addition to infrared which was proposed in 1975. Owing to the relatively uniform composition of oils found in the Santa Barbara Channel area, coupled with intermixing due to thrust faults in the area and variation in composition with time of sampling, even the most sophisticated instrumentation and pattern recognition algorithms available were unable to distinguish individual wells, platforms or zones.
Chemical analysis/Oil wells/Seepage/Pattern recognition/Infrared spectroscopy/Ultraviolet spectroscopy/Gas chromatography/Sampling/Mass spectroscopy/Sites/Comparison/Feasibility/Platforms/Oil spills/Natural emissions/High performance liquid chromatography/Santa Barbara Channel/Chemistry/Physical Chemistry/Environmental Pollution/Analytical Chemistry/petroleum/water quality/resource management.

1645. Chow TJ, Earl JL, Reed JH. Barium content of marine sediments near drilling sites: A potential pollution indicator. Mar. Pollut. Bull. 1978;9(4):97-99.
Barium/Sediments/Water pollution/Offshore operations/REISH/Pacific Ocean/California Coast/Chemical pollutants/anderson/Southern California Bight/pollutant indicators/ANTHROPOGENIC/USA/oil well/gas well/hickey/phyical oceanography/eganhouse/geochemistry/chemical oceanography/barium sediments/pollution/MINERALS MANAGEMENT SERVICE.

1646. Chow TJ, Holm-Hansen O, Orphan V. Year II. Intertidal study of the Southern California Bight (1976/77). Trace metal analyses of sediment and biota, microbial biomass, and master bibliography. Sections 3.1-4.1, 4.2. Prep. for U.S. Dep. Interior, Minerals Management Service, Pacific OCS Region, Los Angeles, Ca. Prep. by Science Applications, Inc., La Jolla, CA. 1978;III:34.
MINERALS MANAGEMENT SERVICE.

1647. Christensen N, Gallegos A. On the response of the nearshore current to the wind during upwelling. Presented at:

Joint Oceanographic Assembly, Edinburgh (UK), 13 Sep 1976 1976;
ISE/Mexico/Baja California/geostrophic currents/coastal
zone/Hood/ecosystem/anthropogenic/anderson/MINERALS MANAGEMENT
SERVICE.

1648. Chu EW. The distribution, abundance, diet, and fat
accumulation patterns of sooty shearwaters Puffinus griseus in the
California current. Dissertation, Univ. of Calif., Santa Cruz
1982;:112.
biological oceanography/Algae/spermatophytes/Bray/Murray./MINERALS
MANAGEMENT SERVICE.

1649. Wittmann P, Colton MC, Rendine JJ, Mooers CNK.
Hydrographic data from the OPTOMA program OPTOMA 18, 31 October and
2 November 1985. REP. U.S. NAV. POSTGRAD. SCH 1985;
The OPTOMA (Ocean Prediction Through Observation, Modeling and
Analysis) program seeks to understand the mesoscale (fronts,
eddies, and jets) variability and dynamics of the California
Current System and to determine the scientific limits to practical
mesoscale ocean forecasting. To help carry out the aims of this
project, a series of cruises and P3 flights has been planned in two
subdomains, NOCAL and CENCAL. Bathythermographic data were acquired
with shallow (300 m) and deep (700 m) AXBT's which were deployed
from a Navy P3 aircraft. hydrographic data/bathythermographic
data/INE/California Current/ASFA.

1650. Vedder JG, Howell DG. Review of the distribution and
tectonic implications of Miocene debris from the Catalina Schist,
California Continental Borderland and adjacent coastal areas. Am.
Assoc. Pet. Geol., Pac. Sect., Misc. Publ. (24). Aspects of the
geol. hist. of the Calif. Cont. Borderland. 1976:p.326 U. S. Geol.
Surv., Menlo Park, Calif., United-States Analytic; Serial B;
Bibliography and Index of Geology (1969-present).
Catalina Schist/San Onofre Breccia/California/sedimentary
petrology/sedimentary rocks/clastic
rocks/terrigenous/Miocene/southwest/coastal/Santa Monica
Mountains/Long Beach/Oceanside/Channel Islands/Santa Cruz
Island/Santa Rosa Island/Anacapa Island/offshore/Patton Ridge/Santa
Rosa Cortes Ridge/United States/paleogeography/faults/plate
tectonics/middle Miocene/upper
Miocene/distribution/Mexico/Tijuana/provenance/displacements/San
Andreas Fault/effects/sedimentation/GEOREF.

1651. Baber D, Coblentz B. Density, home range, habitat use,
and reproduction in feral pigs on Santa Catalina Island. J. MAMMAL
1986;67(3):512-525. A feral pig population on Santa Catalina
Island, California, was studied for 17 months beginning in July
1980. Density was estimated to be 21 to 34 pigs/km super(2). Dry
season home ranges determined from radio-telemetry data were small
and differed significantly between boars and sows. During the dry
season, pigs preferred cool moist canyon bottoms, the result of
both a physiological need for free water and behavioral responses
to high environmental temperatures. Patterns of utilization during
the wet season appeared to be primarily a function of food
availability. Seasonality in time of birth was evident, with
piglets born in winter and spring (1980) or spring and summer
(1981). Litter size as measured by fetal counts was 5.00 plus or
minus 0.36 and sows averaged 0.86 plus or minus 0.17 litters over
a 12-month period.
USA/California/Santa Catalina Island/Sus scrofa/feral
populations/population density/habitat utilization/reproduction/CSA
Life Sciences Collection.

1652. Swartz RC, Cole FA, Schults DW, DeBen WA. Ecological Changes in the Southern California Bight Near a Large Sewage Outfall: Benthic Conditions in 1980 and 1983. Mar. Ecol. Prog. Ser. 1986;31:p.1-13
Performer: Environmental Research Lab.-Narragansett, Newport, OR. Mark O. Hatfield Marine Science Center.
The structure of the macrobenthic community, sediment toxicity, and sediment contamination changed greatly between 1980 and 1983 along a pollution gradient from the Los Angeles County Sanitation Districts' (LACSD) sewage outfalls on the Palos Verdes Shelf, California, USA to a reference site in northern Santa Monica Bay. Stimulation of the species richness, biomass, and density of the benthos along the 60 m contour 5 to 11 km from the outfalls was significantly reduced in 1983 when compared to 1980. Stations 1 to 3 km from the outfalls in 1980 were occupied by a depauperate fauna strongly dominated by the opportunistic polychaete Capitella spp. In 1983 species richness and biomass significantly increased close to the outfalls, and Capitella spp. was much less abundant. There was no significant toxicity associated with any sediment from the Shelf in 1983.
Toxicity/Sediments/Worms/Biomass/Crustacea/Recovery/Storms/Palos Verdes Shelf/California/Reprints/Outfall sewers/Sewage disposal/Ecology/Benthos/Water pollution/NTIS.

1653. Matrai PA. Determination of sulfur in ocean particulates by combustion-fluorescence. MAR. CHEM 1989;VOL. 26, NO. 3:pp. 227-238 Rosenstiel Sch. Mar. and Atmos. Sci., Div. Mar. and Atmos. Chem., 4600 Rickenbacker Causeway, Miami, FL 33149-1098, USA.
A method is described for the determination of organic sulfur at the sub-microgram level in particulate matter present in marine waters. Particulate matter is first collected on filters and combusted at high temperature in an argon-oxygen atmosphere, converting all sulfur-containing compounds to sulfur dioxide. Sulfur is subsequently detected by exposure of the resulting sulfur dioxide to UV light; this produces a fluorescent emission which is then quantified. The detection limit of the method is 0.01 mu g S and the precision is 4-11%, depending on the sample concentration. Using this procedure, organic sulfur was determined in suspended matter collected in the Southern California Bight.
chemical oceanography/chemical analysis/suspended particulate matter/ analytical techniques/organic compounds/sulfur compounds/fluorescenc e spectroscopy/methodology/organic sulfur/OCEANIC ABSTRACTS.

1654. AHLSTROM EH. REMARKABLE MOVEMENTS OF OIL GLOBULES IN EGGS OF BATHYLAGID SMELTS DURING EMBRYONIC DEVELOPMENT. MARINE BIOLOGICAL ASSOCIATION OF INDIA. JOURNAL, 11(1-2): 206-217, JUNE-DEC. 1969 1969
UNKNOWN.
BATHYLAGUS/SMELTS/CALIFORNIA CURRENT/EMBRYOLOGY/EGGS/LEUROGLOSSUS/GULF OF CALIFORNIA/OIL GLOBULES/L/STILBIUS/B/WESETHI/OceanAbstracts.

1655. Berelson WM, Hammond DE, Fuller C. Radon-222 profiles in California borderland basins; models of basin water mixing and the flux of radon from basin sediments. American Geophysical Union; 1981 fall meeting. Eos, Transactions, American Geophysical Union 1981;62(45):894
Address: Univ. South. Calif., Dep. Geol. Sci., Los Angeles, CA
Conference: American Geophysical Union; 1981 fall meeting San Francisco, CA, Dec. 7-11, 1981. isotopes/radon/radium/sediments/sea water/marine

sediments/processes/Rn-222/Ra-226/diffusion/continental borderland/radioactive isotopes/mixing/geochemical profiles/sediment-water interface/Santa Barbara Basin/Channel Islands/San Nicolas Basin/geology/chemistry/geochemistry.

1656. Mendelsohn S. Project execution plan for OTEC (ocean thermal energy conversion) current study. REP. U.S. NAV. FACIL. ENG. COMMAND CHESAPEAKE DIV 1978; As part of the Ocean Thermal Energy Conversion (OTEC) project the contractor being sponsored by the Department of Energy, Deep Oil Technology, Incorporated the contractor is conducting a verification test for the OTEC Cold Water Pipe during November and December 1978. The test is being conducted from the Deep Oil X-1 platform to: 1) test the analytical methods used to design the OTEC Cold Water Pipe; and 2) evaluate the performance of the Cold Water Pipe in the open sea. The work is being carried out off the coast of California on the seaward side of Santa Catalina Island in about 1,000 feet of water. The Cold Water Pipe tests will consist of supporting an instrumented steel pipe five feet in diameter and up to 800 feet long from the Deep Oil X-1. The dynamic behavior of the pipe will be measured for various sea conditions, platform motions, pipe length, and pipe supporting means.
data acquisition/OTEC plants/oceanographic data/experimental research/INE/USA/California/ASFA.

1657. Stuart CJ. Source terrane of the San Onofre Breccia; preliminary notes. Am. Assoc. Pet. Geol., Pac. Sect., Misc. Publ. (24). Aspects of the geol. hist. of the Calif. Cont. Borderland. 1976:p.309
Cont. Oil Co., Explor. Res. Div., Ponca City, Okla., United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present). San Diego County/Orange County/San Onofre Breccia/California/sedimentary petrology/sedimentary rocks/clastic rocks/terrigenous/breccia/Miocene/southwest/Channel Islands/Santa Cruz Island/Santa Catalina Island/Oceanside/Laguna Beach/conglomerate/clasts/petrography/lithofacies/provenance/United States/GEOREF.

1658. Wittmann PA, Kelley EA, Mooers CNK (Performer: Naval Postgraduate School, Monterey, CA). Hydrographic Data from the OPTOMA (Ocean Prediction Through Observations, Modeling and Analysis) Program: OPTOMA16, 20 May - 23 June 1985. Rept. for Oct 82-Aug 85. ; 1985. Report No.: NPS6885023. 133p. The OPTOMA (Ocean Prediction Through Observations, Modeling and Analysis) Program, seeks to understand the mesoscale (fronts, eddies, and jets) variability and dynamics of the California Current System and to determine the scientific limits to practical mesoscale ocean forecasting. To help carry out the aims of this project, a series of cruises has been planned in two subdomains off Northern and Central California. Data acquired during Leg MI, Leg MII and Leg A include expendable bathythermographic data and current temperature density data profiles. Bucket surface temperature and water samples for salinity were taken at most CTD stations. These surface values were used for calibration purposes as well as contributions to the data base. Leg A also acquired continuous 2m thermosalinograph measurements, continuous meteorological data such as atmospheric pressure at a height of 2m and wind speed and direction at a height of 20m, and acoustic Doppler velocity data. Keywords: California Current System; Physical Oceanography; Dynamic Oceanography.
Acoustic data/Acoustic velocity/Acoustic waves/Doppler effect/Surface temperature/California/Meteorological data/Dynamics/Barometric pressure/Data bases/Oceans/Salinity/Oceanographic

data/Collection/Planning/Bathythermograph data/Ocean surface/Predictions/Coastal regions/Limitations/Density/Profiles/Temperature/Wind velocity/Surfaces/Value/Sampling/Water/Ocean currents/Oceanography/OPTOMA Project/Ocean Prediction/California Current/NTIS.

1659. Boekelheide RJ, Ainley DG. Age, resource availability, and breeding effort in Brandt's cormorant. AUK 1989;VOL. 106, NO. 3:pp. 389-401 Point Reyes Bird Obs., 4990 Shoreline Highw., Stinson Beach, CA 94924, USA. The authors gathered life-history data on banded Brandt's Cormorants (Phalacrocorax penicillatus) at Southeast Farallon Island, California, from 1972 to 1984, and documented breeding performance as affected by age and annual variation in food availability. Females bred at a younger age than males, but did not live as long. Birds of both sexes that bred at least once bred the same number of years. Mate fidelity was low (9%) because of poor synchrony in the arrival of mates and low site fidelity by females. Prior breeding experience had little influence on reproductive success. The most successful individuals fledged 10-20 chicks over their lifetime, and averaged 2.5 chicks/breeding year over four to eight years. Cormorants experienced significant interannual differences in food availability.
food availability/Phalacrocorax penicillatus/biological age/breeding/INE, USA, California, Farallon I/Oceanic Abstracts.

1660. SMITH PE. SEASONAL AND GEOGRAPHIC CHARACTERISTICS OF FISHERY RESOURCES. COMMERCIAL FISHERIES REVIEW, 33(7-8): 40-43, JULY-AUG. 1971 1971 UNKNOWN.
ROCKFISHES/FISHERIES RESOURCES/CALIFORNIA CURRENT/SEASONAL AND GEOGRAPHIC CHARACTERISTICS/OceanAbstracts.

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Dynamic response analysis, a technique for determining stock size relative to the maximum net productivity level (MNPL), was applied to northern elephant seal populations from the South Farallon Islands, Ano Nuevo Island, San Nicolas Island and San Miguel Island. Pup counts were used as indices of population size. The application of dynamic response analysis presented here involved some methodological innovations. The authors present a moving interval method which involves calculating separate dynamic response analyses for intervals of various lengths ranging from four counts to the total number available for the colony.
population dynamics/productivity/USA/California/stock assessment/marine mammals/Mirounga angustirostris/pups/INE/USA/California/dynamic response analysis/ASFA.

1662. McLean H, Crowe BM, Howell DG. Source of Blanca Formation volcaniclastic rocks and strike slip faulting on Santa Cruz Island, California. Am. Assoc. Pet. Geol., Pac. Sect., Misc. Publ. (24). Aspects of the geol. hist. of the Calif. Cont. Borderland. 1976:p.294-308
U. S. Geol. Surv., Menlo Park, Calif., United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
Blanca Formation/California/sedimentary petrology/sedimentary rocks/clastic rocks/terrigenous/Miocene/southwest/Channel Islands/Santa Cruz Island/United States/provenance/pyroclastics/clasts/petrography/faults/displacements/strike slip/effects/GEOREF.

1663. Sherman K. Measurement strategies for monitoring and forecasting variability in large marine ecosystems. VARIABILITY AND MANAGEMENT OF LARGE MARINE ECOSYSTEMS.; 1986; pp. 203-235; AAAS SELECT. SYMP. SER.; no. 99 Significant effort is underway aimed at providing a scientific basis for the management and conservation of living resources within seven LMEs--the Insular Pacific, Eastern Bering sea, Gulf of Alaska California Current, Gulf of Mexico, Southeast Atlantic Shelf, and Northeast Atlantic Shelf. In each of the LMEs three resource assessment strategies have been implemented to monitor variability and forecast abundance of resource population: (1) utilization of yield statistics for estimating population trends, (2) yield-independent surveys of adult and early-life stages on mesoscale spatial (20-100 km) and temporal (weeks-months) sampling frequencies, and (3) process-oriented studies of ecosystem structure and function leading to improved resource forecasts.
ecosystems/marine resources/resource management/environment management/methodology/environmental monitoring/measuring techniques/marine ecosystems/variability/CSA Life Sciences Collection.

1664. Colton MC, Mooers CNK (Performer: Naval Postgraduate School, Monterey, CA). OPTOMA (Ocean Prediction Through Observations, Modeling, and Analysis) Program Interim Report. The Airborne Ocean Thermal Structure Mapping Project. Rept. for Feb 83-Feb 85. ; 1985. Report No.: NPS6885008. 106p. The Ocean Prediction Through Observation, Modeling and Analysis (OPTOMA) Program goals are to develop an ocean descriptive predictive system for studying and forecasting the evolution of ocean mesoscale features and the California Current System. Attainment of these goals requires the establishment of a broad-base ocean observing and monitoring system that includes, hydrographic research cruises, moored arrays, and remotely sensed data, etc. To forecast the evolution of the oceanic flow field, the observing system must include a means of obtaining real-time, synoptic maps for the initialization and verification of the dynamic model(s) used. P3 flights to deploy airborne expendable bathythermographs are a clear choice for frequent mappings. Since Feb. 1983 six OPTOMA missions have been flown. A total of 325 AXBTs have been successfully deployed off the northern and central California coasts. Data analysis reinforce recent discoveries about the character of the California Current System: the current regime is highly variable in nature and is comprised of cool anomalies, mesoscale eddies, 'squirts' and jets, current filaments and fronts. An airborne digital data acquisition system, built around an HP9816 microprocessor and a Sippican MK9 digitizing unit, digitizes the AXBT audio signal, then stores the profiles on diskette.
California/Coastal regions/Data processing/Filaments/Arrays/Mooring/Oceans/Predictions/Anomalies/Cooling/Dynami cs/Models/Monitoring/North Direction/Flow fields/Oceanographic data/Bathythermograph data/Collection/Airborne/Planning/Maps/Synoptic meteorology/Ocean currents/Oceanography/OPTOMA Project/Ocean prediction/California current/NTIS.

1665. Nelson DA. Gull predation on Cassin's auklet varies with the lunar cycle. AUK 1989;VOL. 106, NO. 3:pp. 495-497 Rockefeller Univ., Field Res. Cent., Box 38B, RR2, Tyrrel Rd., Millbrook, NY 12545, USA.
predation/Ptychoramphus aleuticus/Laridae/circadian rhythms/INE, USA, California, Farallon I./environmental effects/Oceanic Abstracts.

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CRABS/BREEDING/PLEURONCODES/CALIFORNIA CURRENT/P/PLANIPES/OceanAbstracts.

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MINERALS MANAGEMENT SERVICE.

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MINERALS MANAGEMENT SERVICE.

1669. Howell DG, McLean H. Middle Miocene paleogeography, Santa Cruz and Santa Rosa islands. Am. Assoc. Pet. Geol., Pac. Sect., Misc. Publ. (24). Aspects of the geol. hist. of the Calif. Cont. Borderland. 1976:p.266-293 U. S. Geol. Surv., Menlo Park, Calif., United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
California/sedimentary petrology/sedimentary rocks/clastic rocks/terrigenous/Miocene/southwest/Channel Islands/Santa Cruz Island/Santa Rosa Island/United States/paleogeography/transport/middle Miocene/pyroclastics/conglomerate/sandstone/siltstone/lithofacies /massive/unsor ted/bedding/graded bedding/paleocurrents/provenance/sedimentation/turbidity currents/traction currents/GEOREF.

1670. MacCall A. Changes in the biomass of the California Current ecosystem. VARIABILITY AND MANAGEMENT OF LARGE MARINE ECOSYSTEMS.; 1986; pp. 33-54; AAAS SELECT. SYMP. SER.; no. 99
California Current pelagic fishes have been monitored for 30 to 50 years, and a paleosedimentary record extends back 200 to 2000 years. Large natural fluctuations in abundance occur at all time scales. Overharvest of sardines removed a major component of the ecosystem; the extent to which it was replaced by other species is not clear. Large predatory fishes have declined in abundance due to exploitation. Pinnipeds were depleted in the last century, but now are abundant and are increasing rapidly. Seabird reproductive success is closely related to availability of small forage fish such as anchovy. Despite a wealth of scientific information, species interactions are poorly understood, and are difficult to separate from independent differential responses to varying environmental conditions. The biological basis of fishery management is likely to remain single-species models in the foreseeable future. Ecosystem management requires coordinated consideration of both fished and non-fished species, but faces conflicting jurisdictions and other institutional difficulties.
ecological balance/ecosystem management/marine fisheries/Pacific Ocean/ California Current/biomass/environmental changes/marine ecosystems/INE/ California Current/ISE/California Current/environmental conditions/changes/CSA Life Sciences Collection.

1671. Kozloff P (Performer: National Marine Fisheries

Service, Seattle, WA. Northwest and Alaska Fisheries Center.) Fur Seal Investigations, 1983. Technical memo. ; 1985. Report No.: NOAATMNMFSFNWC78. 84p.
See also PB85-186047. PC A05/MF A01.
Northern fur seal, Callorhinus ursinus, research in 1983 was conducted on the Pribilof Islands and Bogoslof Island in Alaska and on San Miguel Island and nearby Castle Rock, California. Estimates made of the number of pups born in 1983 on the Pribilof Islands indicate a continuing decline in the number of northern fur seals there. Censuses of juvenile males on the hauling grounds of St. George Island from 1978 to 1983 show a general decline in their numbers.
San Miguel Island/Bering Sea/Populations/Breeding/Census/Bogoslof Island/Seals Mammals/Pribilof Islands/North Pacific Ocean/Fur seals/Callohinus ursinus/NTIS.

1672. Stephens JS,, Singer M, Targgart L. Notes on the first record of the orangethroat pikeblenny, Chaenopsis alepidota (Gilbert), in mainland California. CALIF. FISH GAME 1989;VOL. 75, NO. 3:pp. 180-183
Vantuna Res. Group, Occidental Coll., Los Angeles, CA 90041, USA.
The authors report the presence of the orangethroat pikeblenny, Chaenopsis alepidota , in King Harbor, Redondo Beach, which is the first record from a mainland California location. This blenny occurs as two presumably disjunct populations, one in the Gulf of California, C. a. alepidota , and one known from Catalina and Anacapa Islands, C. a. californiensis . At Catalina Island, Chaenopsis alepidota inhabits Chaetopterus -like tubes in quiet sand flats. In the 1960's populations were present in many beaches on the leeside of Catalina Island at depths about 10 m. The only record of this fish from Anacapa Island is a photo. One explanation for the absence of the species on mainland California is that the protected, clean, shallow sand flat habitat required does not occur there since the coast is regularly encroached upon by winter Pacific storm waves. new records/horizontal distribution/habitat/Chaenopsis alepidota/IN E, USA, California/Oceanic Abstracts.

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oceanography/tectonophysics/geophysical surveys/crust/gravity surveys/continental shelf/Santa Cruz Basin/observations/Bouguer anomalies/free-air anomalies/mantle/Neogene/Tertiary/Cenozoic/Santa Cruz Basin/Santa Barbara Channel/geology/solid earth geophysics.

1674. Fang CM. Sea surface current estimates off central California as derived from enhanced AVHRR (advanced very high resolution radiometer) infrared images. 1987;
A technique is presented which uses an interactive computer program to estimate sea surface current velocities from the displacement of sea surface temperature (SST) patterns apparent in enhanced sequential infrared images obtained from the NOAA-6 Advanced Very High Resolution Radiometer. This technique was applied to the surface currents of the California Current System using IR image data from 27 and 28 April 1981. This technique, which uses enhanced pseudocolor gradient imagery, produced more current vectors than an earlier technique develop by O'Hara (1987) which used unenhanced gray scale imagery.
satellite sensing/image enhancement/infrared imagery/surface temperature/surface currents/INE/California Current/ASFA.

1675. Minch JA, Gibson KN, Peterson GL. Clast populations in Sespe and Poway conglomerates and their possible bearing on the tectonics of the southern California Borderland. Am. Assoc. Pet. Geol., Pac. Sect., Misc. Publ. (24). Aspects of the geol. hist. of the Calif. Cont. Borderland. 1976:p.256-265 Saddleback Coll., Mission Viejo, Calif., United-States; San Diego State Univ., San Diego, United States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
San Diego County/San Bernardino County/Sespe Formation/Poway Group/California/sedimentary petrology/sedimentary rocks/clastic rocks/terrigenous/conglomerate/southwest/Santa Ana Mountains/San Diego/clasts/petrography/interpretation/provenance/Eocene/United States/GEOREF.

1676. Cross J. Fin erosion among fishes collected near a southern California municipal wastewater outfall (1971-82). FISH. BULL., STATE CALIF., FISH GAME COMM 1985;83(2):195-206.
In the Southern California Bight fin erosion is most frequently encountered among fishes collected near municipal wastewater outfalls. This paper presents an analysis of the trends in the incidence of fin erosion among fishes collected by otter trawls near Los Angeles from 1971 through 1982. About 24% of the 122 species of fish and 9% of the more than 170,000 individuals collected had the disease. Flatfish (Pleuronectidae, Bothidae, and Cynoglossidae) and rockfish (Scorpaenidae) accounted for 66% of the affected species and 99% of the affected individuals. Dover sole (Pleuronectidae: Microstomus pacificus) accounted for 89% of the affected individuals. The incidence of fin erosion was highest close to the outfalls and declined with increasing distance. The number of species with the disease declined from 1971 to 1982. The incidence of the disease also declined in two of the three most affected species (Dover sole and rex sole, Glyptocephalus zachirus).
sewage outfalls/wastewater treatment/pollution effects/fins/erosion/USA/California/outfalls/fish/California/wastewater discharges/Pisces/ISE/California Bight/CSA Life Sciences Collection.

1677. Wittmann PA, Kelley EA, Mooers CNK (Performer: Naval Postgraduate School, Monterey, CA). Hydrographic Data from the OPTOMA Program, OPTOMA17: OPTOMA17 P, 21 July 1985, OPTOMA17 Leg DI, 10-22 August 1985, OPTOMA17 Leg DII, 23 August-5 September 1985. Rept. for Oct 82-Sep 85. ; 1985. Report No.: NPS6885026. 133p.
The OPTOMA (Ocean Prediction Through Observations, Modeling and Analysis) Program seeks to understand the mesoscale (fronts, eddies, and jets) variability and dynamics of the California Current System and to determine the scientific limits to practical mesoscale ocean forecasting. To help carry out the aims of this project, a series of cruises has been planned in two subdomains, NOCAL and CENCAL. The two cruises and one AXBT flight comprising OPTOMA17 were undertaken in the USNS DE STEIGUER and a Reserve Patrol Wing P3B aircraft. Hydrographic data were acquired off the coast of California in an area which covered and extended the NOCAL region. On each of these cruises, hydrographic stations were occupied at approximately 19 km along the track. For the AXBT flight, the along-track station spacing varied between about 28 km and about 46 km. Data acquired during Legs DI and DII include XBT and CTD profiles; whereas data acquired during Leg P are AXBT profiles. Bucket surface temperatures were taken at all CTD stations. A rosette sampler was used to acquire deep salinity samples. These salinity samples were used for calibration purposes as well as contributions to the data base.

Conductivity/Density/Ocean surface/Fronts Oceanography/Eddies Fluid mechanics/Ocean models/Forecasting/Surface temperature/California/Data bases/Dynamics/Hydrography/Stations/Oceans/Predictions/Calibratio n/Salinity/Sam pling/Coastal regions/Samplers/Oceangraphic data/Predictions/Ocean currents/North pacific ocean/Bathythermograph data/OPTOMA project/California current/NTIS.

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UNKNOWN.
CALIFORNIA CURRENT/PARTICULATE MATTER/DDT RESIDUES/OceanAbstracts.

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California/radiolarians/ecology/algal flora/oceanography/diatom flora/observations /continental margin/California ContinentalBorderland/North American Pacific/species diversity/marine sediments/anaerobicenvironment/biocenoses/California Current/El Nin/ocean currents/Southern California/Hickey/physical oceanography/MINERALS MANAGEMENT SERVICE.

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1681. Neighbors MA. Triacyglycerols and wax esters in the lipids of deep midwater teleost fishes of the Southern California Bight. MAR. BIOL 1988;98(1):15-22.
Total lipid contents and the proportions of triacylglycerols and wax esters were examined in 23 species of deep-sea fishes collected between 1977 and 1980 in the Santa Catalina, San Clemente and San Pedro Basins off Southern California, USA. Mean total lipid content ranged from < 1 to 22% of wet weight. Triacylglycerols accounted for 1 to 91% of total lipids present and were more abundant than wax esters in the lipids of all but a single species. Wax ester contents ranged from 0 to 24% of total lipids but in 20 species were < 10% of the lipids. Lipids, largely in the form of triacylglycerols, may be important in the buoyancy of three species with lipid contents > 10% of wet weight. Two of these species also possess inflated swimbladders.
waxes/esters/lipids/depth/Teleostei/buoyancy/INE/USA/California/A SFA.

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U. S. Geol. Surv., Menlo Park, Calif., United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
Vaqueros Formation/San Onofre Breccia/Rincon Formation/Blanca

Formation/Monterey
Formation/California/stratigraphy/Miocene/sedimentary
rocks/southwest/Channel Islands/Santa Cruz Island/Santa Rosa
Island/clastic
rocks/terrigenous/breccia/conglomerate/sandstone/mudstone/lithofa
cies/clasts/pe
trography/lithostratigraphy/correlation/provenance/United
States/tectonics/evolution/uplifts/folds/effects/GEOREF.

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Oceanographic Sciences, Wormley (England)). MV FARNELLA Cruises
1/84-4/84: 26 April - 15 August 1984. GLORIA Studies of the
Exclusive Economic Zone off the Western United States between 30
deg 30 min and 48 deg 30 min see N. ; 1985. Report No.: CRUISE174.
29p.

See also PB84-110600. PC E05/MF E05.
EEZ-SCAN was a co-operative research program between the United
States Geological Survey (USGS) and the Institute of Oceanographic
Sciences (IOS). The major aim of the program was to undertake a
reconnaissance survey of the entire United States exclusive
economic zone (EEZ) adjacent to the western United States using the
long-range sidescan sonar, GLORIA. In addition to GLORIA data,
single-channel airgun seismic reflection profiles, 3.5 kHz and 10
kHz high-resolution profiles and magnetic anomaly profiles were
continuously collected during the program. Specific objectives of
Leg 1 were to: Obtain overlapping sidescan sonar coverage from the
US-Mexican Border. Survey as much of the bathymetrically-complex
southern California Continental Borderland as possible.
Sonar detection/Bathymetry/Depth/Seismic reflection/Profiles/North
Pacific Ocean/Oregon/Washington State/Magnetic
anomalies/Oceanographic surveys/Oceanographic data/Exclusive
economic zone/Gloria vessel/Foreign technology/NTIS.

1684. Salzman JE. Scientists as advocates: The Point Reyes
Bird Observatory and gill netting in central California. CONSERV.
BIOL 1989;VOL. 3, NO. 2:pp. 170-180
68 Francis Ave., Cambridge, MA 02138, USA.
Scientists and scientific organizations can play singularly
important roles as advocates in the public resolution of
conservation disputes. One scientific organization, the Point Reyes
Bird Observatory, was instrumental in resolving an environmental
controversy in the early 1980s over the use of gill nets off
central California. The gill-net fishery was killing thousands of
birds annually. The Point Reyes Bird Observatory's use of its
scientific data facilitated negotiation and formed the basis for
the threat of litigation. These efforts spurred enforcement of
federal wildlife legislation and helped forge a permanent solution
acceptable to state and federal environmental agencies,
conservation groups, and local fishermen.
mortality/Aves/gillnets/INE, USA, California/nature conservation/e
nvironmental legislation/Oceanic Abstracts.

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FISHERY RESOURCES. CALIFORNIA CURRENT REGION - III. PACIFIC HAKE.
COMMERCIAL FISHERIES REVIEW, 32(7): 41-44, JULY 1970 1970
UNKNOWN.
FISHERIES RESOURCES/MERLUCCIUS/HAKES/CALIFORNIA CURRENT/
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1986;70(10):1303-1314 Address: Chevron USA, Inc., 6001 Bollinger

Canyon Rd., San Ramon, CA 94583-2398, USA.
Drilling activity in the West Coast region in 1985 maintained the brisk 1984 level, the number of wells drilled decreasing by only 2%. Exploration efforts continued at the pace of the previous year with 265 exploratory wells drilled in 1985, 4 less than in 1984. Exploration offshore California continued to decline as development plans progressed for the nearly 2 billion bbl of oil discovered in recent years. Three new platforms were launched in 1985, and 13 others are planned for the Santa Maria and Santa Barbara Channel offshore areas. The Monterey Formation continued to be a hot exploration target, with 4 of the 12 exploratory wells drilled in 1985 each testing combined rates of more than 3,700 b/d of 8-16 degree oil. Drilling in Oregon and Washington continued its active trend with 25 wells drilled in the 2 states in 1985, 5 more than 1984.
oil and gas exploration/drilling/energy sources/Monterey Formation/petroleum/natural gas/geothermal energy/offshore/onshore/exploration/production/enhanced recovery/West Coast of the United States/Santa Maria Channel/Santa Barbara Channel/Western United States/California/Oregon/Washington/San Joaquin Basin/The Geysers/Imperial Valley/Sacramento Basin/Coso Hot Springs KGRA/Casa Diablo Hot Springs/petroleum/economic geology/energy sources.

1687. Titov VB. New data on the California branch of the North Equatorial Current. DOKL. AN S.S.S.R 1988;299(4):985-988.
Results of the first instrumental survey of the Californian branch of North Equatorial current made during the 11th cruise of the R/V Vityaz in April 1986 are given. Current and temperature were measured at 10 independent anchor stations along 119 degree W between 10 and 14 degree 30'N at 50, 150, 300, 500 and 1000m at 15 min intervals for 18 days. Vertical current structure was investigated at 1500, 2000, 2500, 3000 and 3500 m at the entire depth of 4000 m. Actual data on the transfer of mass, heat, and salts through the above meridional section are tabled. The direct measurements revealed comparatively low current velocities, which conforms with geostrophic calculations whereas the width and depth of the current propagation proved to be higher than those from indirect estimates. water currents/current measurement/ISE/California Current/ASFA.

1688. Hill DJ. Geology of the Jurassic basement rocks, Santa Cruz Island, California, and correlation with other Mesozoic basement terranes in California. Am. Assoc. Pet. Geol., Pac. Sect., Misc. Publ. (24). Aspects of the geol. hist. of the Calif. Cont. Borderland. 1976:p.16-46
Univ. Calif., Santa Barbara, Calif., United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
Santa Cruz Island Schist/Willows Plutonic Complex/California/petrology/igneous rocks/metamorphic rocks/Santa Cruz Island/Jurassic/United States/basement/upper Jurassic/Alamos Pluton/metasedimentary/metaplutonic/facies/textures/spilite/keratophyre/quartz keratophyre/gabbro/ultramafic family/microdiorite/leucotonalite/dikes/complexes/mineral assemblages/genesis/interpretation/GEOREF.

1689. Smith R, Dustan P, Au D, Baker K, Dunlap E. Distribution of cetaceans and sea-surface chlorophyll concentration in the California Current. MAR. BIOL 1986;91(3):385-402.
A census of marine mammals was conducted off the coast of California (USA) in 1979-1980. The distribution of sea-surface chlorophyll was determined at the same time by onboard fluorometry and by remote sensing using the Coastal Zone Color Scanner on the

Nimbus-7 satellite. Comparisons of species and chlorophyll distributions indicate that marine mammals are not randomly distributed with respect to chlorophyll. It is suggested that oceanic chlorophyll may be used as a habitat descriptor for selected marine mammals, and that remote sensing will provide complementary data useful in the interpretation of observed distribution patterns of marine mammals and in the estimation of their abundance. California Current/chlorophylls/productivity/population levels/habitat preferences/Cetacea/CSA Life Sciences Collection.

1690. Dixon R (Performer: Pacific Missile Test Center, Point Mugu, CA). Tidal and Lunar Data for Point Mugu, San Nicholas Island, and the Barking Sands Area during 1986. Annual rept. ; 1985. Report No.: PMTCTP00035. 40p. Basic lunar and tidal data for Point Mugu, San Nicolas Island, and the Barking Sands Area during 1986 are provided. The data presented are (1) tidal data, (2) times of moonrise and moonset, (3) times of lunar phases, and (4) times of sunrise and sunset. Keywords: Barking Sands, Hawaii; Lunar data; Point Mugu, California; San Nicolas Island, California; Tide tables.
California/Hawaii/Moon/Phase/Sunrise/Sunset/Tables Data/Tides/Santa barbara islands/Ocean tides/Point Mugu/San Nicolas Island/Barking Sands/Moonrise/Moonset/NTIS.

1691. Spiesberger JL, Bushong PJ, Metzger KJ, Birdsall TG. Ocean acoustic tomography: Estimating the acoustic travel time with phase. IEEE J. OCEAN. ENG 1989;VOL. 14, NO. 1:pp. 108-119
Woods Hole Oceanogr. Inst., Woods Hole, MA 02543, USA.
Continuous acoustic transmissions (133 Hz, 60 ms resolution) between a bottom-mounted source near Oahu, Hawaii, and a bottom-mounted receiver at 4000 km range near the coast of northern California are recorded during a 5-day interval in 1983. An acoustic method, based on cross correlation, is derived to estimate the change in the average acoustic phase (travel time) to a precision of about 0.018 cycles (135 mu s) every 2 min. The new travel-time estimator is applied to the measurements to examine some of the fluctuations of the Pacific. acoustic tomography/sound transmission/sound velocity/ray paths/per iodic variations/INE, USA, California/ISE, Hawaii, Oahu/Oceanic Abstracts.

1692. Blanc TV. Data base for the May 1979 marine surface layer micrometeorological experiment at San Nicolas Island, California. : NTIS, Springfield, VA; 1982. Unknown.
Address: Naval Res. Lab., Washington, D.C., USA.
One hundred thirty-six hours of gradient (profile) and bulk aerodynamic measurements of momentum, moisture, and sensible heat flux, accompanied by determinations of stability, drag coefficient, roughness length, and sky radiation were made in the marine atmospheric surface layer over the Pacific Ocean from an upwind, low-profile promontory of San Nicolas Island, California. Over a 10-day period a wide variety of meteorological and oceanographic conditions were observed. The micro-meteorological observations were accompanied by 80 hours of aerosol size distribution observations of particles ranging from 0.3 to 14 micrometers in radius, 171 hourly measurements of upwind wave period and height, 59 hourly measurements of atmospheric radon (222Rn), and typically twice daily high resolution radiosonde measurements for determining the height of the marine inversion. The data includes measurement error values for the various flux and stability related parameters.
data bases/meteorology/oceanography/aerosols/radon/atmospheric conditions/San Nicolas Island/meteorology/atmospheric sciences.

1693. Colebrook JM. Annual fluctuations in biomass of taxonomic groups of zooplankton in the California Current, 1955-59. U.S. Fish. Wildl. Serv. Fish. Bull. 1977;75(2):357-368. Pieper/Dawson/Zooplankton/Text/MINERALS MANAGEMENT SERVICE.

1694. Alvarino A. Spadella pimukatharos , a new benthic chaetognath from Santa Catalina Island, California. PROC. BIOL. SOC. WASH 1987;100(1):125-133. Spadella pimukatharos is described and compared with closely related species Spadella legazpichessi , S. nana , and S. schizoptera . These species are related in part by the structure fo the adhesive digital organs. The substratum apparently preferred by S. pimukatharos is a sediment rich in fragments of coralline algae. new species/Spadella pimukatharos/animal morphology/INE/USA/California/ Santa Catalina Island/taxonomy/ASFA.

1695. Fisher RV, Charlton DW. Mid Miocene Blanca Formation, Santa Cruz Island, California. Am. Assoc. Pet. Geol., Pac. Sect., Misc. Publ. (24). Aspects of the geol. hist. of the Calif. Cont. Borderland. 1976:p.228-240 Univ. Calif., Santa Barbara, Calif., United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
Blanca Formation County/California/stratigraphy/Miocene/igneous rocks/pyroclastics and glasses/sedimentary rocks/southwest/Channel Islands/Santa Cruz Island/Near Point/Bowes Point/Sierra Blanca/United States/thickness/Blanca Formation/clastic rocks/terrigenous/pyroclastics/tuff/breccia/sandstone/conglomerat e/clasts/petro graphy/andesite/dacite/environmental analysis/marine/shallow/provenance/ash flow/tephra/GEOREF.

1696. Driessen P. Offshore oil platforms: An invaluable ecological resource. OCEANS '86 CONFERENCE RECORD: SCIENCE-ENGINEERING-ADVENTURE. VOL. 2. DATA MANAGEMENT, INSTRUMENTATION AND ECONOMICS.; 1986; pp. 516-521; OCEANS '86 Hard substrates created by oil platforms in the Gulf of Mexico and Santa Barbara Channel provide a significant portion of the hard bottom habitat that is essential for the encrusting organisms that form the base of a complex food web. These substrates, the platforms' high profile and open structure, and their creation of excellent habitats and breeding grounds from the sea floor through the splash zone expand the numbers, diversity and range of many desirable fish, shellfish and other organisms.
artificial reefs/offshore structures/utilization/risks/risk assessment/oil and gas industry/ecological evaluation/industrial sites/CSA Life Sciences Collection.

1697. Culver RL (Performer: Scripps Institution of Oceanography, La Jolla, CA. Marine Physical Lab.) Infrasonic Ambient Ocean Noise Spectra from Freely Drifting Sensors. Summary rept. ; 1985. Report No.: MPLU5285, SIOREF8522. 51p. Self-contained Swallow Floats can record very low frequency (VLF) ambient ocean noise over extended periods of time. The autonomous buoys measure and record the components of particle velocity in the 1-10 Hz band. They can be ballasted to neutral buoyancy at a desired depth. The buoys generate and receive high frequency acoustic signals which may be used to determine their relative positions. The deployment of several of these units forms a freely drifiting array of sensors. Individual element time series may be combined coherently off-line using a beamformer, e.g., the MPL dynamic Beamformer. The Swallow float design minimizes self-noise which can limit accurate ambient ocean noise measurements. The floats drift freely and are not subject to flow noise or cable

strumming. They measure particle velocity and are therefore insensitive to variations in local pressure. MPL has conducted Swallow float deployments annually since 1982. The 1982 deployment tested only the acoustic positioning system. Between 12 and 14 July 1983, three Swallow floats were deployed at a location approximately 50 miles west of San Diego. California and southeast of San Clemente Island (32'N, 118'W). Sea state during the deployment varied between 1 and 2. Water depth was approximately 1900 meters. Two of the floats deployed to a depth of about 1400 meters and the third deployed to the bottom. Measurements recorded by float 3 which deployed to 1400 meters have been analyzed and results are reported in this thesis. Beam forming/Buoys/Deployment/Depth/Detectors/Drift/Dynamics/Floats/Measurement/Nois e/Oceans/Particles/Parts/Position Location/Sea states/Theses/Time series analysis/Velocity/Very low frequency/Water/Oceanographic data/Acoustic arrays/Ambient noise/NTIS.

1698. Stewart JG. Maintenance of a balanced, shifting boundary between the seagrass Phyllospadix and algal turf. AQUAT. BOT 1989;VOL. 33, NO. 3-4:pp. 223-241 A-002, Scripps Inst. Oceanogr., Univ. California, La Jolla, CA 92093, USA. A dense mat of algal turf covers much of the rocky mid-intertidal substrate on beaches in southern California. Beds of Phyllospadix dominate the lower part of the intertidal zone. The study was designed to identify processes that result in this distribution pattern. To evaluate the role of direct plant/plant interactions, changes in the position of the border were measured in undisturbed vegetation and in clearings between two dominant taxa, P. torreyi S. Watson and Corallina pinnatifolia (Manza) Daws. Recovery of the substrate in clearings within the bed was monitored. Growth rates for prostrate and erect portions of each of the taxa were determined. Corallina and Phyllospadix share certain morphological and life history properties that are adaptive to seasonal weather patterns and the effects of sand movement on these intertidal platform beaches; each has distinct advantages on short or longer time scales within the boundary zone where one form replaces the other at a discrete border.
Phyllospadix/algae/community structure/intertidal environment/INE, USA, California/habitat selection/interspecific relationships/Oceanic Abstracts.

1699. SMITH PE. SEASONAL AND GEOGRAPHIC CHARACTERISTICS OF FISHERY RESOURCES. CALIFORNIA CURRENT REGION - I. JACK MACKEREL. COMMERCIAL FISHERIES REVIEW, 32(5): 27-31, MAY 1970 1970 UNKNOWN.
MACKERELS/FISHERIES RESOURCES/CALIFORNIA CURRENT/ZOOGEOGRAPHY/SEASONAL VARIATIONS/OceanAbstracts.

1700. Blanc TV. Report and analysis of the May 1979 marine surface layer micrometeorological experiment at San Nicolas Island, California. Final Report. : Naval Research Lab., Washington, DC. NRL-8363; 1981. 150. One hundred thirty-six hours of profile and bulk measurements of momentum, moisture, and sensible heat flux, accompanied by determinations of stability, were made in the marine atmospheric surface layer over the Pacific Ocean from an upwind, low-profile promontory of San Nicolas Island, California, at 33 deg North latitude and 120 deg West longitude. A review of previous marine surface layer profile measurements is presented, and the need for additional high wind speed flux measurements is demonstrated. Extensive analysis of the San Nicolas Island data revealed that the measurements were made upwind and above the internal boundary layer formed by the island. Additionally, a

generalized technique was developed for correcting the wind-profile modification induced by the inherent change in elevation associated with many beaches. A comparison with previous profile measurements determined that earlier experimenters had overestimated the accuracy of their humidity measurements and that it was impractical to introduce buoyancy into the stability equation. An analysis performed to determine the relative magnitude of the flux and stability measurement errors associated with both the profile and bulk methods determined that the errors were typically in excess of 100%. Recommendations for future bulk method measurements are presented. and a simple two level bulk method is proposed. An extensive bibliography is given, and the topic of horizontal homogeneity of the marine boundary layer is discussed.
Marine meteorology/Micrometeorology/Meteorological data/Pacific Ocean/Ocean surface/Profiles/Oceanographic data/Air water interactions/Surface temperature/Wind direction/Wind velocity/San Nicolas Island/atmospheric sciences/meteorology/physical oceanography.

1701. Monagna PA, Bauer JE, Toal J, Hardin D, Spies RB. Temporal variability and the relationship between benthic meiofaunal and microbial populations of a natural coastal petroleum seep. J. MAR. RES 1987;45(3):761-789. Previous studies of the Isla Vista petroleum seep in the Santa Barbara Channel found much higher abundances of macrofauna and concentrations of adenosine triphosphate (ATP) in sediments near petroleum seepage compared to those from nonseep areas. To further assess the possible effect of petroleum on organisms at the base of benthic food webs, population abundances of meiobenthos and their suspected microbial food (bacteria and diatoms) were measured biweekly for one year at three stations with differing petroleum exposure. Determinations of suspended particulate matter and the abundance and gut contents of juvenile fishes were also made at seep and nonseep stations.
oil seepages/food webs/meiobenthos/microorganisms/meiofauna/benthos/population dynamics/marine microorganisms/USA/California/Santa Barbara Channel/petroleum/bacteria/Bacillariophyceae/abundance/INE/Santa Barbara Channel/temporal variations/seeps/ASFA.

1702. Higgins RE. Major element chemistry of the Cenozoic volcanic rocks in the Los Angeles Basin and vicinity. Am. Assoc. Pet. Geol., Pac. Sect., Misc. Publ. (24). Aspects of the geol. hist. of the Calif. Cont. Borderland. 1976:p.216-227
Cent. Wash. State Coll., Wash., United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
Los Angeles County/California/geochemistry/major elements/igneous rocks/volcanic/southwest/Los Angeles Basin/Santa Monica/Santa Monica Mountains/Los Angeles/Glendora/Santa Cruz Island/basalt/dacite/andesite/interpretation/plate tectonics/subduction zones/Miocene/subduction/United States/GEOREF.

1703. Wittmann PA, Colton MC, Rendine JJ, Mooers CNK (Performer: Naval Postgraduate School, Monterey, CA). Hydrographic Data from the OPTOMA Program OPTOMA18 31 October and 2 November 1985. Progress rept. Oct 85-Jan 86. ; 1985. Report No.: NPS6886001. 49p.
The OPTOMA (Ocean Prediction Through Observation, Modeling and Analysis) Program seeks to understand the mesoscale (fronts, eddies, and jets) variability and dynamics of the California Current System and to determine the scientific limits to practical mesoscale ocean forecasting. To help carry out the aims of this project, a series of cruises and P3 flights has been planned in two subdomains, NOCAL and CENCAL. Bathythermographic data were acquired

with shallow (300m) and deep (700m) AXBT's which were deployed from a Navy P3 aircraft.
Oceanography/California/Hydrography/Limitations/Dynamics/Oceans/Predictions/Bat hythermograph data/Ocean currents/OPTOMA project/NTIS.

1704. Hubbard DM, Dugan JE. Northern occurrence of two estuarine crabs: The fiddler crab, Uca crenulata , and the burrowing crab, Malacoplax californiensis. CALIF. FISH GAME 1989;VOL. 75, NO. 1:pp. 55-57
Mar. Sci. Inst., Univ. California, Santa Barbara, CA 93106, USA. A male fiddler crab, Uca crenulata , was found in Goleta Slough, approximately 2 km E of the University of California, Santa Barbara campus, on 17 July 1986. The fiddler crab was found in the upper intertidal zone of the small estuary, in a muddy area vegetated with pickleweed. Salicornia sp. in U. crenulata is the only species of fiddler crab reported from California. U. crenulata has previously been reported as far north as Playa del Rey, Los Angeles County. One male burrowing crab, Malacoplax californiensis , was collected on the Morro Bay mud flat during an early morning minus tide, several hundred meters S of the Morro Bay State Park. The crab was collected in shallow water in a muddy area with patches of eelgrass, Zostera sp., and ghost shrimp, Callianassa californiensis , burrows. M californiensis is an interedial to subtidal inhabitant of bays and protected water in southern California and Baja California. M. californiensis was previously reported as far north as Mugu Lagoon, Ventura County. The northern extensions of these species may be the result of larval transport and recruitment associated with nearshore currents during the El Nino events of 1982 and 1983. The distances between previous northernmost occurrences and those reported here are about 130 km for U. crenulata and 230 km for M. californiensis .
distribution records/geographical distribution/Uca crenulata/Malacop lax californiensis/biogeography/INE, USA, California/INE, USA, California, Santa Barbara/INE, USA, California, Morro Bay/estuaries/Oceanic Abstracts.

1705. Blanc TV. Micrometeorological data for the 1978 Cooperative Experiment for West Coast Oceanography and Meteorology (CEWCOM-78) at San Nicolas Island, California. Volume I. Introduction and May 9-15 Data. Interim rept. : Naval Research Lab Washington DC. NRL-MR-3871-VOL-1; 1978. 384. Note: See also Volume 2, AD-A061 113.
A detailed presentation and explanation of the Naval Research Laboratory's approximately 440 micrometeorological data runs taken in the marine surface layer of San Nicolas Island during the May 1978 Cooperative Experiment for West Coast Oceanography and Meteorology (CEWCOM-78) is presented.
Micrometeorology/Marine meteorology/Meteorological data/Oceanographic data/Surface waters/Towers/Collecting methods/Meteorological instruments/Data displays/Computer printouts/Ocean surface/San Nicolas Island/ Atmospheric Sciences/Meteorology.

1706. Middaugh DP, Hemmer MJ. Reproductive ecology of the tidewater silverside, Menidia peninsulae (Pisces: Atherinidae) from Santa Rosa Island, Florida. COPEIA. 1987;(3):727-732.
The reproductive ecology of the tidewater silverside, Menidia peninsulae , was studied during 1982-83 along the shoreline of Santa Rosa Island, Florida. Adult Menidia were observed at low tide spawning on a red alga, Ceramium byssoideum . Pinfish, Lagodon rhomboides , were noted preying upon newly spawned Menidia eggs. The annual reproductive cycle of M. peninsulae extended from Feb.-

July with the highest spawning activity during March-June at water temperatures of 16.7-30.8 C. Spawning and subsequent hatching of larvae may have occurred in periodic pulses throughout the spring and early summer.
USA/Florida/Santa Rosa Island/reproduction/spawning/reproductive cycle/Menidia peninsulae/seasonal variations/ASW/USA/Florida/Santa Rosa I./ASFA.

1707. Crowe BM, McLean H, Howell DG, Higgins RE. Petrography and major element chemistry of the Santa Cruz Island volcanics. Am. Assoc. Pet. Geol., Pac. Sect., Misc. Publ. (24). Aspects of the geol. hist. of the Calif. Cont. Borderland. 1976:p.196-215
U. S. Geol. Surv., Menlo Park, Calif., United-States; Cent. Wash. State Coll., Wash., United States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
California/petrology/igneous rocks/volcanic/Miocene/southwest/Santa Cruz Island/basalt/andesite/dacite/lava flows/flow breccia/pyroclastics/petrography/geochemistry/major elements/magnesia/iron/silica/alumina/potash/titanium/abundance/ratios/GEOREF.

1708. Fishery Bulletin 1986;84(1)
Performer: National Marine Fisheries Service, Seattle, WA
Young jack mackerel, Trachurus symmetricus, living offshore are starving while those living nearshore are healthy. These results for sea-caught jack mackerel were determined by using histological and morphological criteria that reliably diagnosed the viability of laboratory-raised jack mackerel. Both the histological and morphological indices indicated that 350 km offshore about 70% of the first-feeding jack mackerel were starving. In contrast, 12% of the fish collected near islands and banks were starving. In both habitats, mortality rates decreased to zero for jack mackerel at 2 weeks of age. The accuracy of the techniques for prediction of the nutritional state of wild larvae is discussed and evaluated.
Mortality/Hypoxia/Dolphins
Mammals/Eggs/Estuaries/Lobsters/Exposure/Organic compounds/Metals/Clams/Salmon/North Atlantic Ocean/Florida/Ecology/Zooplankton/California current/Crabs/Fishes/Marine fishes/Fisheries/Announcement bulletins/Trachurus symmetricus/Quahog/NTIS.

1709. Alldredge AL, Gotschalk CC. Direct observations of the mass flocculation of diatom blooms: Characteristics, settling velocities and formation of diatom aggregates. DEEP-SEA RES 1989;VOL. 36, NO. 2A:pp. 159-171 Dep. Biol. Sci., Univ. California, Santa Barbara, CA 93106, USA. Blooms of chain-forming marine diatoms were observed in the process of aggregating into centimeter-sized flocs of marine snow in surface waters of the Santa Barbara Channel, California. These aggregates were composed of a rich assemblage of living, actively photosynthesizing diatoms dominated by the setose genus Chaetoceros and by chain-forming Nitzschia spp. Flocculation of one bloom occurred in as little as 24 h, and bloom flocculation apparently was not triggered by nitrogen-limitation. Marine snow of diatom origin was also abundant during spring, summer and early autumn throughout the Southern California Bight, suggesting that diatom flocculation is a seasonally significant source of marine snow. Resting spores rarely occurred within either newly formed or aged diatom flocs. The mean in situ settling velocity (plus or minus S.D.) of newly formed flocs was 117 plus or minus 56 m d super(-1), two orders of magnitude faster than unaggregated Chaetoceros .
Chaetoceros/Nitzschia/algal blooms/flocculation/seasonal variations/coastal waters/INE, USA, California/Oceanic Abstracts.

1710. ANONYMOUS. PHYSICAL, CHEMICAL, AND BIOLOGICAL DATA: CRUISE TO-64-1 JUNE 8-28, 1964 AND CRUISE TO-64-2 AUGUST 4-25, 1964. CALIFORNIA. UNIVERSITY. INSTITUTE OF MARINE RESOURCES. IMR REFERENCE NO. 69-8, 78 PAGES, MARCH 27, 1969 1969
UNKNOWN.
CALIFORNIA CURRENT/TUNAS/OCEANOGRAPHIC DATA/BAJA CALIFORNIA COAST/CRUISE REPORT/CHEMICAL, PHYSICAL AND BIOLOGICAL OCEANOGRAPHY/OceanAbstracts.

1711. Blanc TV. Micrometeorological data for the 1978 Cooperative Experiment for West Coast Oceanography and Meteorology (CEWCOM-78) at San Nicolas Island, California. Interim rept. : Naval Research Lab Washington DC. NRL-MR-3871-VOL-2; 1978. 554.
Note: See also Volume 1, AD-A061 112.
Micrometeorology/Marine meteorology/Meteorological data/Collecting methods/Data displays/Computer printouts/Oceanographic data/San Nicolas Island/Atmospheric Sciences/Meteorology.

1712. Middaugh DP, Hemmer MJ. Influence of environmental temperature on sex-ratios in the tidewater silverside, Menidia peninsulae (Pisces: Atherinidae). COPEIA. 1987;(4):958-964.
Sex-ratios of Menidia peninsulae from Santa Rosa Island, Florida were studied during a 13 mo survey. Monthly samples revealed significant deviations from the expected sex-ratio of 1:1. During May-Oct., young-of-year (YOY) females comprised 70-94% of the individuals collected in the 32.5-62.4 mm standard length (SL) size-class. These females were the presumptive progeny of reproduction at cold to cool fluctuating temperatures (14.1-24.2 C), during Feb.-April. In contrast, collections of YOY Menidia during Nov.-April yielded 35-60% females. These individuals were the presumptive progeny of reproductive activity and sexual differentiation in May-Aug. at warm fluctuating water temperature of 23.5-31.5 C. Sex-ratios for combined (13 mo) collections of YOY were identical (69% females) to sex-ratios in older Menidia .
sex ratio/temperature/USA/Florida/Santa Rosa Island/sex determination/temperature effects/Menidia peninsulae/ASW/USA/Florida/Santa Rosa Island/ASFA.

1713. Vedder JG, Moore EJ. Paleoenvironmental implications of fossiliferous Miocene and Pliocene strata on San Clemente Island, California. Am. Assoc. Pet. Geol., Pac. Sect., Misc. Publ. (24). Aspects of the geol. hist. of the Calif. Cont. Borderland. 1976:p.107
U. S. Geol. Surv., Menlo Park, Calif., United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
California/stratigraphy/Miocene/Pliocene/southwest/San Clemente Island/United States/sedimentary rocks/unconformities/igneous rocks/Invertebrata/geologic history/Relizian/Luisian/Mohnian/environmental analysis/calcarenite/conglomerate/sandstone/shale/claystone/pyroclastics and glasses/tuff/lapilli/volcanic breccia/faunal studies/assemblages/Mollusca/Bivalvia/Gastropoda/Brachiopoda/Echinodermata/GEOREF.

1714. Smith RL, Pittock G, Fleischbein J, Still R (Performer: Oregon State Univ., Corvallis. School of Oceanography). Current Measurements from Moorings off Northern California: September 1984-July 1985. Data rept. ; 1986. Report No.: DATA121, REF866. 218p.
Contract: N0001484C0218.
Three deep-sea subsurface moorings, each equipped with five current meters at depths from 150m below the surface to 200m above the

bottom, were deployed off Northern California from September 1984 to July 1985 as part of the OPTOMA program. The triad of moorings, centered near 38.5 deg N, 125 deg W, had mutual separations of 100 km. Velocity and temperature were recorded at hourly intervals; statistics and various plots of the data time series are presented in this report. Keywords: Ocean currents; Oceanographic data; Physical oceanography; Current meter measurements; California Current System.
California/Measurement/Mooring/Oceanography/Time series analysis/Depth/Measuring instruments/North Direction/Oceanographic data/Subsurface/Deep oceans/North pacific ocean/Ocean currents/NTIS.

1715. Alabaster JS. The dissolved oxygen and temperature requirements of king salmon, Oncorhynchus tshawytscha , in the San Joaquin Delta, California. J. FISH BIOL 1989;VOL. 34, NO. 2:pp. 331-332
1 Granby Rd., Stevenage, Herts. SG1 4AR, UK.
In the years 1964-1967, Hallock et al. (1970) carried out detailed studies of the passage of king salmon (U.S.A. variety of Oncorhynchus tshawytscha) upstream through the San Joaquin Delta during September-November using sonic tags; they also recorded concentrations of dissolved oxygen (DO) and water temperature, intermittently, for about 40% of the time during the actual migration of the fish and for rather less of the time during about 2 weeks immediately beforehand. The daily minimum DO and maximum water temperature were 1 multiplied by 1-6.8% mg/l and 14 multiplied by 4-24 multiplied by 4 degree C, respectively, during the tagging period from mid-September to the third week in November, and 4 multiplied by 2-7 multiplied by 2 mg/l and 12 multiplied by 2-20 multiplied by 8 degree C, respectively, when fish were passing through the region of lowest DO from early October to the end of November.
dissolved oxygen/Oncorhynchus tshawytscha/anadromous migrations/phys icochemical properties/biotelemetry/sonic tags/water temperature/ri vers/INE, USA, California, San Joaquin Delta/Oceanic Abstracts.

1716. Blanc TV. Micrometeorological data report for the November 1978 electro-optics meteorology (EOMET) experiment at San Nicolas Island, California. Interim rept. : Naval Research Lab., Washington, DC. NRL-MR-4056; AD-E000 325; 1979. 521.
Presented in this report are both the profile and bulk aerodynamic derived micrometeorological data taken in the marine atmospheric surface layer at San Nicolas Island, California, during a five day experiment in November 1978. Thirty-six figures are presented to represent much of the data results in graphic form. A comparison of the profile and bulk derived stability parameters strongly indicated an escarpment phenomenon similar to what had been reported for the Riso, Denmark, site. Although an escarpment induced, height dependent horizontal acceleration of the wind field profile was observed, there was no apparent effect on either the temperature or humidity profile. A suitable wind field escarpment correction for future data taking was left to the next experiment, in which a better quality bulk water temperature measurement essential to the bulk comparison would be available.
Micrometeorology/Marine meteorology/Marine atmospheres/Electrooptics/Meteorological data/Meteorological instruments/Optical properties/Ocean surface/Air water interactions/Coastal regions/Oceanographic data/Surface temperature/Wind velocity/Islands/Atmospheric temperature/Humidity/Infrared radiation/San Nicolas Island/North Pacific Ocean/Atmospheric Sciences/Meteorology.

1717. Cook DO. The occurrence and geologic work of rip currents off southern California. Mar. Geol. 1970;9(3):173-186. California/Marine geology/Hickey/physical oceanography/sedimentary structures/Sedimentation/Sediments/Pacific Ocean/Current markings/Ocean-currents/rip currents/MINERALS MANAGEMENT SERVICE.

1718. Jefferts K. Zoogeography and systematics of cephalopods of the northeastern Pacific Ocean. PUBL. OREG. STATE UNIV. SEA GRANT COLL. PROGRAM 1983; Collections of cephalopods from the northeastern Pacific North of 20 degree N and East of 170 degree E were examined in order to elucidate zoogeographic patterns for the region. Sixty-four species were identified, including two new species to Gonatus . The distributions of Subarctic and Transitional (including California Current) species are now fairly well understood. Ten pelagic distributional types are defined for cephalopods in this area; most coincide with water masses or portions or combinations thereof. The relative abundance of cephalopods in the major water mass types is considered, using diversity and evenness statistics. The central water mass is dominated by Enoploteuthidae, and the Subarctic by Gonatidae. Possible mechanisms for population maintenance are discussed, and consideration is given to speciation processes relative to the observed distributions. The phylogeny of the Gonatidae is explored on the basis of primitive vs. derived characters and the observed zoogeographic distribution. It is proposed that the subgenus Boreoteuthis be elevated to generic status. biogeography/taxonomy/new species/Gonatus/Boreoteuthis/Cephalopoda/INE/animal morphology/ASFA.

1719. Vedder JG, Howell DG. Neogene strata of the southern group of Channel Islands, California. Am. Assoc. Pet. Geol., Pac. Sect., Misc. Publ. (24). Aspects of the geol. hist. of the Calif. Cont. Borderland. 1976:p.80 U. S. Geol. Surv., Menlo Park, Calif., United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present). California/stratigraphy/Tertiary/lithostratigraphy/southwest/Channel Islands/Santa Catalina Island/San Clemente Island/Santa Barbara Island/United States/sedimentary rocks/igneous rocks/volcanic/lower Tertiary/Miocene/Pliocene/breccia/conglomerate/shale/tuff/calcarenite/sandstone /petrography/flows/pyroclastics/GEOREF.

1720. Kozloff P (Performer: National Marine Fisheries Service, Seattle, WA. Northwest and Alaska Fisheries Center.) Fur Seal Investigations, 1984. Technical memo. ; 1986. Report No.: NOAATMNMFSFNWC97. 91p.
See also PB86-113487. PC A05/MF A01.
;Contents: Population assessment, Pribilof Islands, Alaska; Live pup weights, St. Paul Island, Alaska; Tetracycline marking of northern fur seals, St. Paul Island, Alaska; Behavior and biology, Pribilof Islands, Alaska; Northern fur seal tracking study, Bering Sea; Northern fur seal survey, Bogoslof Island, Alaska; Population and behavioral studies, San Miguel Island, California. Marine biology/Populations/Assessments/Animal behavior/Marking/Harvesting/Tables Data/Seals Mammals/Alaska/NTIS.

1721. Lea RN, Duffy JM, Wilson KC. The Cortez angelfish, Pomacanthus zonipectus , recorded from Southern California. CALIF. FISH GAME 1989;VOL. 75, NO. 1:pp. 45-47
Mar. Res. Lab.--Garnite Canyon, Coast Rt., Monterey CA 93940, USA.
The Cortez angelfish, Pomacanthus zonipectus (Gill), was originally described from a single specimen taken by Captain John M. Dow off

"San Salvador" (= El Salvador) in the 1850's. Between March 1984 and October 1986, three Cortez angelfish were observed (one of which was collected) at three different localities off southern California. The observations support the hypothesis that Cortez angelfish can occur as expatriates off southern California during certain oceanographic conditions.
distribution records/geographical distribution/biogeography/Pomacant hus zonipectus/INE, USA, California/Oceanic Abstracts.

1722. AHLSTROM EH. DEVELOPMENT OF LANTERNFISHES (FAMILY MYCTOPHIDAE) IN THE CALIFORNIA CURRENT. PART I. SPECIES WITH NARROW-EYED LARVAE. LOS ANGELES COUNTY MUSEUM, LOS ANGELES. BULLETIN : SCIENCE O. 7, FEB. 25, 1970 1970:150 PAGES LANTERNFISHES/CALIFORNIA CURRENT/EYES/LARVAE DEVELOPMENT/ABUNDANCE/SPECIES CHARACTERISTICS/DISTRIBUTION/ EYE SHAPE/OceanAbstracts.

1723. Blanc TV. The data base for the May 1979 marine surface layer micrometeorological experiment at San Nicolas Island, California. Final Report. : Naval Research Lab., Washington, DC. NRL-MR-4713; 1982. 631. One hundred thirty-six hours of gradient (profile) and bulk aerodynamic measurements of momentum, moisture, and sensible heat flux, accompanied by determinations of stability, drag coefficient, roughness length, and sky radiation were made in the marine atmospheric surface layer over the Pacific Ocean from an upwind, low-profile promontory of San Nicolas Island, California. Over a 10-day period a wide variety of meteorological and oceanographic conditions were observed in which 30-minute average wind speeds ranged from 2 to 17 m/s, air-water temperature difference from -2.1 to +0.6 C, dew point-water temperature differences from -7.5 to -2.0 C, and Richardson number stabilities from -2.7 to +0.1. Subsequently, 10% of the data were acquired under stable atmospheric conditions and 15% at wind speeds in excess of 12 m/s. The micro-meteorological observations were accompanied by 80 hours of aerosol size distribution observations of particles ranging from 0.3 to 14 micrometers in radius, 171 hourly measurements of upwind wave period and height, 59 hourly measurements of atmospheric radon (222Rn), and typically twice daily high resolution radiosonde measurements for determining the height of the marine inversion. The data includes measurement error values for the various flux and stability related parameters.
Meteorological data/Ocean surface/Troposphere/Layers/Marine meteorology/Micrometeorology/Aerodynamics/Aerosols/Ocean waves/Radon/Temperature inversion/Marine surface layer/San Nicolas Island/Meteorology/atmospheric sciences.

1724. Johnson J, Hardin D, Spies R. An investigation of the effects of discharged drilling fluids from exploratory drilling on hard bottom communities in the western Santa Barbara Channel. OCEANS '85 PROCEEDINGS: OCEAN ENGINEERING AND THE ENVIRONMENT. 1985;2:1094-1103.
A pioneering investigation of the effects of discharged drilling fluids on hard bottom communities was carried out at depths of 51.8 to 64 m using the manned submersible, Nekton GAMMA. The authors report on the first three surveys conducted for: reconnaissance and site selection; documenting pre-drilling conditions; and post-drilling impacts. A dose-response design, utilizing 10 stations at varying distances from the well site was used to interpret post-drilling ecological changes - in order for observed changes to be attributed to drilling, they had to correlate with measured doses of drilling fluids, as determined by analysis of Barium in particle traps.

drilling/fluids/ecology/pollution/water pollution/industrial waste disposal/offshore structures/benthos/oil pollution/drilling fluids/oil and gas exploration/pollution effects/INE/Santa Barbara Channel/ASFA.

1725. Arnal RE. Miocene paleobathymetric changes of the Santa Rosa Cortes Ridge area, California Continental Borderland. Am. Assoc. Pet. Geol., Pac. Sect., Misc. Publ. (24). Aspects of the geol. hist. of the Calif. Cont. Borderland. 1976:p.60-79
U. S. Geol. Surv., Menlo Park, Calif., United-States Analytic; Serial Foraminifera, Miocene. B; Bibliography and Index of Geology (1969-present).
California/stratigraphy/Miocene/paleogeography/offshore/Santa Rosa Cortes Ridge/continental shelf/United States/Pacific Ocean/uplifts/subsidence/evolution/vertical tectonics/foraminifera/lower Miocene/middle Miocene/Mohnian/paleoecology/assemblages/salt marshes/estuaries/sublittoral/inner/outer/bathyal/abyssal/interpr etation/bathym etry/maps/tectonics/rates/GEOREF.

1726. Seelig WN (Performer: Naval Facilities Engineering Command, Washington, DC. Chesapeake Div.) Preliminary Analysis of SOAR Cable Landing Sites at San Clemente Island. ; 1984. Report No.: CHESNAVFACFPO18413. 63p. The SOAR permanent underwater range is now in the preliminary design stage for an area west of San Clements Island. The purposes of this report are to: (1) summarize environmental data available for the area around the island, (2) identify and analyze potentially useful cable landing sites using available data; and (3) recommend promising methods of landing the cables at the various sites. The 4 sites examined re ranked from best to worst as: Seal Cove, West Cove, Eel Point and North Wilson Cove. The ranking process considered wave climate, wave forces on the cables, local hydrography and topography, construction conditions, the offshore profiles, track and the distance from the site to the range. Two passes of armor are required to protect the cables. Tentative lengths of this armoring are recommended. Detailed sub-bottom and hydrographic studies need to be performed at Seal Cove and West Cove to determine if 3 feet or more of sand is available offshore in water depths greater than 75 feet. If so, the amount of armor required could be reduced and significant cost savings could result. A swim-by of Eel Point is recommended to determine if this site warrants further consideration. The cable landing area in Seal Cove should be examined to determine if there are any special problems with this area. Surf and runup conditions in Seal and West Coves should be examined during a major storm to determine if any unusual hydraulic conditions are present.
Keywords: SOAR(Southern California Acoustic Array); Santa Barbara Islands.
Shores/West Direction/Construction/Environments/Hydrography/Offshore/Profiles /Armor/Landing fields/Costs/Savings/Hydraulic equipment/Range Distance/Underwater/Storms/Topography/Depth/Water/Inlets Waterways/Sites/Surf/Waves/North pacific ocean/Naval shore facilities/Underwater equipment/Inshore areas/Bays/Sand/Santa Barbara Islands/Transmission lines/Electric cables/Acoustic ranges/SOAR Southern California Acoustic Range/San Clemente Island/NTIS.

1727. Plant R. A northern range extension for the thornback, Platyrhinoidis triseriata. CALIF. FISH GAME 1989;VOL. 75, NO. 1:p. 54
475 Vision Rd., Inverness, CA 94937, USA.
The thornback, Platyrhinoidis triseriata , is listed as having a

range extending from Thurloe Head, Baja California, Mexico, to San Francisco, California and is considered rare north of Point Conception, California. On 3 May 1988, Antoine Venghiatis caught a thornback while fishing from shore with hook-and-line in Tomales Bay, approximately one nautical mile northwest of Inverness, California. Fishing depth did not exceed 3 m. This specimen is catalogued at the California Academy of Sciences (CAS 63193) and represents a northern extension for the species. On 7 June 1988 a second thornback was taken and released from a gill net operated by Frank Spenger in ca. 6 m of water opposite Heart's Desire Beach, Tomales Bay. Of additional interest was the capture of a total of 20 thornbacks between 22-26 April 1988 by the commercial trawlers Romance and Pacific sun during three separate tows of a pair trawl near Pacifica, California, (just south of San Francisco). The above information indicates that the thornback may not be as rare north of Point Conception as previously thought.
distribution records/geographical distribution/biogeography/Platyrhi/OCEANIC ABSTRACTS.

1728. Blevins RW, Donnelly HL, Stadter JT, Weiss RO, Perez y Perez L. At-sea test of a large diameter steel, cold water pipe. : Johns Hopkins Univ., Laurel, MD. Applied Physics Lab. DOE/ET/20342-T8; 1979. 20. ((Sponsored by Department of Energy, Washington, DC.)).
Note: Portions are illegible in microfiche products.
During December 1978 and January 1979, a series of tests were conducted off Santa Catalina Island, California, on a large-diameter steel pipe. The pipe was 5 ft (1.52 m) in diameter and made up in 20-ft (6.10 m) sections to obtain a total length up to 500 ft (152.4 m). Deep Oil Technology's X-1 semi-submersible platform was used to support the pipe through a gimbal joint and the platform was moored with spring buoys in 1000 ft (304.8 m) of water. The objectives were to evaluate the at-sea performance of various configurations and to use the test results to verify or improve existing time and frequency domain analyses of cold-water pipes for Ocean Thermal Energy Conversion (OTEC) plants. The configurations tested were platform alone; platform with 120-ft (36.58 m) pipe, with 300-ft (91.44 m) pipe, with 500-ft (152.4 m) pipe and with 384-ft (117.0 m) pipe including a U-joint at 162 ft (49.38 m). The results of the analyses indicate that the frequency locations of the spectral peaks are generally well predicted, but comparison of the peak values is in poorer agreement.
Ocean Thermal Power Plants/Acceleration/Bending/Experimental Data/Frequency Analysis/Offshore Platforms/Performance/Pipes/Spectra/Steels/Stresses/Santa Catalina Island/Mechanical/Industrial/Civil/Marine/Engineering.

1729. Sherman K. Large marine ecosystems as global units for recruitment experiments. ICES; COPENHAGEN (DENMARK); ICES COUNCIL MEETING 1987 (COLLECTED PAPERS) 1987;
On a global basis, the LME's represent geographically distinct units for the conservation and management of fisheries resources for which the observations in the ocean by the International Geosphere and Biosphere Program of the Int. Counc. of Scientific Unions will be most useful. Within several of the LME's, hypotheses thought to be controlling recruitment variability are under investigation. They include the Oyashio/Kuroshio Current, California Current, the Eastern Bering Sea, the Gulf of Alaska, the Humboldt Current, and Peru Current ecosystems in the Pacific rim area, and the Northeast U.S. Continental Shelf, Southeast U.S. Continental Shelf, the Gulf of Mexico, the Scotian Shelf, Norwegian Sea/Barents Sea, North Sea, the Iberian Coastal and the Benguela Current ecosystems in the Atlantic rim area. Within the LME's

recruitment studies are focused on upwelling, frontal zones, continental shelf systems, and pelagic systems. recruitment/ichthyoplankton surveys/commercial species/ASFA.

1730. Mattinson JM, Hill DJ. Age of plutonic basement rocks, Santa Cruz Island, California. Am. Assoc. Pet. Geol., Pac. Sect., Misc. Publ. (24). Aspects of the geol. hist. of the Calif. Cont. Borderland. 1976:p.53-58 Univ. Calif., Dep. Geol. Sci., Santa Barbara, Calif., United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present). Willows Complex/Alamos Pluton/California/geochronology/absolute age/Jurassic/southeast/Santa Cruz Island/dates/minerals/zircon/hornblende/diorite/keratophyre/K/Ar/Pb/Pb/United States/basement/igneous rocks/age/GEOREF.

1731. Cooper K (Performer: Naval Facilities Engineering Command, Washington, DC. Chesapeake Div.) Project Execution Plan for the Near Shore Survey SOCAL ASW (Southern California Anti-Submarine Warfare) Range. ; 1985. Report No.: CHESNAVFACFPO1858. 52p.
The Southern California Acoustic Range (SOAR) is designed to provide a 100 sq mi antisubmarine warfare training range in 4500 feet of sea water west of San Clemente Island. SOAR will provide accurate tracking of air, surface and submerged targets. This project plan is a working document that details the mobilization, execution and demobilization of an underwater survey of the near shore area of SOAR. The purpose of the survey is to provide geotechnical and environment data for the shore landing for underwater cables. Survey results will provide (a) a basis for environmental factors required for cable design; (b) geophysical data for cable location; (c) data necessary for the Naval Ocean System Center to support an environmental impact statement, and (d) provide the near shore portion of the total range survey. The survey will be conducted in two parts: (a) a diver cable inspection of two existing cables; and (b) an hydrographic survey of bathymetry, sub-bottom profile, side-scan sonar and current meter data. Antisubmarine warfare/Training/Cables/Position Location/Environments/Geophysics/Bathymetry/Hydrographic surveying/Mobilization/Inshore areas/Divers/Inspection/Environmental impact statements/Navy/Oceans/Surveys/Planning/Landing/Shores/Antisubmarine warfare/California/South Direction/Tracking/Underwater/Sea water/Underwater targets/Underwater equipment/North pacific ocean/Santa barbara islands/Naval shore facilities/Transmission lines/Electric cables/Acoustic ranges/SOAR Southern California Acoustic Range/Shore Survey/NTIS.

1732. Warnock N. Piracy by ring-billed gulls on dunlin. WILSON BULL 1989;VOL. 101, NO. 1:pp. 96-97
4990 Shoreline Highw., Stinson Beach, CA 94970, USA.
On 16 December 1987, the author observed Ring-billed Gulls (Larus delawarensis) and Black-bellied Plovers (Pluvialis squatarola) pirating Dunlin (Calidris alpina) during a heavy rain at Bolinas Lagoon, California. During my observations, the Dunlin appeared to be searching specifically for arrow gobies (Clevelandia los). Fish being captured and eaten were generally equal to or less than the length of the Dunlin's culmen (mean culmen = 37.9 plus or minus 2.7 mm (SD)). Often Dunlin had difficulty swallowing the fish, and this facilitated kleptoparasitism. Dunlin lost 16 (44%) of the 36 fish they captured during 26 attempts by the kleptoparasites. kleptoparasitism/Pluvialis squatarola/Calidris alpina/Larus delawarensis/INE, USA, California, Bolinas Lagoon/feeding behavior/e cological associations/Oceanic Abstracts.

1733. CHEKOTILLO KA. FEATURES OF THE CIRCULATION OF INTERMEDIATE WATERS IN THE NORTH PACIFIC. OCEANOGRAPHIC RESEARCH BY THE VITYAZ IN THE NORTH PACIFIC UNDER THE I.G.Y. PROGRAM. SYSOEV, N.N., ED., NATIONAL SCIENCE FOUNDATION, SPECIAL FOREIGN CURRENCY SCIENCE INFORMATION PROGRAM. PP.110-119. 1969. NO ABS., 3 FIGS., 2 TABLES, 9 REFS., 3 IN RUSS 1969
UNKNOWN.
PACIFIC OCEAN NORTH/SALINITY/TOPOGRAPHY/WATER TRANSPORT/ TEMPERATURES/CIRCULATION/CALIFORNIA CURRENT/INTERMEDIATE WATERS/VITYAZ 29TH VOYAGE/OceanAbstracts.

1734. Napp JM. Primary productivity maxima in the Southern California Bight: Distribution, predicted depth and nutritional content. OCEANOL. ACTA 1987;10(3):329-337.
Primary productivity maxima are hypothesized to be sites of enhanced grazing activity by particle-capturing zooplankton. In the Southern California Bight, the vertical distribution of primary productivity is stratified to a high but variable degree, while the vertical distributions of microplankton biomass are less stratified and seasonally more variable. In general, the primary productivity maxima are shallower than the particulate carbon maxima, which are shallower than the chlorophyll a maxima. The distances separating these features are not constant throughout the year. The carbon to nitrogen ratio of the particulate matter, one index of the nutritional content for particle-grazing zooplankton, was only slightly different between the primary productivity and chlorophyll a maxima. primary production/phytoplankton/biomass/plant nutrition/vertical distribution/INE/USA/California/Southern California Bight/ASFA.

1735. Platt JP. The significance of the Catalina Schist in the history of the southern California Borderland. Am. Assoc. Pet. Geol., Pac. Sect., Misc. Publ. (24). Aspects of the geol. hist. of the Calif. Cont. Borderland. 1976:p.47-52 Analytic; Serial B; Bibliography and Index of Geology (1969-present). Catalina Schist/California/structural geology/tectonics/southwest/Santa Catalina Island/structure/basement/structural complexes/Mesozoic/United States/GEOREF.

1736. Miller S, Davis W. Insects associated with the flowers of two species of Malacothrix (Asteraceae) on San Miguel Island, California. PSYCHE (CAMB., MASS.) 1985;92(4):547-556.
The insects associated with Malacothrix incana (Nutt.) T. & G. and M. implicata Eastwood on San Miguel Island were sampled as part of a general analysis of hybridization between the two species on the island. On San Miguel Island, M. incana is widely distributed on unstabilized and stabilized sand dunes on slopes near the ocean or on sandy substrate on the upper surfaces of the island including the slopes of San Miguel Peak and Green Mountain.
community structure/species composition/Malacothrix incana/Malacothrix implicata/Insecta/USA/California/San Miguel Island/association/CSA Life Sciences Collection.

1737. Cooper KR, Thornton JA (Performer: Naval Facilities Engineering Command, Washington, DC. Chesapeake Div.) Project Documentation Report, Southern California ASW Range (SOAR) Survey. ; 1985. Report No.: CHESNAVFACFPO8528. 111p. The Southern California ASW Range (SOAR) Phase 1B will provide a 100 square mile Anti-Submarine Warfare Training Range in 4,500 feet of seawater west of San Clemente Island, California. An underwater survey of the near shore area of SOAR was conducted in April and May of 1985. The survey was to provide geotechnical and environmental data for

the shore landing of underwater cables to be installed in 1987 (SOAR Phase 1B). The survey was conducted in two parts; (a) A diver conducted cable inspection of two existing cables and geotechnical data gathering in the near shore area, (b) A hydrographic survey including bathymetry, sub-bottom profile, side scan sonar and current meter data. Both portions of the survey confirmed the presence of two sand covered channels adjacent to West Cove Beach, the proposed cable landing site. They offer potentially good shore landing cable routes to the eastern portion of the survey area where sand thicknesses exceed 60 feet. The western part of the survey area in about 200-300 FSW where sand thicknesses are relatively thin should be avoided although dynamic wave-induced motion of the cable should not be a problem at this depth. The survey provided a good image of the bottom and sub-bottom physical characteristics of the area permitting the development of a cable route to deepwater that provides maximum cable protection. The results of the survey also provide data necessary for cable design and nearshore protection requirements.
Antisubmarine warfare/California/Dynamics/Environments/Hydrographic surveying/Naval shore facilities/Images/Inspection/Landing/Bottom/Cables/Santa barbara islands/Measuring instruments/Motion/Physical properties/Protection/Requirements/Sand/Scanning sonar/Sea water/Acoustic ranges/Side looking sonar/Surveys/Thickness/Training/Underwater/Underwater equipment/Waves/Shores/Inshore areas/Ocean bottom/San Clemente Island/SOAR Southern California Acoustic Range/Underwater cables/Cable landing areas/NTIS.

1738. AHLSTROM EH. MESOPELAGIC AND BATHYPELAGIC FISHES IN THE CALIFORNIA CURRENT REGION. CALIFORNIA CURRENT SYSTEM- THEIR FLUCTUATING MAGNITUDE DISTRIBUTION AND SUSCEPTIBILITY TO USE FOR THE BENEFIT OF THE STATE OF CALIFORNIA. SYMPOSIUM. PAPERS. MESSERSMITH, J.D., ED. HELD IN LAKE ARROWHEAD, CALIF., DEC.11-12,1967. SPONSORED BY THE STATE OF C 1969 UNKNOWN.
CALIFORNIA CURRENT/MESOPELAGIC FISHES/FISHES/ABUNDANCE/SPECIES COMPOSITION/OceanAbstracts.

1739. Bodkin JL, Jameson RJ, Van Blaricom GR. Pup production, abundance, and breeding distribution of northern elephant seals on San Nicolas Island, winter 1981. Calif. Fish Game 1985;71(1):53-55
Address: USFWS, Denver Wildl. Res. Cent., Piedras Blancas Field Stn., P.O. Box 70, San Simeon, CA 93452.
A major breeding colony of northern elephant seals (Mirounga angustirostris) occurs on San Nicolas Island, California. Due to commercial hunting, elephant seals were extinct on San Nicolas Island by the end of the 19th century. Subsequent recovery of the population has been well documented. Census data collected since 1949 indicate that the colony has been growing rapidly in numbers after breeding began again in the late 1940's. In summary, the colony of northern elephant seals on San Nicolas Island continues to grow exponentially. In recent years, pup production has increased most rapidly at the west end of the breeding area. Although the length of the breeding area has approximately tripled since 1971, many beaches which appear suitable for pupping remain unused. The authors feel that population growth should continue and that expansion of breeding areas will also continue as current breeding beaches become saturated.
population growth/breeding sites/abundance/exponential growth/breeding biology/population structure/colonies/population

dynamics/pup production/northern elephant seals/Mirounga angustirostris/San Nicolas Island/marine biology/mammalogy.

1740. Simons TR. The role of research in developing resource management tools at Gulf Islands National Seashore. PROCEEDINGS OF TENTH NATIONAL CONFERENCE. ESTUARINE AND COASTAL MANAGEMENT: TOOLS OF THE TRADE. NEW ORLEANS, LOUISIANA, 12-15 OCTOBER 1986. VOLUME 2. 1987;2:793-798.
Gulf Islands National Seashore is comprised of approximately 57,000 hectares of barrier islands and their adjacent waters in northwest Florida and coastal Mississippi. Established in 1971, the seashore stretches from West Ship Island in Mississippi, 240 kilometers east to the middle of Santa Rosa Island in Florida. The park's resources range from remote wilderness barrier islands with very limited visitation, to readily accessible recreational beaches and historic sites visited by several million people each year. The undeveloped portions of the Seashore represent the best example of an undisturbed barrier island ecosystem remaining in the Gulf of Mexico. Research efforts at the Seashore are aimed at providing park resource managers with the information and tools required to carry out their difficult and often contradictory responsibilities of preserving park resources for public use.
refuges/resource management/nature conservation/barrier islands/Gulf I./ Natl. Seashore/research and development/research programs/ASW/USA/Gulf Islands Natl. Seashore/ASFA.

1741. Stadum CJ, Susuki T. The discovery of marine Pliocene strata on San Clemente Island, California. Geol. Soc. Am., Abstr. Programs. Cordilleran Section, 72nd annual meeting. 1976;8(3):p.411
Huntington Beach High Sch., Huntington Beach, Calif., United-States; Univ. Calif., United States Analytic; Serial; Abstract
Faunal evidence including foraminifera. B; Bibliography and Index of Geology (1969-present).
Orange County/San Diego Formation/Fernando Formation/Monterey Formation/sedimentary rocks/clastic rocks/terrigenous/sandstone/biogenic/conglomerate/fossiliferous/marine/lithostr
atigraphy/correlation/occurrence/thickness/lithology/Pliocene/California/San Clemente Island/United States/sedimentation/biostratigraphy/Mollusca/Brachiopoda/foramin
ifera/Bryozoa/ Invertebrata/faunal studies/assemblages/Bivalvia/Pecten/Chlamys/Laqueus/sedimentary petrology/southwest/San Diego/GEOREF.

1742. Stewart B, Yochem P. Northern elephant seals breeding at Santa Rosa Island, California. J. MAMMAL 1986;67(2):402-403.
Northern elephant seals (Mirounga angustirostris) began a well documented increase following termination of commercial harvests in the late nineteenth century. This population growth was accompanied by an expansion of the breeding range northward from the surviving remnant population at Isla de Guadalupe. The authors observed two newborn elephant seal pups, each in the company of an adult female, at the southwestern tip of Santa Rosa Island (SRI). These seals were still present on 4 February but the females had departed prior to 22 February, when they observed only the two weaned pups. This is the first record of elephant seals breeding at SRI.
sexual reproduction/breeding sites/USA/California/Santa Rosa Island/new records/Mirounga angustirostris/geographical distribution/INE/USA/ California/Santa Rosa I./CSA Life Sciences Collection.

1743. Cooper K, Jones T (Performer: Naval Facilities Engineering Command, Washington, DC. Chesapeake Div.) Project

Execution Plan for the Installation of the SOCAL Acoustic Range (SOAR). ; 1984. Report No.: CHESNAVFACFPO1844. 72p. The Southern California Acoustic Range (SOAR) is designed to provide a 100 square mile Anti Submarine Warfare training range in 4000 feet of sea water west of San Clemente Island, California. SAR will provide accurate tracking of air, surface and submerged targets. This plan is a working document that details the mobilization, execution and demobilization of the underwater portion of the SOAR project. The overall scenario of the project is to accomplish the following; (a) Prefabrication and assemble project materials at NOSC, San Diego; (b) Conduct training near Coronado beach; (c) Mobilize the OCP SEACON and UCT-2 personnel and equipment at West Cove, San Clemente Island; (d) Land the SSL cable and deploy the SSL system at sea; (e) Land the WQC cable and deploy the WQC transducer at sea; (f) Conduct a complete as-built survey (g) Demobilize SEACON and return all equipments and (h) Prepare a detail completion report.
Naval training/Antisubmarine warfare/Aerial targets/Surface targets/Installation/Naval planning/Deep oceans/Inlets Waterways/West Direction/Prefabrication/Sea water/Underwater targets/Documents/California/Mobilization/Scenarios/South Direction/Tracking/Acoustic ranges/SOAR/ SOCAL Acoustic Range/NTIS.

1744. ORCUTT HG. BOTTOMFISH RESOURCES OF THE CALIFORNIA CURRENT SYSTEM. CALIFORNIA CURRENT SYSTEM- THEIR FLUCTUATING MAGNITUDE, DISTRIBUTION AND SUSCEPTIBILITY TO USE FOR THE BENEFIT OF THE STATE OF CALIFORNIA. SYMPOSIUM. PAPERS. MESSERSMITH, J.D., ED. HELD IN LAKE ARROWHEAD, CALIF., DEC.11-12,1967. SPONSORED BY THE STATE OF 1969
UNKNOWN.
MOLLUSKS/TRAWL FISHERIES/FISHES/SHELLFISH/CALIFORNIA CURRENT/BOTTOMFISH/OceanAbstracts.

1745. Bogaert BM. An aftershock study of the Santa Barbara earthquake of August 13, 1978 [dissertation]. Santa Barbara, CA: University of California; 1984. 55.
Address: Univ. of California, Santa Barbara, CA.
seismology/faults/earthquakes/displacements/aftershocks/reverse faults/Santa Barbara earthquake, 1978/arrays/focal mechanism/continental shelf/Transverse Ranges/decollement/mechanics/Santa Barbara County/Santa Barbara Channel/ geology/geophysics/seismology.

1746. Cox JL. Uptake, assimilation, and loss of DDT residues by Euphausia pacifica, a Euphausiid shrimp. U.S. Natl. Mar. Fish. Serv. Fish. Bull. 1971;69(3):627-633.
euphausia/shrimps/pesticide residues/california current/ddt/pacifica/zooplankton/Pieper/MINERALS MANAGEMENT SERVICE.

1747. Smith DL, Normark WR. Deformation and patterns of sedimentation, South San Clemente Basin, California Borderland. Mar. Geol. 1976;22(3):p.175 Univ. Fla., Dep. Geol., Gainesville, Fla., United-States; Univ. Minn., United States Analytic; Serial B; Bibliography and Index of Geology (1969-present). Pacific Ocean/oceanography/sedimentation/seismic surveys/California Borderland/San Clemente Basin/San Diego Trough/marine geology/United States/California/continental borderland/rates/controls/tectonics/structural controls/sediments/turbidite/deposition/patterns/geophysical surveys/reflection/marine/continental shelf/GEOREF.

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Vaucher CA (Performer: Naval Postgraduate School, Monterey, CA). Sodar, Rawinsonde, and Surface Layer Measurements at a Coastal Site. Part 2. SCCCAMP (South Central Coast Aerometric Monitoring Project) Data Report. Technical rept. Jul 85-May 86. ; 1986. Report No.: NPS6386001. 107p.
This report presents data gathered by the Naval Postgraduate School (NPS) during the South Central Coast Aerometric Monitoring Project (SCCCAMP) in September and October of 1985. The data are from a triaxial monostatic doppler acoustic sounder and a 20-meter meteorological tower which were located at the Ellwood pier near Goleta, California and from rawinsondes launched from the R/V Acania in the Santa Barbara Channel. Keywords include: Boundary layer, Doppler Acoustic Sounder, and Rawinsonde.
Acoustics/Boundary layer/California/Coastal regions/Doppler systems/Layers/Measurement/Piers/Radiosondes/Sites/Surfaces/Wind velocity/Atmospheric sounding/Marine atmospheres/Meteorological data/SCCCAMP South Central Coast Cooperative Aerometric Monitoring Project/R/V Acania Vessel/NTIS.

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Sea surface temperature increases from about 16 degree C in February-March to 31 degree C in August. An additional effect is a deepening of the winter pycnocline down about 200 m, compared to the usual depth of < 100 m. In summer, this effect is not as clear as in winter, due to the strong stratification. The effects of the very strong 1982-1983 and 1957-1958 ENSO episodes may have lasted for one and two years, respectively. It is argued that during an ENSO event the Transition Water of the California Current meet and mix near the Gulf entrance with the Tropical Surface Water of the Costa Rica Coastal Current.
thermohaline circulation/temperature data/salinity data/seasonal

variations/annual variations/ISE/California Gulf/Guaymas Basin/ASFA.

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Escambia County/Florida/geomorphology/shore features/shorelines/west/Santa Rosa Island/Pensacola Inlet/Phillips Inlet/changes/erosion/Holocene/modern/North America/United States/Gulf Coastal Plain/GEOREF.

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The OPTOMA (Ocean Prediction Through Observation, Modeling and Analysis) Program seeks to understand the mesoscale (fronts, eddies, and jets) variability and dynamics of the California Current System and to determine the scientific limits to practical mesoscale ocean forecasting. The cruise OPTOMA19 was undertaken in Feb. 1986 and covered a domain 240 km square centered 190 km off the coast from Pt. Arena. This report presents the hydrographic data which were acquired during the period 8 to 13 February. The cruise track consisted of alongshore transects. Data acquired during OPTOMA19 include XBT and CTD profiles. Wind velocity, air temperature, dew point, and 2 meter thermalsalinograph measurements were recorded every 2 minutes. Keywords: Ocean currents.
Sea water/Atmospheric temperature/California/Dew point/Dynamics/Hydrography/Limitations/Oceans/Predictions/Wind velocity/Ocean models/Bathythermograph data/Temperature/Electrical conductivity/Density/Winter/Salinity/Oceanographic data/Ocean currents/OPTOMA Project/California current/NTIS.

1755. SETTE OE. A PERSPECTIVE OF A MULTI-SPECIES FISHERY. CALIFORNIA CURRENT SYSTEM- THEIR FLUCTUATING MAGNITUDE, DISTRIBUTION AND SUSCEPTIBILITY TO USE FOR THE BENEFIT OF THE STATE OF CALIFORNIA. SYMPOSIUM. PAPERS. MESSERSMITH, J.D., ED. HELD IN LAKE ARROWHEAD, CALIF., DEC.11-12,1967. SPONSORED BY THE STATE OF 1969
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Pacific Ocean/geochemistry/organic materials/sediments/Santa Barbara Basin/valeric acid/formic acid/methane/genesis/biogenic/diagenesis/anaerobic/GEOREF.

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Performer: National Marine Fisheries Service, Seattle, WA
Contents: Copepodids and adults of Leptinogaster major, a poecilostomatoid copepod living in Mya arenaria and other marine bivalve mollusks; Reproductive biology of female spotted dolphins, Stenella attenuata, from the eastern tropical Pacific; Chinook salmon, Oncorhynchus tschawytscha, spawning escapement based on multiple mark-recapture of carcasses; The distribution of the humpback whale, Megaptera novaeangliae, on Georges Bank and in the Gulf of Maine in relation to densities of the sand eel, Ammodytes americanus; Seabirds near an Oregon estuarine salmon hatchery in 1982 and during the 1983 El Nino; Development and evaluation of methodologies for assessing and monitoring the abundance of widow rockfish, Sebastes entomelas; Population and fishery characteristics of gulf menhaden, Brevoortia patronus; Length-weight relationships of blue, Paralithodes platypus, and golden, Lithodes aequispina, king crabs parasitized by the rhizocephalan, Briarosaccus callosus Boschma. Distribution and abundance of common dolphin, Delphinus delphis, in the Southern California Bight; Cetacean high-use habitats of the northeast United States continental shelf; Sounds from Bryde, Balaenoptera edeni, and finback, B. physalus, whales in the Gulf of California.
Cetacae/Ecology/Birds/Whales/Reproduction Biology/Seals Mammals/Crabs/Dolphins Mammals/Populations/Abundance/Pacific Ocean/California Gulf/Alaska/Fishes/Marine fishes/Fisheries/Announcement bulletins/Habitats/El Nino/NTIS.

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1762. Schmitt RJ. Indirect interactions between prey:

Apparent competition, predator aggregation, and habitat segregation. ECOLOGY 1987;68(6):1887-1897. Field experiments were performed to explore the nature of indirect interactions between two groups of ecologically distinct prey that occur on subtidal rocky reefs at Santa Catalina Island, California. Mobile gastropods and sessile bivalves (mostly Chama arcana) share a common set of invertebrate predators (lobster Panulirus interruptus , cephalopod Octopus bimaculatus , and whilk Kelletia kelletii). The gastropods principally occur on cobble reefs and less commonly on high-relief reefs. Sessile bivalves and other species of favored prey are common on high-relief reefs and are rare or absent in cobble arcas. The density of each predator species is greatest in high-relief areas containing abundant favored prey. The density of predators within a cobble reef, although low overall, was found to be positively correlated with density of gastropods. Thus each group of prey was negatively affected by the presence of the other because each alternative prey increased the local density of predators.
USA/California/Santa Catalina Island/predator-prey interactions/competition/aggregation/habitat utilization/intertidal environment/predation/interspecific relationships/predators/Mollusca/population density/correlation/INE/USA/California/Santa Catalina Island/rocky shores/prey density/ASFA.

1763. Drever JI, Murphy JD. Non influence of anion exchange on the chloride and sulfate contents of interstitial waters in marine sediments. Geol. Soc. Am., Abstr. Programs. 1974;6(7):p.1034 Univ. Wyo., Geol. Dep., Laramie, Wyo., United-States Analytic; Serial; Abstract B; Bibliography and Index of Geology (1969-present).
California/geochemistry/chloride/sulfate/pore water/sediments/offshore/San Pedro Basin/Santa Barbara Basin/Mexico/Rio Ameca/composition/variations/relation/mineral composition/ion exchange/marine/Holocene/modern/United States/GEOREF.

1764. Pinkel R (Performer: Scripps Institution of Oceanography, La Jolla, CA. Marine Physical Lab.) Wavenumber Frequency Spectrum of Upper Ocean Shear. Summary rept. ; 1985. Report No.: MPLU4284. 21p.
Pub. in Jnl. of Physical Oceanography, v15 n11 p1453-1469 Nov 85. Sponsored in part by Contract N00014-79-C-0472. PC A02/MF A01 Contracts: N0001480C0220, N0001482K0147.
In May 1980 an 18-day sequence of oceanic velocity profiles was obtained off the coast of Southern California. Measurements were made using a pair of Doppler sonars mounted on the research platform FLIP and angled downward 45 deg. The profiles extend to a depth of 600 m. Depth resolution is approximately 30 m. From these profiles the vertical wavenumber-frequency spectrum of the oceanic shear field, Phi(Kappa, Omega) is identical with ((del u/del z)sq)/d(kappa(d(omega) is estimated. The shear spectrum is resolved between vertical wavenumbers 1/530 and 1/28 cpm. It is band-limited in wavenumber in the frequency region encompassing near-inertial waves and semidiurnal tides. Motions of vertical wavelength between 100 and 300 m have the greatest spectral density. As frequency increases, the band of most energetic motion shifts to ever higher wavenumbers. At frequencies above 8 cpd only the low-wavenumber side of the energetic band can be resolved by the sonars. The wavenumber dependence here appears blue. It is unlikely that the high-frequency, high-wavenumber shear is a result of linear internal wave activity. The shear spectrum is not consistent with previous estimates of the spectrum of isotherm vertical

displacement if linear internal wave scaling is used. The vertical displacement spectrum becomes progressively more red(low-mode dominated) with increasing frequency while the shear spectrum becomes progressively more blue. In ignorance of the dynamics of these motions, it is unwise to use internal wave (WKB) scaling to describe the vertical variation of the shear field.
Ocean tides/Velocity/Shear properties/Inertia/Displacement/Vertical orientation/Water flow/Sea water/Ocean currents/Doppler sonar/Reprints/Ocean waves/Internal waves/Frequency spectrum/Vertical wavenumber/Semidurnal tides/Oceanic shear fields/Upper ocean shear/California current/Shear spectrum/NTIS.

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1766. VALDES S. MARINE BASINS OFF THE COAST OF VENEZUELA. BULLETIN OF MARINE SCIENCE 1969;19(1, P.1-17, MARCH 1969. ABS., SP. SUM., 12 FIGS., 1 TABLE, 22 REFS. GRANT- NSF GP-5012)
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Univ. Calif., San Diego, Calif., United-States Analytic; Serial; Abstract B; Bibliography and Index of Geology (1969-present).
sedimentary structures/planar bedding structures/varves/interpretation/climate/precipitation/temperatur e/variations/P acific Ocean/northeast/United States/California/Santa Barbara Basin/sedimentary petrology/GEOREF.

1768. (Performer: California Univ., Santa Cruz. Center for Marine Studies. Funder: Minerals Management Service, Los Angeles, CA. Pacific OCS Region.) Marine Mammals and Seabirds of Central and Northern California, 1980-1983: Executive Summary. Final rept. ; 1983. Report No.: MMS840041. 35p.
See also PB85-183861. PC A03/MF A01 Contract: DI1412000129090.
This volume summarizes the findings of a three-year study of marine mammal and seabird distribution, abundance, and seasonality. The marine fauna of central and northern California includes at least 102 species of seabirds, 21 species of cetaceans, 5 species of pinnipeds, and the sea otter. Seabird density in central and northern California is seasonally great, and more similar in magnitude to the Gulf of Alaska and the Bering Sea than to the Southern California Bight. Aerial surveys/Dolphins Mammals/Spatial distribution/Abundance/Whales/Seasonal variations/Offshore drilling/Crude oil/Natural gas/Animal ecology/California/Sites/Animal migrations/Mammals/Seals Mammals/Birds/Water pollution/Outer continental shelves/NTIS.

1769. HARDWICK JE. REVIEW OF THE PELAGIC WET FISHERIES DURING THE 1966-67 SEASON. CALIFORNIA COOPERATIVE OCEANIC FISHERIES INVESTIGATIONS. REPORTS 1968;12, P.22-23, MAY 1,1968. NO ABS., 5 TABLES, NO REFS
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1771. Crouch JK. Neogene tectonic evolution of the California borderland and western Transverse Ranges. Geol. Soc. Am. Bull. 1979;90:338-345. introduction/MINERALS MANAGEMENT SERVICE.

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The structure of the macrobenthic community, sediment toxicity, and sediment contamination changed greatly between 1980 and 1983 along a pollution gradient from the Los Angeles County Sanitation Districts' (LACSD) sewage outfalls on the Palos Verdes Shelf, California, USA to a reference site in northern Santa Monica Bay. Stimulation of the species richness, biomass, and density of the benthos along the 60 m contour 5 to 11 km from the outfalls was significantly reduced in 1983 when compared to 1980. Stations 1 to 3 km from the outfalls in 1980 were occupied by a depauperate fauna strongly dominated by the opportunistic polychaete Capitella spp. In 1983 species richness and biomass significantly increased close to the outfalls, Capitella spp. was much less abundant. Sediment contamination by most measured chemicals and parameters of organic enrichment decreased on the Palos Verdes Shelf, but not at the reference station, between 1980 and 1983. marine pollution/outfalls/pollution effects/zoobenthos/Capitella/Parvilucina tenuisculpta/Tharyx/community composition/INE/USA/ California/Palos Verde Shelf/ASFA.

1774. Warme JE. Geologic exploration of southern California basins and bank margins; results using manned submersible. Am. Assoc. Pet. Geol., Bull. AAPG-SEPM annual meeting. 1976;60(4):p.732 Rice Univ., Dep. Geol., Houston, Tex., United-States Analytic; Serial; Abstract B; Bibliography and Index of Geology (1969-present).
Pacific Ocean/oceanography/ocean floors/exploration/north/United States/California/San Diego Trough/Santa Cruz Basin/marine geology/submersibles/sediments/cores/troughs/basins/banks/margins /GEOREF.

1775. Dohl TP (Performer: California Univ., Santa Cruz. Center for Marine Studies. Funder: Minerals Management Service, Los Angeles, CA. Pacific OCS Region.) Marine Mammals and Seabirds of Central and Northern California, 1980-1983: Synthesis of Findings. Final rept. ; 1983. Report No.: MMS840042. 248p.

See also PB85-183820. PC A11/MF A01 Contract: DI1412000129090. This volume summarizes the findings of a three-year study of marine mammal and seabird distribution, abundance, and seasonality. The marine fauna of central and northern California includes at least 102 species of seabirds, 21 species of cetaceans, 5 species of pinnipeds, and the sea otter. Seabird density in central and

northern California is seasonally very great, and more similar in magnitude to the Gulf of Alaska and the Bering Sea than to the Southern California Bight. The authors estimate that seabirds number almost 6.5 million when maximally abundant. Autumn is the season of greatest marine mammal abundance, with an estimated population of more than 200,000 animals. Numbers progressively decrease, on a seasonal basis, until an annual minimum of approximately 110,000 animals is reached in summer.
Abundance/Spatial distribution/Alaska Gulf/Bering Sea/Cetacea/Whales/Birds/Seals Mammals/Marine biology/Ecology/North Pacific Ocean/Water pollution/Outer continental shelves/Habitats/NTIS.

1776. Briggs KT, Lewis DB, Tyler WB, Hunt Jr. GL. Brown Pelicans Pelecanus occidentalis in Southern California, USA: habitat use and environmental fluctuations. Condor 1981;83(1):1-15
Address: CENTER FOR COASTAL MARINE STUDIES, UNIVERSITY OF CALIFORNIA, SANTA CRUZ, CALIFORNIA 95064.
The population size, distribution and habitat affinities of brown pelicans (P. occidentalis) were investigated during 1975-1978 using monthly aerial, ship and ground surveys throughout the southern California bight. Pelican numbers are lowest during spring, when most birds are found near the small nesting colonies at Anacapa Island and Islas Los Coronados. The annual post-breeding migration from Mexican colonies augments the local population during summer and autumn; estimated peak populations of 65,000-94,000 birds occurred in Sept. and Oct. Throughout autumn and early winter pelicans regularly occurred as far offshore as Cortes Bank, 75 km seaward from the nearest island and 175 km off the mainland. Adults predominated offshore and near the California Channel Islands all year, but immature birds outnumbered adults along the mainland shore during autumn and winter. Brown pelicans occurred at sea in highest densities in areas of shallow, warm water within .apprx. 30 km of shore. During Aug. and Dec., migrating birds showed no discernible affinity for particular sets of environmental conditions. The distribution of spawning northern anchovies, the principal prey of brown pelicans during the nesting season, was not a good indicator. of bird density distribution. The effects of a 2-yr warming trend on pelican numbers are discussed.
habitat use/environmental fluctuations/anchovy population size/size distribution/seasonal migration/breeding biology/warming trend/population levels/distribution/habitat preferences/population number/habitat selection/Brown Pelican/Pelecanus occidentalis/California Channel Islands/Anacapa Island/Islas Los Coronados/Coronados Islands/Cortes Bank terrestrial biology/ornithology.

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introduction/MINERALS MANAGEMENT SERVICE.

1778. Jones GF, Thompson BE. The ecology of Adontorhina cyclia Berry (1947) (Bivalvia: Thyasiridae) on the Southern California Borderland. INT. REV. GESAMT. HYDROBIOL 1986;71(5):687-700.
Adontorhina cyclia Berry, 1947 is widely distributed on the continental borderland of southern California. It is a faunal element in every major habitat type including two of the outer deep basins, Santa Cruz Basin and San Nicolas Basin. On the mainland shelf it is discontinuously distributed from Point Conception to the US/Mexican Border. The depth distribution of Adontorhina

reflects the fact that it inhabits both topographic highs and some of the deep basins of the borderland. Its depth range is from 11.6 to 1,886.0 meters. While Adontorhina is able to inhabit a wide range of sediment types, from 1.5 to 8.1 mean phi, it was primarily collected from locations where sediments ranged from 3 to 5 mean phi. A diverse array of macrofaunal taxa is associated with Adontorhina . The numerically dominant taxa varied from habitat to habitat.
distribution records/vertical distribution/ecological associations/Adontorhina cyclia/sediment texture/INE/USA/California/ASFA.

1779. O' NTJ. Source identification of beach tars within southern California borderland. Am. Assoc. Pet. Geol., Bull. AAPG-SEPM annual meeting. 1976;60(4):p.704
Univ. South. Calif., Dep. Geol. Sci., Los Ang., Calif., United-States Analytic; Serial; Abstract B; Bibliography and Index of Geology (1969-present). California/geochemistry/organic materials/tar/beaches/south/continental borderland/hydrocarbons/sources/identification/tracer experiments/asphaltene/evaluation/applications/environmental geology/pollution/petroleum/reservoir rocks/United States/GEOREF.

1780. Mueller J. Optical variability in the eastern North Pacific Ocean as measured by the NIMBUS-7 coastal zone color scanner. PROCEEDINGS OF THE PACIFIC CONGRESS ON MARINE TECHNOLOGY, HONOLULU, HAWAII, APRIL 24-27, 1984.; 1984; pp. OST2/11-12
Sequences of Nimbus-7 Coastal Zone Color Scanner (CZCS) images have been processed to map bio-optical variability in the eastern North Pacific Ocean. Phytoplankton pigment concentrations)chlorophyll-a plus phaeopigments-a) and k(490) (the vector irradiance attenuation coefficient at a wavelength of 490 nm) were calculated from the radiances measure in cloud free portions of each available CZCS image. These parameters were then mapped onto a Mercator grid extending from 28 N to 42 N and from 117 W to 143 W at a nominal resolution of 5 km. Emphasis was placed on Oct and Nov of 1979 and 1982 as part of the analysis phase of the ONR sponsored Optical Dynamics Experiment (ODEX). The objective of the ODEX program is to develop a 1-dimensional model for predicting optical propagation in the upper ocean away from coastal current systems. A strong optical front separates turbid coastal water from transparent offshore water at a location near the base of the continental slope. Along the zonal transect at 35 N, this front is clearly visible near 123 W in CZCX-derived optical depth. In the offshore continuation of the 35 N transect, the Acania's CTD profiles clearly indicated that the water masses between the optical front of 123 W and beyond 130 W have temperature-salinity characteristics associated with the California Current System. Vertical profiles of in situ.
optical propertiescence also varied systematically over the zonal t/satellite sensing/photosynthetic pigments/phytoplankton/water masses/water currents/CTD observations/image processing/remote sensing/satellites/oceanography/chlorophylls/marine environment/INE/California Current/variability 35 N./NIMBUS-7/CSA Life Sciences Collection.

1781. Kozloff P (Performer: National Marine Fisheries Service, Seattle, WA. Northwest and Alaska Fisheries Center.) Fur Seal Investigations, 1982. Technical memo. ; 1985. Report No.: NOAATMNMFSFNWC71. 136p.
Research on the northern fur seal, Callorhinus ursinus, in 1982 was conducted on the Pribilof Islands, Alaska; on San Miguel Island, California, and nearby Castle Rock; and in the Bering Sea. An estimate was made of the number of pups born in 1982 on St. Paul

Island, Alaska, including the sizes of the 1940, 1977 and 1978 year classes. Studies in 1982 showed that the majority of net fragments in which fur seals become entangled have a stretched mesh size of about 20-25 cm. A study of juvenile survival (birth-age 2 yr) on the Pribilof Islands concluded that survival on land is somewhat higher on St. George than on St. Paul. Pup production at both Adams Cove (1,029) on San Miguel Island and nearby Castle Rock (680) was greater in 1982 than in any previous year. Dietary studies based on the principal prey species of fur seals and the relative abundance of fish-squid resources suggest that fur seals are opportunistic feeders. Chlorinated hydrocarbons were found in the tissues of northern fur seals from St. Paul Island. San Miguel Island/Bering Sea/Populations/Nets/Survival/Animal behavior/Growth/Chlorohydrocarbons/Tissues Biology/Bioassay/Spatial distribution/Mortality/Isotopic labeling/Diets/Seals Mammals/Pribilof Islands/North Pacific Ocean/Fur seals/Ecosystems/Tracer studies/Callorhinus ursinus/NTIS.

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1783. Cullen JJ, Eppley RW. Chlorophyll maximum layers of the Southern California Bight and possible mechanisms of their formation and maintenance. Research on the marine food chain, prog. rep. Inst. Mar. Res., Univ. Calif., San Diego 1980;:133-164. MINERALS MANAGEMENT SERVICE.

1784. Cullen JJ, Eppley RW. Chlorophyll maximum layers of the Southern California USA Bight and possible mechanisms of their formation and maintenance. Oceanol. Acta. 1981;4(1):23-32. phytoplankton/biomass/primary production/light/TEXT/algae/spermatophytes/Bray/Hardy/phytoplankt on/primary productivity/chlorophyll/layers/southern california bight/MINERALS MANAGEMENT SERVICE.

1785. Cullen JJ, Renger EH. Continuous measurement of the 3-3 4 di chlorophenyl-1 1-dimethyl urea induced fluorescence response of natural phytoplankton populations. Mar. Biol. (Berl) 1979;53(1):13-20. metabolic drug/southern california bight/usa/chlorophyll a/photosynthetic efficiency/off shore nutrients/Algae/spermatophytes/Bray/Hardy phytoplankton/TEXT/MINERALS MANAGEMENT SERVICE.

1786. Field ME. Shallow structure of northern Santa Rosa Cortes Ridge, southern California continental borderland. Am. Assoc. Pet. Geol., Bull. AAPG-SEPM annual meeting. 1976;60(4):p.670-671
U. S. Geol. Surv., Menlo Park, Calif., United-States Analytic; Serial; Abstract B; Bibliography and Index of Geology (1969-present).
Los Angeles County/California/oceanography/continental shelf/seismic surveys/sediments/south/Santa Barbara Islands/Santa Rosa Cortes Ridge/United States/continental borderland/structure/shallow/sedimentation/transport/sedimentary structures/slump structures/marine geology/Pacific Ocean/geophysical surveys/reflection/marine/faults/bottom features/soft sediment deformation/tectonics/GEOREF.

1787. Miller S, Miller P. Beetles of Santa Barbara Island, California (Coleoptera). ENTOMOLOGY OF THE CALIFORNIA CHANNEL ISLANDS: PROCEEDINGS OF THE FIRST SYMPOSIUM.; 1985; pp. 121-136
USA/California/Channel Island/Coleoptera/geographical distribution/check lists/CSA Life Sciences Collection.

1788. Hauksson E, Teng T, Henyey TL, McRaney JK, Hsu L (Performer: University of Southern California, Los Angeles. Geophysics Lab. Funder: Geological Survey, Reston, VA.) Earthquake Hazard Research in the Los Angeles Basin and Its Offshore Area (October 1, 1983 to September 30, 1984). Technical rept. ; 1985.
Report No.: TR851. 44p.
Contract: DI1408000121858.
The Geophysics Laboratory at the University of Southern California is conducting a comprehensive investigation of seismicity in the greater Los Angeles basin and its offshore area under U.S.G.S. Contract No. 14-08-0001-21858. As a part of this investigation, U.S.C. operates a seismic network in the Los Angeles basin area. During the 1984 fiscal year the authors have concentrated on seismotectonic analysis of the seismicity recorded in the Los Angeles Basin during the last 10 years. A comprehensive study of earthquakes along the Newport-Inglewood fault is in progress and the authors report the latest results. The authors are also reanalyzing the January 1, 1979 Malibu earthquake and its aftershocks. A substantial swarm of small earthquakes that occurred in the Santa Barbara channel during 20-25 April 1984 offers new understanding of active tectonics in southern California coastal zone offshore oil fields.
Geological faults/Seismic waves/Tectonics/Channels Waterways/Coasts/Oil fields/California/Hazards/Earthquakes/Los Angeles Basin/Newport Inglewood fault/NTIS.

1789. DENOYER JM. GEOLOGY, PETROLEUM DEVELOPMENT, AND SEISMICITY OF THE SANTA BARBARA CHANNEL REGION, CALIFORNIA. D. SEISMICITY AND ASSOCIATED EFFECTS, SANTA BARBARA REGION. U.S. GEOLOGICAL SURVEY. WASH., D.C. PROFESSIONAL PAPER NO. 679-D, 47-77, 1969 1969
UNKNOWN.
SANTA BARBARA CHANNEL/CALIFORNIA COAST/EARTHQUAKES/SEISMICITY/NUCLEAR EXPLOSIONS/TSUNAMIS/Oceanic Abstracts.

1790. Brown DH, Norris KS. Observations of captive and wild cetacea. J. Mammalogy 1956;37(3):120-145
behavior/cetaceans/Cetacea/marine biology/mammalogy.

1791. Colton MC, Mooers CNK. OPTOMA (Ocean Prediction Through Observations, Modeling, and Analysis) program interim report. The airborne ocean thermal structure mapping project. REP. U.S. NAV. POSTGRAD. SCH 1985; The Ocean Prediction Through Observation, Modeling and Analysis (OPTOMA) program goals are to develop an ocean descriptive predictive system for studying and forecasting the evolution of ocean mesoscale features and the California Current System. Since Feb. 1983 six OPTOMA missions have been flown. A total of 325 AXBTs have been successfully deployed off the northern and central California coasts. Data analysis reinforce recent discoveries about the character of the California Current System: the current regime is highly variable in nature and is comprised of cool anomalies, mesoscale eddies, "squirts" and jets, current filaments and fronts. An airborne digital data acquisition system, built around an HP9816 microprocessor and a Sippican MK9 digitizing unit, digitizes the AXBT audio signal, then stores the profiles on diskette.
mesoscale features/water circulation/INE/California

Current/prediction/mathematical models/OPTOMA/ASFA.

1792. Davis CC. Observations of circulation and suspended sediment transport over part of southern California borderland from satellite imagery. Am. Assoc. Pet. Geol., Bull. AAPG-SEPM annual meeting. 1976;60(4):p.663 Univ. South. Calif., Los Ang., Calif., United-States Analytic; Serial; Abstract B; Bibliography and Index of Geology (1969-present).
Pacific Ocean/oceanography/oceans/circulation/sedimentation/continental shelf/United States/California/marine geology/continental borderland/patterns/remote sensing/satellite/Landsat/transport/marine transport/GEOREF.

1793. Nagano C. Distributional notes on the tiger beetles of the California Channel Islands (Coleoptera: Cicindelidae). ENTOMOLOGY OF THE CALIFORNIA CHANNEL ISLANDS: PROCEEDINGS OF THE FIRST SYMPOSIUM.; 1985; pp. 105-112 Tiger beetles are widespread and often abundant predatory insects in littoral habitats. Cicindela is the only one of the four North American genera in the family Cicindelidae inhabiting the sea coast and Channel Islands of southern California. The first island record of Cicindela was made by Fall (1897) in a treatment of the Coleoptera of the Channel Islands. Freitag (1965) listed a species from Santa Cruz Island in his revision of the Nearctic members of the Cicindela maritima complex. However, a comprehensive survey for island tiger betles has only been completed recently (Nagano, 1982) in which seven of the islands are reported to harbor five species of Cicindela . The present paper is a review and update of Nagano (1982) with new records and discussions. Cicindelidae/geographical distribution/USA/California/Channel Island/check lists/CSA Life Sciences Collection.

1794. Wittmann PA, Rienecker MM, Kelley EA, Mooers CNK (Performer: Naval Postgraduate School, Monterey, CA). Hydrographic Data from the OPTOMA (Ocean Prediction through Observations, Modeling and Analysis) Program: OPTOMA11, 5 June-5 August 1984. Report for Oct 82-Mar 85. ; 1985. Report No.: NPS6885011. 216p. The six cruises and one aircraft flight comprising OPTOMA11 were undertaken in June, July and August 1984 to sample two subdomains of the California Current. This report presents the hydrographic data, acquired by XBT, AXBT and CTD casts, from the cruises and the flight. Keywords: Temperatures, Salinity, Density, Depth, Profiles, Graphs, and Tables(Data).
North Pacific Ocean/Depth/Profiles/Temperature/Salinity/Graphs/Tables Data/Oceanographic data/Ocean currents/OPTOMA project/California Current/NTIS.

1795. YENNE KA. GEOLOGY, PETROLEUM DEVELOPMENT, AND SEISMICITY OF THE SANTA BARBARA CHANNEL REGION, CALIFORNIA. B. PETROLEUM. U.S. GEOLOGICAL SURVEY. WASH., D.C. PROFESSIONAL PAPER NO. 679-B, 13-27, 69-77, 1969. DEVELOPMENT IN THE REGION OF THE SANTA BARBARA CHANNEL 1969
UNKNOWN.
OFFSHORE OPERATIONS/GAS/PETROLEUM/OIL/SANTA BARBARA CHANNEL/OJAI AREA/MONTALVO AREA/POINT CONCEPTION/GOLETA AREA/Oceanic Abstracts.

1796. Brownell RL, Rathbun GB. California sea otter translocation: a status report. Endangered Species Technical Bulletin XIII(4). Washington, D.C. 20204: Department of the Interior, U.S. Fish and Wildlife Service; 1988. 1,6. This paper describes the efforts of the U.S. Fish and Wildlife Service to

translocate sea otters to San Nicolas Island. Capture procedures, censuses, and fate of otters are described.
translocation/endangered species/relocation/Enhydra lutris/California/sea otter/Big Sur/San Nicolas Island/marine biology/mammalogy.

1797. Four additional exploratory oil and gas wells. DATA ANNOUNCE. NGDC WELL LOG DATA 1986;
Well logs and auxiliary information for 4 privately drilled test wells are now available for purchase from the National Geophysical Data Center. These data were generated by private companies that drilled exploratory oil and gas wells in areas for which the proprietary terms of the leases have terminated. These wells are in addition to 86 previously advertised wells released to NGDC by the Minerals Management Service, U.S. Department of Interior, for public dissemination. A summary of the types of well logs and auxiliary information now available for these wells is given.
oil and gas exploration/offshore operations/oil wells/continental shelves/well logging/INE/Santa Barbara Channel/ASFA.

1798. Platt JP. The petrology, structure, and geologic history of the Catalina Schist terrain, southern California. Calif., Univ., Publ. Geol. Sci. 1976;112
Univ. Calif., United-States Monographic; Serial B; Bibliography and Index of Geology (1969-present).
Los Angeles County/Catalina Schist/California/petrology/metamorphic rocks/Mesozoic/south/Santa Catalina Island/metamorphism/P T conditions/greenschist facies/amphibolite facies/schists/mineral assemblages/fabric/composition/data/facies/blueschist facies/plate tectonics/tectonics/structure/folds/faults/thrust/structural analysis/age/convergence/interpretation/petrofabrics/maps/United States/geologic/GEOREF.

1799. Wittman PA, Rienecker MM, Kelley EA, Mooers CNK (Performer: Naval Postgraduate School, Monterey, CA). Hydrographic Data from the OPTOMA (Ocean Prediction Through Observations, Modeling and Analysis) Program: OPTOMA9, 20-25 February 1984, OPTOMASF 3-4 March 1984, OPTOMA10 23-24 April 1984. Rept. for Oct 82-Feb 85. ; 1985. Report No.: NPS6885007. 69p.
See also AD-A141 666.
The OPTOMA (Ocean Prediction Through Observations, Modeling and Analysis) Program, a joint Naval Postgraduate School/Harvard program, seeks to understand the mesoscale (fronts, eddies, and jets) variability and dynamics of the California Current System and to determine the scientific limits to practical mesoscale ocean forecasting. To help carry out the aims of this project, a series of cruises has been planned. The cruises OPTOMA9, OPTOMASF, and OPTOMA10 were undertaken to sample subdomains of the California Current System west of Monterey and west of Pt. Arena. This report presents the hydrographic data, acquired by XBT and CTD casts, from the cruises. Keywords: Physical oceanography; Dynamic oceanography. Dynamics/Oceanography/Oceans/Predictions/Fronts Meteorology/Eddies Fluid mechanics/North pacific ocean/Jets/Ocean currents/California Current/OPTOMA project/NTIS.

1800. SCHOELHAMER JE. GEOLOGY, PETROLEUM DEVELOPMENT, AND SEISMICITY OF THE SANTA BARBARA CHANNEL REGION, CALIFORNIA. A. GEOLOGIC FRAMEWORK OF THE SANTA BARBARA CHANNEL REGION. U.S. GEOLOGICAL SURVEY. WASH., D.C. PROFESSIONAL PAPER NO. 679-A, 1-13, 69-77, 1969 1969
UNKNOWN.
SEISMICITY/STRATIGRAPHY/SANTA BARBARA CHANNEL/STRUCTURAL GEOLOGY/HISTORICAL GEOLOGY/Oceanic Abstracts.

1801. Brumbaugh RW. Hillslope gullying and related changes, Santa Cruz Island, California [dissertation]. Los Angeles, California, USA: University of California; 1983. 210.
This study examined the multiple processes involved in initiating and shaping the hillslope gully under varied steepland conditions on Santa Cruz Island. Gullies cut into bedrock of steep watersheds are the result of varying influences of rock and soil type, vegetation reduction, and intense rainfall. The vegetation reduction coincides with commencement of sheep grazing in the mid 19th century. Ensuing rapid erosion of the Island's steep slopes in the late 19th century and 20th century is documented by accelerated aggradation of adjacent canyon floors. Intense rainfall influence was documented during the 1977-78 and 1978-80 storm seasons. The 1977-78 storm season is one of the most severe of the century. Hillslope gullies were surveyed on five different watershed types ranging from ungrazed to heavily sheep-grazed sites on three rock types. Propensity for gullying varied with rock type. The most severe gullying occurred where there had been almost complete loss of previously substantial woody cover. Gullying especially was facilitated by mass movement on the disturbed watersheds and locally on fine-grained regoliths prone to soil piping. Gully morphology varied with respect to different rock types. Gully depths were constrained by unweathered bedrock, while width of the gully channel was more dependent on gully depth and gully wall stability. However, on some sites there were no trends or interrelationships among gully. dimensions while there were strong interrelationships among the same dimensions in other populations. The type of gully head varied considerably among gully populations demonstrating the process-selective influence of rock type. Three gullies were monitored for 2.5 years, by erosion pins and placement of painted stones on the gully floor between storms. Varying scales of mass movement were found to shape the hillslope gullies rather than fluvial processes. Amelioration of gully erosion occurred in an area recently excluded from sheep-grazing. California/geomorphology/mass movements/erosion features/bedrock/Pacific Coast/Western U.S./United States/channels/classification/grazing/gullying/processes/Santa Cruz Island/Southern California/storms/vegetation /hillslopes/gullying/gullies/sheep grazing/sheep/Santa Cruz Island/geology/geography.

1802. Cox JL. DDT residues in seawater and particulate matter in the California Current system. U.S. Natl. Mar. Fish. Serv. Fish. Bull. 1971;69(2):443-450.
sea water/particulates/pesticide/residues/california/california current/anthropogenic/anderson/reish/Particulate matter/DDT residues/zooplankton/Pieper/text/chemical/oceanography/eganhouse/ venkatesan/MIN ERALS MANAGEMENT SERVICE.

1803. Kropfli RA. Airflow characteristics in the marine boundary layer over the Santa Barbara Channel during SCCCAMP (South Central Coast Cooperative Aerometric Monitoring Program): Part 1. Summary of dual-Doppler radar observations. NOAA TECH. MEMO 1986;
The two NOAA/Wave Propagation Laboratory 3 cm wavelength (X-band) pulsed Doppler radars were used during the South Central Coast Cooperative Aerometric Monitoring Program (SCCCAMP) to map the vertically averaged 2-D flow in the marine boundary layer (MBL) over the central and western portions of the Santa Barbara Channel. This is an area that has been poorly documented in the past and received relatively less intensive coverage by other measurement

systems during SCCCAMP. The Doppler radar measurements, therefore, were used to fill a critical gap in the authors understanding of low-level mesocale flows in the region. remote sensing/climatology/atmospheric boundary layer/radar/INE/Santa Barbara Channel/ASFA.

1804. Barnes RO, Goldberg ED. Methane production and consumption in anoxic marine sediments. Geology (Boulder). 1976;4(5):p.297-300
Scripps Inst. Oceanogr., La Jolla, Calif., United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present). Pacific Ocean/geochemistry/organic materials/methane/sediments/pore water/United States/California/Santa Barbara Basin/hydrocarbons/marine/genesis/anaerobic/consumption/bacteria/ sulfate/reduct ion/mechanism/sinks/Holocene/modern/processes/GEOREF.

1805. Wittmann PA, Kelley EA, Mooers CNK (Performer: Naval Postgraduate School, Monterey, CA). Hydrographic Data from the OPTOMA (Ocean Prediction Through Observations, Modeling and Analysis) Program: OPTOMA15, 24 January to 23 February 1985. Rept. for Oct 82-Apr 85. ; 1985. Report No.: NPS6885016. 114p. The two cruises, Leg DI and DII, and one AXBT flight Leg P were undertaken in January and February 1985. This report presents the hydrographic data acquired by XBT, AXBT and CTD casts, from the cruises and the flight. Keywords include: California Current System, Physical Oceanography, Dynamic Oceanography. North Pacific Ocean/Temperature/Salinity/Depth/California/Dynamics/Hydrography/ Oceanography/P redictions/Oceanographic data/Bathythermograph data/Ocean currents/California current/Oceanographic cruises/OPTOMA project/NTIS.

1806. Brunk JL, Jokela TA, Wong KM, Nochkin VE. 238-Pu concentrations in the marine environment at San Clemente Island. Health Physics 1981;40(5):643 Plutonium-238/Marine pollution/San Clemente Island/water quality/pollution/resource management.

1807. Ward BB. Nitrogen transformations in the Southern California Bight. DEEP-SEA RES 1987;34(5-6):285-805.
Oxidation and assimilation of ammonium and nitrate were measured in profiles from the surface to 1000 m at four stations in the Southern California Bight. Assimilative processes dominated the turnover of these nitrogen compounds in the nutrient depleted photic zone; however, at the bottom of the photic zone, nitrification and assimilation were equally important in the turnover of both compounds. Although ammonium oxidation was strongly inhibited by light in the surface samples, nitrification probably contributed to rapid nitrogen cycling within the photic zone. Assimilation of ammonium and nitrite, integrated over the photic zone, was about 3-fold greater than calculated regenerated production, estimated from super(14)CO sub(2) uptake measurements. Integrated nitrification rates below the photic zone usually exceeded new primary production estimates. marine environment/nitrogen cycle/ammonium/oxidation/nitrification/nitrate/nitrifying bacteria/nutrient uptake/nitrite/phytoplankton/bacteria/Southern California Bight/Pacific Ocean/marine microorganisms/assimilation/ASFA.

1808. Smith KLJ, Rowe G, Clifford CH. Sediment oxygen demand in an outwelling and upwelling area. Tethys. Analyse de l'ecosysteme des ''upwellings''; deuxieme conference.

1974;6(1-2):p.223
Woods Hole Oceanogr. Inst., Woods Hole, Mass., United-States
Analytic; Serial B; Bibliography and Index of Geology (1969-present).
Atlantic Ocean/oceanography/sediments/New York Bight/Pacific Ocean/California Current/environmental analysis/benthonic/effects/pollution/nutrients/enrichment/organic /utilization/c arbon/oxygen/experimental studies/in situ/Holocene/GEOREF.

1809. (Performer: Jet Propulsion Lab., Pasadena, CA. Funder: National Aeronautics and Space Administration, Washington, DC.) Towards a Study of Synoptic-Scale Variability of the California Current System. ; 1985. Report No.: NAS126175871, JPLPUB8522, NASACR175871. 43p.
Contract: NAS7918.
A West Coast satellite time series advisory group was established to consider the scientific rationale for the development of complete west coast time series of imagery of sea surface temperature (as derived by the Advanced Very High Resolution Radiometer on the NOAA polar orbiter, and near-surface phytoplankton pigment concentrations (as derived by the Coastal Zone Color Scanner on Nimbus 7). The scientific and data processing requirements for such time series are also considered. It is determined that such time series are essential if a number of scientific questions regarding the synoptic-scale dynamics of the California Current System are to be addressed. These questions concern both biological and physical processes.
Environmental monitoring/Forecasting/Marine environments/Ocean surface/Ocean temperature/Marine biology/Ocean currents/Oceanographic parameters/Synoptic meteorology/Time series analysis/NTIS.

1810. Bruno RO, Dean RG, Gable CG. Longshore transport evaluations at a detached breakwater. Proceedings of the Coastal Engineering Conference 1981;17:1453-1475
Address: Waterw. Exp. Stn., Chesapeake Bay Model Branch, Stevensville, MD, USA; Univ. Del., Dep. Civ. Eng., USA Conference: Seventeenth coastal engineering conference Sydney, Australia, March 23-28, 1980.
sedimentation/ocean waves/transport/breaking waves/oceanography/marine transport/littoral drift/rates/nearshore sedimentation/nearshore environment/shorelines/Channel Islands Harbor/engineering/environmental geology.

1811. Yochem PK, Stewart BS, DeLong RL, DeMaster DP. Diel haul-out patterns and site fidelity of harbor seals (Phoca vitulina richardsi) on San Miguel Island, California, in autumn. MAR. MAMM. SCI 1987;3(4):323-332. The authors studied the haul-out patterns and movements of harbor seals (Phoca vitulina richardsi) on San Miguel Island, California, from 23 October through 6 December 1982 by attaching a radio transmitter to each of 18 seals and monitoring their presence ashore with continuously scanning receivers. Seals hauled out at all hours although, on average, the largest proportion of tagged seals was ashore between 1300 and 1500 h. Median durations of haul-out bouts of individual seals ranged from 4.7 to 21.8 h; 81% of all haul-out bouts were less than 12 h and 3% were longer than 24 h. Eighty-one percent of the seals that were resighted at least twice used only the sites where they were tagged; two seals used two sites and one seal used three.
USA/California/San Miguel Island/movements/population levels/activity patterns/diurnal variations/local movements/Phoca vitulina

richardsi/INE/USA/California/San Miguel Island/haul-out behavior/ASFA.

1812. Hom W, Risebrough RW, Soutar A, Young DR. Deposition of DDE and polychlorinated bipyenyls in dated sediments of the Santa Barbara Basin. Calif., Univ., Scripps Inst. Oceanogr., Contrib. Reprint from Science, Vol. 184, June 14, 1974 1974;44(part 2):p.1492-1494
Univ. Calif., Bodega Mar. Lab., Bodega Bay, Calif., United-States; Scripps Inst. Oceanogr., United States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
California/environmental geology/pollution/Santa Barbara Basin/water/sediments/cores/marine/DDE/biphenyls/polychlorinated/age/rates/effe cts/ecosystems/United States/GEOREF.

1813. Colton MC, Mooers CNK. Meteorological Data from the OPTOMA (Ocean Prediction through Observations, Modeling and Analysis) Program OPTOMA II, Leg DII. 30 June - 10 July, 1984. Master's thesis. [dissertation] ; 1985. 79p. Performer: Naval Postgraduate School, Monterey, CA
The OPTOMA (Ocean Prediction Through Observations, Modeling and Analysis) Program seeks to understand the mesoscale (front, eddies, and jets) variability and dynamics of the California Current System and to determine the scientific limits to practical mesoscale ocean forecasting. This report presents the meteorological data acquired by twenty-six radiosondes launched during the hydrographic cruise OPTOMA11, Leg DII (30 June to 10 July, 1984). To compare the prevailing atmospheric and oceanic conditions, the radiosonde potential temperature and specific humidity profiles are plotted with nearly coincident XBT temperature profiles. Also included are: 1) time series plots of hourly dry-bulb and wet-bulb temperatures and hourly wind velocities, 2) an AVHRR image, and 3) National Weather Service surface pressure analyses for the cruise period.
Keywords Radiosonde data; Coastal meteorology; Air/Sea interaction; Atmospheric boundary layer; Oceanic mixed layer; California current system.
Atmospheres/Boundary layer/California/Coastal regions/Dynamics/Humidity/Limitations/Meteorological data/Meteorology/Oceans/Plotting/Predictions/Profiles/Radiosondes /Temperature/Time series analysis/Wind velocity/Eddies Fluid mechanics/Atmospheric temperature/Bathythermograph data/Jet flow/Barometric pressure/Marine atmospheres/North pacific ocean/Observation/Forecasting/Air water interactions/Ocean currents/Marine meteorology/OPTOMA Ocean Prediction Through Observations Modeling and Analysis/California current/Atmospheric boundary layer/Mesoscale forecasting/NTIS.

1814. BASYE DE. SANTA BARBARA SPARKLING IN THE WAKE OF CLEAN-UP JOB. OIL AND GAS JOURNAL 1969;67(34, P. 33-38, AUG. 25, 1969. NO ABS., 4 FIGS., NO REFS) UNKNOWN.
SANTA BARBARA CHANNEL/POLLUTION CONTROL/OIL POLLUTION/METHODS/RESULTS/ECOLOGICAL EFFECTS/OCEANIC ABSTRACTS.

1815. Bruno RO, Dean RG, Gable CG, Walton JTL. Longshore Sand Transport Study at Channel Islands Harbor, California. : Coastal Engineering Research Center, Fort Belvoir, VA. CERC-TP-81-2; 1981. 50.
A field experiment was conducted to develop correlations between wave characteristics and longshore sediment transport. The waves were measured by two near-bottom mounted pressure transducers and by visual observation when pressure transducers were not in operation. The average longshore sediment transport rates were determined from sequential volumetric surveys behind an offshore

breakwater which was regarded as a total trap. The data analyzed encompass a period of 2 years, 1 year after each dredging cycle. Spectral analyses of the pressure gage wave data were conducted and yielded one direction per frequency. The correlations include immersed weight sediment transport rate, I, versus longshore component of wave energy flux at breaking, P sub ls. The most widely used correlation constant, K, in the relationship I = KP sub ls is 0.77. The value determined from the data was K = 0.98, based on the P sub ls values directed toward the trap. One feature of this type of trap is the potential for overtrapping if the waves are directed nearly normal to shore.
Sediment transport/Harbors/California/Beaches/Sand/Profiles/Modification/Variations/Surv eys/Ocean waves/Measurement/Longshore sand transport/Channel Islands Harbor/Earth Sciences/Oceanography/Engineering/Marine Geology.

1816. Antonelli GAJ, Lowry MS, DeMaster DP, Fiscus CH. Assessing northern elephant seal feeding habits by stomach levage. MAR. MAMM. SCI 1987;3(3):308-322. Stomach lavaging was used to study the feeding habits of northern elephant seals (Mirounga angustirostris) found on San Miguel Island, California, during the spring of 1984. The stomachs of 57 (96.6%) of the animals lavaged contained identifiable parts of prey. Twenty-nine different food items were identified, 12 of which have not been previously reported as prey of the northern elephant seal: two teleost fish, Coryphaenoides acrolepis (Pacific rattail) and another unidentified macrourid; two crustaceans, Pasiphaea pacifica (glass shrimp) and Euphausia sp.; six squid, Abraliopsis felis, Gronatus berryi, Histioteuthis dofleini, Cranchia scabra, Taonius pavo , and Galiteuthis sp. and two octopi, Octopus dofleini and Octopus rubescens .
USA/California/San Miguel Island/diets/food organisms/Mirounga angustirostris/INE/USA/California/San Miguel I./ASFA.

1817. Koide M, Griffin JJ, Goldberg ED. Records of plutonium fallout in marine and terrestrial samples. J. Geophys. Res. 1975;80(30):p.4153-4162 Scripps Inst. Oceanogr., La Jolla, Calif., United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
plutonium/abundance/sediments/marine/terrestrial/accumulation/sources/transport /wind transport/stream transport/United States/California/south/Mexico/Baja California/North America/geochemistry/Santa Barbara Basin/Soledad Basin/sedimentation/composition/lead/isotopes/comparison/fallout/ GEOREF.

1818. Coyer JA. Invertebrate Assemblage Associated with the Giant Kelp, 'Macrocystis pyrifera' at Santa Catalina Island, California: A General Description with Emphasis on Amphipods, Copepods, Mysids and Shrimps. Journal article. Fishery Bulletin 1984;82(1):p.55-66
Performer: University of Southern California, Los Angeles. Inst. for Marine and Coastal Studies.
Funder: National Oceanic and Atmospheric Administration, Rockville, MD. Office of Sea Grant.
The motile invertebrate assemblage associated with the giant kelp, Macrocystis pyrifera, fronds was examined monthly from June 1975 through December 1976, at Santa Catalina Island, California. Replicate samples were collected from each of three vertical zones (canopy (C), middle (M), bottom (B)). The number of species collected from all zones were 114 and ranged from 51 to 75 for any given month. The assemblage displayed three patterns of vertical

stratification within the Macrocystis forest: (1) The mean number of species progressively decreased from the bottom to the canopy; (2) more individuals and a greater total biomass were present in the lower zones than in the canopy; and (3) the mean lengths of gammarids, mysids, and shrimps were significantly larger and proportionately greater numbers of large individuals were present in the canopy than in either of the lower zones.
Abundance/Crustacea/Shrimps/Santa Catalina Island/California/Reprints/Invertebrates/Sea grasses/Ecology/Kelp/Habitats/Macrocystis pyrifera/Plant canopy/NTIS.

1819. ANONYMOUS. SANTA BARBARA CLEANS UP. OFFSHORE 1969;29(10, P. 86,89, SEPT. 1969. NO ABS., NO REFS) UNKNOWN.
POLLUTION CONTROL/SANTA BARBARA CHANNEL/CONTAINER SHIPS/OIL POLLUTION/UNDERWATER TENTS/OCEANIC ABSTRACTS.

1820. Bruno RO, Watts GM, Gable CG. Sediments impounded by an offshore breakwater. : Coastal Engineering Research Center Fort Belvoir Va. CERC-REPRINT-78-8; 1978. 20.
The breakwater and entrance jetties for the Channel Islands Harbor in California form a total littoral barrier to longshore sand transport. The sand impounded by these structures was monitored by repetitive bathymetric surveys and systematic surface sand sampling. This paper discusses patterns of sediment deposition behind an offshore breakwater. Data collected were studied to determine if the deposition observed agrees with that predicted prior to construction. Both the geometry and size distribution of the deposition sediment are examined. Three dimensional computer plots are used to illustrate filling patterns. Sediment size and sorting distribution which occur during filling are investigated. Analyzed data allows an evaluation of predicted verses actual filling patterns. Sediment distribution in the impoundment area was evaluated.
Breakwaters/Sedimentation/Offshore structures/Sand/Deposits/Filling/Sediments/Sizes (Dimensions)/Distribution/Computer graphics/Shores/Protection/Ocean waves/Channel Islands Harbor/Mechanical/Industrial/Civil/Marine/Engineering.

1821. Benson MR. A demographic study of Dictyopteris undulata Holmes (Dictyotales, Phaeophyta) at Santa Catalina Island, California. PHYCOLOGIA 1986;25(4):448-454.
The demography of Dictyopteris undulata Holmes was studied between 1979 and 1982 at Isthmus Reef, Santa Catalina Island, California (USA), at depths ranging from 4.6 to 10.7 m below mean lower low water. Maximum density of plants of taggable size (6 cm) occurred at about 6.1 m. Maximum plant height increased significantly with depth. The species was an annual. Reproductive plants were first observed 6-8 months after recruitment and were most abundant in autumn. Plants at the deepest depth studied (10.7 m) had the highest survival rate. Plant loss was due either to detachment of the holdfast from the substrate or to breakage of the stipe. Plants could recover from extensive damage by regrowth from the midribs.
demography/reefs/islands/USA/California/USA/California/Santa Catalina Island/life history/Dictyopteris undulata/autecology/INE/USA/California/ Santa Catalina I./ASFA.

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Pub. in Jnl. of Physical Oceanography, v15 n4 p372-385 Apr 85. PC A02/MF A01 Contracts: N0001475C0152, N0001476C0197.
Observations of the horizontal velocity field in the upper 150 m, made from the Research Platform FLIP as it drifted off the cost of Baja California, were used to examine the variability of the velocity field and its relation to local wind forcing. At subinertial frequencies a spatially varying flow field associated with the California Current System was encountered. In addition, there was low frequency near-surface flow to the right of the wind stress that decayed with depth. At near-inertial frequencies oscillatory motion with an amplitude of up to 40 cm/s was observed. Most of the energy in the near-inertial frequency band was associated with modes with vertical wavelengths large compared to the thickness of the mixed layer. The local wind alone had neither the strength nor the variability needed to directly produce the observed inertial period variability. It is suggested that FLIP encountered regions in which the shear of the quasi-geostrophic flow resulted in localized intensifications of near-inertial motion.
Air water interactions/Oscillation/Inertia/Flow fields/Horizontal orientation/Velocity/Variations/Mixed layer Marine/Pacific Ocean/Shear properties/Mexico/Coastal regions/Reprints/Ocean currents/Wind/California current/Wind driven flow/Baja California/Wind stress/Geostrophic flow/FLIP oceanographic ship/NTIS.

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SANTA BARBARA CHANNEL/POLLUTION/OCEANIC ABSTRACTS.

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Pacific Ocean/oceans/circulation/sedimentation/marine geology/Hickey/physical oceanographycontinental shelf/United States/California/continental/borderland/patterns/remote sensing/satellite/Landsat/marine transport/transport/Eganhouse/geochemisrty/chemical oceanography/transport/continental shelf/borderland/landsat/MINERALS MANAGEMENT SERVICE.

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California. In recent years, huge oil discoveries have been made off the South/Central Coast of California in the Santa Barbara Channel and in the Santa Maria Basin. A number of oil development proposals are now being considered by relevant federal, state, and local authorities. The article first characterizes the magnitude of the current oil build-up, placing it in historical perspective. Next, it describes the major issues posed by accelerated development, and the complex of federal, state, and local laws that govern offshore oil extraction. The analysis highlights management dilemmas faced by local authorities in coping with the increase in oil activity.
drilling/oil and gas industry/government policy/legislation/economic analysis/INE/USA/California/ASFA.

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Analytic; Serial B; Bibliography and Index of Geology (1969-present). California/economic geology/petroleum/Santa Barbara Channel/Dos Cuadras/United States/exploration/production/offshore/blowouts/seepage/GEOREF.

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Funder: Department of Energy, Washington, DC.) Research on the Marine Food Chain. Final Technical Report. ; 1985. Report No.: DOEER60031T1. 334p. Portions of this document are illegible in microfiche products. PC A15/MF A01 Contract: AS0382ER60031.
This final report includes summaries of the Food Chain Research Group's extensive basic research in Southern California Bight waters and on planktonic organisms which are important components of the bight's pelagic food web. Additionally, the report conveys much of the information resulting from biological, chemical and physical oceanographic research by others active in the study of the pelagic realm of the Bight, especially that conducted during the last several decades. Hence, the book is intended to be a comprehensive description and analysis of the pelagic food web form and function in the Bight and of interactions between food web components and the environmental parameters affecting these. It is presented in a style intended to be informative to the layman as well as the scientist interested in the important coastal resources represented by the Southern California Bight. (ERA citation 10:047262).
Baseline Ecology/California/Coastal Waters/Leading Abstract/Plankton/Research Programs/Water Currents/Aquatic Ecosystems/Food Chains/ERDA/520100/NTIS.

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benthic boundary layer/organic carbon/mineralization/metabolism/benthos/Pacific Ocean/Santa Catalina Basin/boundary layers/benthic environment/carbon/organic matter/INE/Santa Catalina Basin/ASFA.

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Nationwide adoption of standards similar to the current California standards for fluid milk products would result in increased retail prices for fluid milk products of about 3.5 cents per half gallon (3 percent). The change in standards would generally increase the nutrient content of milk and have positive nutritional benefits for most Americans. The new standards could cause problems for groups with special dietary concerns and would cost an estimated $5.9 million annually to effectively enforce. Adoption of higher standards could result in somewhat increased sales of butterfat and solids-not-fat in fluid milk products but the magnitude is unclear. In addition, the new standards likely would result in only a small reduction in purchases of dairy products by the Government in surplus periods.
Milk/Prices/Dairy products/Standards/Nutrition/Diets/Solids/Marketing/Law enforcement/California/Milk/Prices/NTIS.

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OCEANOGR./SUISAN KAIYO KENKYUKAIHO. 1983;(42):49-50.
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survival/fish larvae/chlorophylls/feeding/food organisms/Clupeiformes/Engraulis mordax/INE/California Current/INW/Japan/ASFA.

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Ventura County/Los Angeles County/Orange County/California/structural geology/orogeny/tectonics/faults/south/Santa Monica Mountains/Santa Ana Mountains/Santa Barbara Basin/petroleum/United States/Ventura Basin/Los Angeles Basin/stratigraphy/paleogeography/displacements/Tertiary/Miocene/Luisian/evolut ion/interpretation/basins/reconstruction/extent/periodicity/GEOREF.

1838. Anderson VC (Performer: Scripps Institution of Oceanography, La Jolla, CA. Marine Physical Lab.) Anomalous Absorption. Management rept. 1 Oct-31 Dec 79. ; 1979. Report No.: MPLU1780. 6p.
PC A02/MF A01 Contract: N0001480C0091, ARPAOrder220.
The primary objective of this program is to observe and correlate in a quantitative manner the anomalous frequency dependent acoustic absorption caused by fish and fish larvae with the type and abundance of the fish and larvae population as determined by net hauls. Such a characterization of the absorption will allow tactical sonar performance prediction to draw on fisheries surveys of regional productivity as a data bank for prediction of anomalous absorption in the mobile passive sonar band. Cooperative support has been offered by the National Bureau of Fisheries for the program by way of ship time on the DAVID STARR JORDAN for deploying and recovering the buoy systems and in collecting and supplying net haul data at the buoy stations during the data collection period. The scope of the program includes the design, fabrication and testing of the automatic data collection buoy system in the first year, followed by a two year program of data collection in the southern California current.
Acoustic absorption/Frequency/Passive sonar/Underwater acoustics/Ocean currents/North Pacific Ocean/Data bases/Fisheries/Surveys/Larvae/Population/Anomalies/Fishes/Produc tivity/Acoustic absorption/Net hauls/California Current/Anomalous absorption/NTIS.

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Oil & Gas Jour., Tulsa, Okla., United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
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PC A02/MF A01 Contract: N0001480C0091, ARPAOrder220.
The primary objective of this program is to observe and correlate in a quantitative manner the anomalous, frequency dependent acoustic absorption caused by fish and fish larvae with the type and abundance of the fish and larvae population as determined by net hauls. Such a characterization of the absorption will allow tactical sonar performance prediction to draw on fisheries surveys of regional productivity as a data bank for prediction of anomalous absorption in the mobile passive sonar band. Cooperative support for the program has been offered by the National Bureau of Fisheries by way of ship time on the DAVID STAR JORDAN for deploying and recovering the buoy systems and in collecting and supplying net haul data at the buoy stations during the data collection period. The scope of the program includes the design, fabrication and testing of the automatic data collection buoy system in the first year, followed by a two year program of data collection in the southern California current.
Acoustic absorption/Underwater acoustics/Anomalies/Fishes/Larvae/Population/Passive sonar/Fisheries/Surveys/Productivity/Data bases/Ocean currents/North Pacific Ocean/Acoustic absorption/Anomalous absorption/California Current/Net hauls/NTIS.

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FISHERIES RESOURCES/CALIFORNIA CURRENT/SAURIES/ZOOGEOGRAPHY/SEASONAL VARIATIONS/OceanAbstracts.

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Note: Prepared in cooperation with California State Resources Agency. Squid usually migrate into shallow waters of 15 to 35 meters in depth to spawn, although some trawlers claim to have captured squid egg capsules at depths exceeding 100 meters. Spawning aggregations occur most frequently during winter in southern California and progressively later in the season further northward. Major spawning areas have been documented for years in Monterey Bay, near La Jolla, and near the Channel Islands. These spawning aggregations support the bulk of the existing fishery. Larval squid hatch after 3 weeks, depending on water temperature. Little is known about the life history of the market squid between

hatching and maturity. Squid are important predators; research has shown that squid feed most heavily during daylight hours, primarily on euphausiids, copepods, megalops larvae, mysids, amphipods, fish, and other cephalopods. Market squid are themselves an important prey of sharks, fishes, seabirds, and marine mammals. Life cycles/Squids/Monterey Bay/Animal migrations/Shallow water/Eggs/Winter/Abundance/Females/Depths/Feeding/spawning/larva e/predation/Sq uid/California Channel Islands/Monterey Bay/La Jolla/marine biology/fisheries management/resource management.

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The distribution of living coccolithophores in the California Current system of southern California at 10 water depth was investigated on two dates in March and June, 1982. Six closely spaced stations were sampled in March, of which three were resampled in June. Thirty-six euphotic species were identified of which four, Emiliania huxleyi, Umbilicosphaera sibogae, Gephyrocapsa oceanica , and Rhabdosphaera longistylis , respectively, were the most abundant. Both the "cold" and "warm"

morphotypes of E. huxleyi , were present, in varying proportions. Large ranges in community structure, diversity (0.35-2.64 natural bels), and standing crop (1.0 x 10 super(4)-6.2 x 10 super(5) cells/l) were recorded. This range of end-member values is approximately that found in the open ocean from 0 degree to about 65 degree latitude.
micropaleontology/check lists/living fossils/Coccolithophoraceae/INE/ California Current/water masses/ASFA.

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Analytic; Serial; Abstract B; Bibliography and Index of Geology (1969-present). California/economic geology/petroleum/offshore/Santa Barbara Channel/United States/production/recommendations/wells/development/rapid/seepage /abatement/env ironmental geology/oil spills/pollution/sea water/Pacific Ocean/oil and gas fields/structure/GEOREF.

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Acoustic absorption/Underwater acoustics/Anomalies/Fishes/Larvae/Population/Passive sonar/Fisheries/Surveys/Productivity/Data bases/Ocean currents/North Pacific Ocean/Acoustic absorption/Anomalous absorption/California Current/Net hauls/NTIS.

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An airborne two-channel KrF laser fluorosensor was tested from a Convair 580-T over targets at the Nevada Test site, and at the Naval Petroleum Reserve and Santa Barbara Channel in California. The two spectral-channel system (295 and 395 nm) successfully detected a variety of pollutant-type materials on the ground, both at night and in full daylight.
Air Pollution Monitors/Aerial Monitoring/Flight Testing/Gas Lasers/Telescopes/Noise/Signals/Spectral Response/Santa Barbara Channel/Nevada Test site/Mechanical/Industrial/Civil/Marine/Engineering/Air Pollution.

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The California Current system comprises some of the world's most

productive marine waters. From an oceanographic and fisheries standpoint this region is perhaps the best studied in the world, but the role of seabirds and other predators is only now emerging. In this chapter the authors apply new approaches to a familiar bioenergetics model to assess the impact of California coastal seabirds on marine prey populations. The model is based on comprehensive population studies done from mid-1975 through early 1978 in southern California, and 1980 through 1982 in central and northern California, (Briggs et al., 1981 a,b, 1984), as part of our work focusing on all seabird and marine mammal populations in habitats targeted for oil and gas leasing.
trophic relationships/food consumption/coastal waters/USA/California/bioenergetics/Aves/INE/California Current/ISE/California Current/ASFA.

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California/geochemistry/hydrocarbons/sediments/Santa Barbara Channel/carbon/organic/quantitative analysis/spectroscopy/infrared/United States/marine geology/Pacific Ocean/organic materials/GEOREF.

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Acoustic absorption/Underwater acoustics/Anomalies/Fishes/Larvae/Population/Passive sonar/Fisheries/Surveys/Productivity/Data bases/Ocean currents/North Pacific Ocean/Acoustic absorption/Anomalous absorption/Southern California current/Net hauls/NTIS.

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Address: Southwest Fish. Cent., NMFS, NOAA, P.O. Box 271, La Jolla, CA 92038, USA.
This article summarizes the results of an investigation made into historical sealing activities on the California coast and Channel Islands. Of primary interest were the numbers of California sea lions, Zalophus californianus , killed on San Miguel Island. The harvesting of the northern or Steller sea lion, Eumetopias jubatus , is also discussed. Literature was reviewed for records on the number of sea lions taken for commercial purposes. Many other potential sources of information on numbers of animals killed were also investigated. harvesting/exploitation/California sea lions/Zalophus californianus/northern sealion/Steller sea lion/Eumetopias jubatus/California coast/California Channel Islands/San Miguel Island/marine biology/mammalogy.

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aggregation/phytoplankton/food webs/biomass/predator-prey interactions/USA/California Coast/organism aggregations/predation/INE/Southern California Bight/ASFA.

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mineral collecting/national parks/California Channel Islands/geology.

1864. Wall DA. Dinoflagellate cysts and acritarchs from California Current surface sediments. DISS. ABST. INT. PT. B - SCI. & ENG 1987;48(1):vp. Three aspects of Recent dinoflagellate cyst

and acritarch paleoecology in the California Current are examined in the present study: their biogeography from seventy surface sediment samples, yearly variations in cyst deposition in varved sediments, and their systematics. Six regions within the Current were studied; aquatic palynomorphs varied in peak abundance as follows (from greatest to smallest): Baja California, Southern California Bight, Gulf of California, Washington Shelf, San Juan Islands, Central California. The most important dinocyst group is the genus Spiniferites , with several species reaching dominance. Lingulodinium machaerophorum is the most abundant cyst in the Southern California Bight. Broad similarity is seen in assemblages from the six areas, with a general tendency to add species to the flora during the southward flow.
paleoecology/biogeography/cysts/paleotemperature/paleosalinity/Dinoflagellata/S piniferites/Lingulodinium machaerophorum/INE/California Current/ISE/California Current/ASFA.

1865. Brundall L. Platform ''A''; the oil spill that spread around the world. Explor. Econ. Pet. Ind. 1972;10:p.77-122 Environ. Qual. Advisory Board, Santa Barbara, Calif., United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present). California/environmental geology/pollution/oil spills/Santa Barbara County/Santa Barbara Channel/Dos Cuadros Field/water/sea water/shorelines/impact/ecology/human ecology/legislation/litigation/United States/1969/GEOREF.

1866. Bentz AP, Jadamec JR, Hiltabrand RR, Anderson CP, Hendrick MS (Performer: Coast Guard Research and Development Center, Groton, CT). Feasibility Studies for Identification of Santa Barbara Natural Seep and Platform Oils. Final rept. ; 1984. Report No.: CGRDC1184, CGD2884. 78p.
The objective of this project was to 'develop a capability to identify an oil spill source (seep or specific well) in the Santa Barbara area'. Samples of available natural seeps, as well as a series of samples from various platforms representing numerous producing zones, were examined very thoroughly using state-of-the-art analytical techniques. We demonstrated that oils from natural seeps could be distinguished from platform oils by any of several methods in addition to infrared which was proposed in 1975. Owing to the relatively uniform composition of oils found in the Santa Barbara Channel area, coupled with intermixing due to thrust faults in the area and variation in composition with time of sampling, even the most sophisticated instrumentation and pattern recognition algorithms available were unable to distinguish individual wells, platforms or zones.
Chemical analysis/Oil wells/Seepage/Pattern recognition/Infrared spectroscopy/Ultraviolet spectroscopy/Gas chromatography/Sampling/Mass spectroscopy/Sites/Comparison/Feasibility/Platforms/Chemical analysis/Oil wells/Seepage/Pattern recognition/Oil spills/Natural emissions/Santa Barbara California/High performance liquid chromatography/Oil spills/NTIS.

1867. Catlin MF. Our jinxed trip to a Channel Island, San Miguel. Lapidary J. (San Diego) 1980;34(7):1620-1624 mineral collecting/San Miguel Island/geology.

1868. Barnes RO. Inert gas gradients and concentration anomalies in N. E. Pacific sediments. Eos (Am. Geophys. Union, Trans.). 1975;56(6):p.374 Walla Walla Coll., College Place, Wash., United-States Analytic; Serial; Abstract B; Bibliography and Index of Geology (1969-present).
Pacific

Ocean/geochemistry/gases/helium/neon/argon/krypton/sediments/sea water/northeast/Santa Monica Basin/San Pedro Basin/San Clemente Basin/marine geology/United States/California/pore water/GEOREF.

1869. Batteen ML (Performer: Naval Postgraduate School, Monterey, CA). Bibliography Update on the California Current System and Related Mesoscale Ocean Modeling. ; 1984. Report No.: NPS6884017. 61p.
This bibliography has been prepared for use in the Ocean Prediction Through Observation, Modeling and Analysis (OPTOMA) program. It updates the 1980 publication: Bibliography for the Coastal Circulation of the Eastern North Pacific. In addition, mesoscale ocean modeling references related to the California Current System have been included. Originator-supplied keywords include: California Current, Ocean modeling, Mesoscale eddies, and Physical oceanography.
Bibliographies/Ocean models/Ocean currents/California/Coastal regions/Predictions/Oceanography/Bibliographies/Ocean models/Ocean currents/NTIS.

1870. Cava FM. Information technology: a key to effective marine sanctuary management. Coastal Zone 89. ; In press.
Information technology and the use of personal computers have proven to be effective tools in accomplishing programmatic goals for the National Marine Sanctuary Program. This technology has been used to supplement the capabilities of a small, on-site staff in Santa Barbara, California, allowing innovative development of educational programs, research data bases and public outreach materials. Computers have also played a critical role in emergency response efforts during a major oil spill threat to the Channel Islands National Marine Sanctuary and subsequent development of a contingency plan. Channel Islands National Marine Sanctuary/contingency plans/desk top publishing education/emergency response/interactive exhibits/laser discs/management/micro computers/research database/California Channel Islands/Santa Barbara/Santa Barbara Channel/computer technology/resource management.

1871. Haury LR, Poulain PM, Mantyla AW, Venrick EL, Niiler PP. FRONTS cruise: Leg I: 11 July 1985, leg II: 12-23 July 1985. SIO REP. SER. SCRIPPS INST. OCEANOGR 1986;
The data in this report were collected from 1 to 23 July 1985 on the two legs of the FRONTS cruise aboard RV New Horizon of the Scripps Institution of Oceanography. The purpose of the cruise was to describe the vertical and horizontal structure and dynamics of the physical, chemical, and biological properties associated with a persistent, seasonally-recurring front in the California Current southwest of San Diego, California.
cruise reports/oceanic fronts/frontal features/hydrographic data/data reports/INE/California Current/ASFA.

1872. (Performer: Centaur Associates, Inc., Washington, DC. Funder: Minerals Management Service, Los Angeles, CA. Pacific OCS Region.) Cumulative Socioeconomic Impacts of Oil and Gas Development in the Santa Barbara Channel Region: A Case Study. Final rept. ; 1984. Report No.: MMS840059. 603p. Contract: DI1412000130026.
This report is a retrospective case study of the effects of offshore oil and gas development on the socioeconomic environment of Santa Barbara and Ventura counties in southern California. The study was conducted primarily using secondary sources. The report contains profiles of about 60 socioeconomic characteristics for each of the two counties. Estimates of the actual effects of

offshore oil and gas development in federal and state waters on selected characteristics of the two counties were made using regression analysis and a regional economic model. Tests of the applicability of these results to other coastal California counties were made.
Offshore drilling/Oil wells/Gas wells/Impact/Economic models/Regression analysis/Interactions/Coasts/Offshore drilling/Oil wells/Gas wells/Socioeconomic factors/Case studies/Economic impact/Socioeconomic factors/NTIS.

1873. Cava FM, Power DM. Environmental information, the public and the Channel Islands National Marine Sanctuary. Coastal Zone 89. ; In press. A cooperative agreement has been established in California between NOAA and the Santa Barbara Museum of Natural History through the museum's Sea Center. The goal of both the Sea Center and the Sanctuary office is to advance appreciation and understanding of the Santa Barbara Channel and the Channel Islands National Marine Sanctuary. This mission is accomplished through interpretive exhibits, public education, and coordination of research and operational activities in the region. The Sea Center is situated on Stearns Wharf at the Santa Barbara waterfront, and, because of this prime location overrlooking the very region that makes up the Sanctuary, it has been the focal point of the cooperative aggreement between the two agencies. Many of the public programs that have been developed also take place elsewhere, such as at the museum, in Sanctuary waters, and in the community at large. Over the last few years federal assistance has ben provided to cover part of the cost of constructing the building and some of the exhibits. Most recently, ongoing support has been provided to further the public programs already established at the Sea Center, at the museum, and through the Sanctuary office in Santa Barbara--educational efforts for a variety of targeted audiences, including tourists, students and researchers.
education/environmental information/marine sanctuary/NOAA/private public partnership/public exhibits/Santa Barbara Museum of Natural History/Sea Center/California Channel Islands/Santa Barbara Channel/education/environmental information/resource management.

1874. Ciandro ML, Whittmann PA, Bird AA, Mooers CN. Hydrographic data from the OPTOMA (Ocean Prediction through Observation, Modeling and Analysis) Program OPTOMA22, 27 July-5 August 1986. REP. U.S. NAV. POSTGRAD. SCH 1986; The OPTOMA (Ocean Prediction Through Observation, Modeling and Analysis) Program, a joint NPS/Harvard program sponsored by ONR, seeks to understand the mesoscale (fronts, eddies, and jets) variability and dynamics of the California Current System and to determine the scientific limits to practical mesoscale ocean forecasting. To help carry out the aims of this project, a series of cruises has been planned in two subdomains, NOCAL and CENCAL. The cruise, OPTOMA22, was undertaken during the period 27 July to 5 August 1986, and sampled a domain approximately 240km square centered about 280km off the coast between Pt. Arena and Cape Mendocino. Oceanographic stations were occupied during the period 27 July to 5 August at approximately 18km along each track.
mesoscale features/hydrographic data/cruise reports/variability/INE/ California Current/ASFA.

1875. Koons CB, Brandon DE. Hydrocarbons in water and sediment samples from Coal Oil Point area, offshore California. Offshore Tech. Conf., Prepr. (7 Vol. 3). 1975:p.513-521
Exxon Prod. Res. Co., United-States; Alyeska Pipeline Serv. Co.
1975 offshore technology conference, Houston, Tex., May 5-8, 1975
Analytic; Serial; Conference publication B; Bibliography and Index

of Geology (1969-present). California/geochemistry/hydrocarbons/sea water/sediments/south/Coal Oil Point/Santa Barbara Channel/organic materials/chromatography/seepage/pollution/impact statements/United States/GEOREF.

1876. Skupniewicz CE, Schacher GE (Performer: Naval Postgraduate School, Monterey, CA). Measured Plume Dispersion Parameters Over Water. Volume 1. Final rept. Oct 83-Oct 84. ; 1984. Report No.: NPS6184012. 108p. The Minerals Management Service sponsored a series of four atmospheric tracer experiments at California coastal locations over a two-year span, 1980-1982. These experiments were designed to assess air pollution impact from proposed oil exploration and drilling activities along the continental shelf. Two experiments (winter and summer) at each of two sites (open coast and Santa Barbara Channel) were funded in order to investigate air quality impact under a range of meteorological conditions and sites. The basic designs of all four experiments were similar. A tracer gas, 100% SF6, was continuously released from a stationary, sea surface platform located, for the majority of the experiments approximately 3 miles from shore. During parts of the last experiment, the platform was moved to distances up to 5 miles from shore. This volume analyzes the collected data. The tracer plume is characterized by a variety of parameters, including the conventional hourly averaged sigma-y and sigma-z values widely used in Gaussian plume dispersion formulae. Gaseous dispersion is parameterized for the over-water case by classifying the tracer results by stability in a Pasquill-Gifford equivalent scheme, and analytically describing horizontal and vertical plume growth as a function of plume travel distance. Several other over-water data sets are used in this parameterization. Comparisons are made to the over land case. Environmental impact/Air pollution/Plumes/Tracer studies/Sulfur compounds/Fluorides/Offshore drilling/Oil fields/Meteorological phenomena/Coastal regions/Dispersions/Air quality/Continental shelves/Trace gases/Environmental impact/Air pollution/Plumes/NTIS.

1877. Centaur Associates IW,D. Assessment of space and use conflicts between the fishing and oil industries. Volume III. Historical interactions between the fishing and offshore oil and gas industries. : BLM/YL/TR-81/03; 1981. 198. ((Sponsored by Bureau of Land Management, New York. New York Outer Continental Shelf Office.)).
Note: See also Volume 2, PB81-215972, and Volume 4, PB81-215998. Volume III explores the historical interactions which have taken place between the fishing and oil and gas industries with respect to competition for labor, port space and other areas of impacts including fuel and repair facilities, equipment, supplies, and financing. This volume includes a detailed examination of effects which have taken place in the North Sea, Southern California, Western Gulf of Mexico and Davisville, Rhode Island.
Crude oil/Fishing/Petroleum industry/Continental shelves/Water pollution/Conflicts/Area/Natural gas/Manpower/Merchant ships/North Sea/Marine terminals/Harbors/Rhode Island/History/Environmental impacts/Mexico Gulf/California Outer continental shelves/Baseline studies/Santa Barbara Channel/North Sea/Western Gulf of Mexico/Davisville, Rhode Island fisheries/petroleum/marine biology/pollution/resource management.

1878. Sherman K. Biomass flips in large marine ecosystems. 1987 AAAS ANNUAL MEETING: 153rd NATIONAL MEETING, CHICAGO, 14-18 FEBRUARY. S OF PAPERS. 1987;:24-25.
The National Marine Fisheries Service conducts fish biomass assessments in seven LMEs within the Exclusive Economic Zone (EEZ)

of the United States - the Northeast Shelf, the Southeast Shelf, the Gulf of Mexico, the California Current, the Gulf of Alaska, the East Bering Sea, and the Insular Pacific, including the Hawaiian Islands marine ecosystem. The biomass of populations inhabiting all of these LMEs have been altered significantly over the past three decades by natural and anthropogenic changes resulting in negative impacts to the fishing industry. Mortalities can be of sufficient magnitude to result in a species "flip" from a position of dominance to a subordinate position within the ecosystem. Frequently the species "flips" occur in heavily-exploited ecosystems in which multispecies fisheries are operating on several trophic levels simultaneously. ecosystems/marine fisheries/multispecies fisheries/dominant species/Exclusive Economic Zone/USA Coasts/species flips/ASFA.

1879. Howell DG. Eocene paleogeography of southern California continental bordeland. Am. Assoc. Pet. Geol., Soc. Econ. Paleontol. Mineral., Annu. Mtg. Abstr. 1975;2:p.37-38
U. S. Geol. Surv., Menlo Park, Calif., United-States Analytic; Serial; Abstract B; Bibliography and Index of Geology (1969-present).
California/stratigraphy/Eocene/paleogeography/south/San Nicolas Island/San Miguel Island/Santa Rosa Island/Santa Cruz Island/San Diego/United States/sedimentation/continental margin/turbidite/sandstone/conglomerate/faults/GEOREF.

1880. Brady BJ. Critical Analysis of Ocean Thermal Analysis Models in Operation at FNOC (Fleet Numerical Oceanography Center's). [dissertation] ; 1984. 161p.
Performer: Naval Postgraduate School, Monterey, CA
The objectives of this research are firstly to obtain a description of the characteristics of the ocean thermal structure from a portion of the ocean (ca.37 degs N to 39 deg N; 124 degs W to 126 deg W) sampled during the three cruises comprising OPTOMA5 which took place in June and July 1983. (OPTOMA - Ocean Prediction Through Observations, Modeling, and Analysis, is a joint Harvard/NPS project 'intended to acquire field data to characterise synoptic scale eddies over a domain in the California Current off Northern California, and to 'set-up' an eddy-resolving, statistical/dynamical, limited domain, open boundary numerical ocean prediction model. The '5' indicates the fifth series of cruises of the project). Secondly, the analysed ocean thermal structure is to be used as a 'sea truth' by which to evaluate the accuracy of two real-time ocean thermal analysis systems presently in use at the Fleet Numerical Oceanography Center (FNOC), namely, the Expanded Ocean Thermal Structure (FCTS) analysis and the Thermodynamic Ocean Prediction System (TOPS)-Coupled EOTS (TEOTS) analysis. The final objective is to determine the operational significance of deviations in the modeled thermal structure from the 'sea truth' by utilizing the output from operational acoustic models to provide a quantitative measure of the effect of these thermal structure differences on acoustic propagation in the ocean. Two low-frequency, passive-acoustic models were used to provide a measure of the variability of acoustic energy propagation which could be expected from the acoustic models alone.
Ocean models/North Pacific Ocean/Temperature/Horizontal orientation/Vertical orientation/Ocean currents/Oceanographic data/Statistical analysis/Theses/Ocean models/Ocean thermal structure/California current/OPTOMA project/Ocean thermal structure/NTIS.

1881. Centaur Associates IW,D. Cumulative socioeconomic impacts of oil and gas development in the Santa Barbara Channel

Region: A case study. Final report. : MMS-84-0059; 1984. 603. ((Sponsored by Minerals Management Service, Los Angeles, CA. Pacific OCS Region)).
This report is a retrospective case study of the effects of offshore oil and gas development on the socioeconomic environment of Santa Barbara and Ventura counties in southern California. The study was conducted primarily using secondary sources. The report contains profiles of about 60 socioeconomic characteristics for each of the two counties. Estimates of the actual effects of offshore oil and gas development in federal and state waters on selected characteristics of the two counties were made using regression analysis and a regional economic model. Tests of the applicability of these results to other coastal California counties were made.
Offshore drilling/Oil wells/Gas wells/Impact/Economic models/Regression analysis/Interactions/Coasts/Socioeconomic factors/Case studies/Economic impact/Santa Barbara Channel/Santa Barbara County/Ventura County oceanography/petroleum/socioeconomics/policy/.

1882. Chen C. Topographic influences in the California Current System. NPS; MONTEREY, CA (USA) 1986;
A ten-level primitive equation numerical model is used to study the influence of the ocean bottom topography in the California Current System. Five different numerical experiments were integrated for 40 days after being initialized with a baroclinic along shore coastal jet representative of the observed coastal jet. By comparison with a flat bottom case, in Experiments 1 and 3, in which the topographic slopes face westward or northward, the topography appears to have stabilizing influences on the mean flow. In experiments 2 and 4, in which the topographic slopes face southward, the topographic beta-effect appears to be strong enough so that these two cases have already reached a quasisteady state by 40 days.
bottom topography effects/coastal currents/mathematical models/INE/ California Current/ASFA.

1883. Booth JS. Early diagenesis in southern California continental borderland sediments. Am. Assoc. Pet. Geol., Soc. Econ. Paleontol. Mineral., Annu. Mtg. Abstr. 1975;2:p.6
Univ. South. Calif., Los Angeles, Calif., United-States Analytic; Serial; Abstract B; Bibliography and Index of Geology (1969-present). California/oceanography/sedimentation/south/continental margin/diagenesis/continental borderlands/cores/pore water/reactions/Cenozoic/sediments/geochemistry/clay minerals/organic materials/textures/continental shelf/United States/GEOREF.

1884. Xie SM, Aoki T, Yoshino MM. Characteristics on interannual variations of the North Pacific SST and its relation to East Asian climate. ACTA OCEANOL. SIN./HAIYANG XUEBAO 1987;6(1):68-79.
The interannual variations of the monthly sea surface temperature (SST) in the North Pacific (including Equatorial East Pacific) during 1951-1980 were analysed by the EOF method: (1) in the cold and warm ocean current areas, such as the North Pacific Current, the California Current and the Equatorial East Pacific areas, the convergence speeds are the fastest, while in the Kuroshio and the western part of the North Equatorial Current they are fast only in winter; (2) the physical features of the first 3 eigenvectors are clear. The first eigenvector shows that the SST values are high in the south and low in the north in the latitudinal distribution of the SST field. The warm current area, i.e. the northwestern part of

the North Pacific, is positive and the cold current area, i.e. the southeastern part of the North Pacific including the Eastern Equatorial Pacific, is negative. The zero line of the 2nd eigenvector field runs from northeast to southwest, in the same direction as the 1st term. For the 3rd eigenvector field, the role of the Kuroshio area is striking. The sign of components of this eigenvector is negative in the north, the North Pacific Current area. The other 3 ocean current areas show positive. Central Pacific is weakly negative; (3) the characteristics of the annual variation of the monthly SST were obtained from analyses of time amplitude coefficients associated with eigenvectors. There are quasi-periodic oscillations of 5-6 years in the 1950's and early 1960's.
surface temperature/equatorial circulation/teleconnections/climate/annual variations/correlation/IN/North Pacific/INW/Kuroshio Current/INE/California Current/East Asia/ASFA.

1885. Level HR, Goforth D, Ramelli W. Geologic sites in Ventura County (teacher's guide). ; 1974. 23 p.
Natl. Assoc. Geol. Teachers, Far Western Sect. Monographic; Book B; Bibliography and Index of Geology (1969-present).
California/areal geology/guidebook/south/Ventura County/Muga Rock/Anacapa Island/Channel Islands/education/general/high school/junior high/teacher's guide/United States/GEOREF.

1886. D'Asaro EA (Performer: Washington Univ., Seattle. Applied Physics Lab). XCP(Expendable Current Profiler), Measurements Off California in October. ; 1983. Report No.: APLUW8310. 33p.
Sponsored in part by Contract N00014-81-K-0095. PC A03/MF A01 Contract: N0001482C0038.
Sixty nine profiles of horizontal velocity and temperature from the surface to about 800 m were made using the Expendable Current Profiler (XCP) during De Steiguer cruise 1212, 7-18 October 1982. The XCP's were deployed in a 6 day time series behind a drogued buoy and in a 275 n.mi. zigzag spatial survey. Satellite infrared images were used to locate a cruise area away from strong mesoscale features. The measurements were designed to estimate the horizontal coherence function of the near-inertial frequency internal wave field for comparison with similar measurements made in the Sargasso Sea. It was found that the near-inertial waves are a dominant feature of the velocity field. Significant coherence exists between nearby profiles. It will, therefore, be possible to compute a correlation function for these data as planned. A near-surface feature with peak-to-peak velocities of 70 cm/s was observed and partially surveyed. (Author). Ocean currents/North Pacific ocean/Temperature/Velocity/Horizontal orientation/Depth/Profiles/Ocean currents/Temperature/California current/NTIS.

1887. Challet GL. Additional records of predaceous diving beetles (Coleoptera: Dytiscidae) from Santa Catalina Island, California. Coleopt. Bull. 1987;41(1):13-14
Address: ORANGE COUNTY VECTOR CONTROL DISTRICT, P.O. BOX 87, SANTA ANA, CALIF. 92702.
new record/predators/records/collections/fauna/islands/geographical distribution predaceous diving beetles/Coleoptera/Dytiscidae/Laccophyllus fasciatus terminalis/Laccophyllus fasciatus decipiens/Hydroporus belfragei/Hydroporus bilis/Deronectes striatellus/Agabinus glabrellus/Agabus lugens/Rhantus gutticollis/Dytiscus marginicollis/Santa Catalina Island/terrestrial biology/entomology.

1888. Chen MX. On the influence of sea surface temperature upon NW-Pacific subtropical high. ACTA OCEANOL. SIN./HAIYANG XUEBAO 1987;6(1):80-86. A correlation characteristics analysis of monthly sea surface temperature of 13 sea areas (mainly strong ocean-current areas) and 15 subtropical highs was made. The characteristics of the time-space variation of high-correlation areas are discussed. On the basis of a preliminary analysis of the possible physical mechanism for several related phenomena, it is concluded that SST affects subtropical highs through a variety of ways.
surface temperature/high pressure systems/subtropical zone/air-sea interaction/INW/Kuroshio Current/INE/California Current/INW/North Pacific/correlation/ASFA.

1889. Sherburne RW. Seismicity of the eastern Santa Barbara Channel. Calif. Geol. 1975;28(6):p.133
Cal. Div. Min. Geol., Calif., United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
seismology/seismic sources/epicenters/causes/tectonics/United States/California/Santa Barbara Channel/GEOREF.

1890. Champion DE, Howell DG, Marshall M. Paleomagnetism of Cretaceous and Eocene strata, San Miguel Island, California, borderland and the northward translation of Baja California. Journal of Geophysical Research 1986;B91(11):11,557-11,570
Address: U. S. Geol. Surv., Menlo Park, CA,; San Diego State Univ.
paleomagnetism/plate tectonics/Paleogene/Tertiary/rocks/movement/natural remanent magnetization/remanent magnetization/demagnetization/reversals terranes allochthons/Santa Barbara County/Pacific Coast/Western United States/Southern California/San Miguel Island/continental borderland/Baja California/stratigraphy/historical geology/solid earth geophysics.

1891. Dickey TD, Koblinsky CJ, Simpson JJ. An offshore eddy in the California current system. Part II. Surface manifestation. Prog. Oceanogr. 1984;13:51-69.
physical oceanography/MINERALS MANAGEMENT SERVICE.

1892. Wittmann PA, Ciandro ML, Bird AA, Mooers CN. Hydrographic data from the OPTOMA (Ocean Prediction Through Observation, Modelling and Analysis) Program OPTOMA 21, 7-20 July 1986. 1987;
Optoma 21 was a multidisciplinary study which took place from 7 to 20 July 1986 aboard the R/V Point Sur in the nocal domain. In addition to conducting a quasi-synoptic CTD/XBT mapping of a cool anomaly, meandering jet, and eddy system, measurements were made to determine: 1) the fine scale variability of the upper ocean mass and velocity fields; 2) the upper ocean nutrient, optical and phytoplankton fields; and 3) the structure of the zooplankton population. In this report, the CTD/XBT data are presented.
CTD observations/bathythermographic data/cruise reports/INE/California Current/ASFA.

1893. Oil and gas development in the Santa Barbara Channel, outer continental shelf off California. p. variously paginated 1975
U. S. Geological Survey, United-States Monographic; Report Three volume report; pagination follows subject sections. B; Bibliography and Index of Geology (1969-present) U. S. Geol. Surv.
California/economic geology/energy sources/Santa Barbara Channel/continental shelf/United States/outer/petroleum/gas/natural/exploration/development/impact

statements/maps/geologic/environmental geology/pollution/marine/shorelines/oil spills/GEOREF.

1894. Chow T, Orphan V, Rainbridge A, Bruland K, Martin J (Performer: Science Applications, Inc., La Jolla, CA. Funder: Bureau of Land Management, Washington, DC.) Southern California Baseline Study and Analysis (1975/1976). Volume 3. Principal Investigator Work Element Reports. Report Sections 4.1-4.4, 5.1, 5.2; Book 10. ; 1978. Report No.: BLMYNSR7814VOL310. 474p. See also PB83-174847. Portions of this document are not fully legible. PC A20/MF A01 Contract: DI08550CT552.
Intertidal and offshore samples were collected in the Southern California Bight. The purpose of this study was to determine existing levels of petroleum hydrocarbons and trace metals associated with Outer Continental Shelves development, plus enhancing or establishing the data base of abundance, composition, diversity and general health of the marine flora and fauna of the area. Rocky intertidal habitats were studied to determine community composition, biogeographical and seasonal variation. Kelp bed distribution and their seasonal variation were delineated for the shallow areas along the mainland coast and around the offshore islands. Sediment and macrobiota samples from intertidal sites were analyzed for selected trace metals and hydrocarbon characteristics; temporal and spatial variations are discussed.
Crude oil/Ecology/Marine biology/Water pollution/Southern California Bight/Hydrocarbons/Metals/Concentration Composition/Aquatic plants/Aquatic animals/Abundance/Distribution Property/Chromatographic analysis/Sampling/Crude oil/Ecology/Marine biology/Water pollution/Southern California Bight/Outer continental shelves/Baseline studies/NTIS.

1895. Champion DE, Howell DG, Marshall MC. Paleomagnetic evidence for 3800 km of northwestward translation of San Miguel Island, southern California borderland. American Geophysical Union; 1981 fall meeting. Eos, Transactions, American Geophysical Union 1981;62(45):855
Address: U. S. Geol. Surv., Menlo Park, CA, USA; San Diego State Univ. Conference: American Geophysical Union; 1981 fall meeting San Francisco, CA, Dec. 7-11, 1981.
paleomagnetism/tectonophysics/applications/plate tectonics/plate rotation/sedimentary rocks/Eocene/Paleogene/Tertiary/Upper Cretaceous/Cretaceous/movement/continental borderland/paleolatitude/Santa Barbara County/California Channel Islands/San Miguel Island/solid earth geophysics/geology.

1896. Smith CR. Nekton falls, low-intensity disturbance and community structure of infaunal benthos in the deep sea. J. MAR. RES 1986;44(3):567-600. A simulation of natural disturbance at the bathyal seafloor evoked rapid response from dominant infaunal species, for the first time providing experimental evidence that similar disturbances structure normal deep-sea communities. Parcels of dead fish (1-40 kg) were placed on the seafloor at a depth of 1310 m in the Santa Catalina Basin and monitored. Dense aggregations of fish and ophiuroids were rapidly attracted to the baitfalls; in the process of consuming the bait, these megafaunal scavengers disrupted sediment surface structures and resuspended substantial amounts of sediment. The predominant macrofaunal effect was reduction of infaunal species diversity and community abundance around treatments. ecosystem resilience/ecosystem disturbance/meiobenthos/bathyal-benthic zone/benthos/disturbance/community structure/Pacific Ocean/Santa Catalina Basin/deep sea/community composition/INE/USA/California/Santa Catalina Basin/ASFA.

1897. Chung Y. Excess radon in the Santa Barbara Basin. Calif., Univ. Scripps Inst. Oceanogr., Contrib. 43 (Part 2). p. 1476-1480. Reprint from Earth and Planetary Science Letters 1973;17 Scripps Inst. Oceanogr., La Jolla, Calif., United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present). Pacific Ocean/geochemistry/radon/sea water/Santa Barbara Basin/isotopes/Ra 222/temperature/salinity/GEOREF.

1898. Durban DC. Analysis of Observed and Modeled Mixed Layers: NOCAL (Northern California) Region. [dissertation] ; 1983. 189p. Performer: Naval Postgraduate School, Monterey, CA
Surface mixed layer properties off Northern California (NOCAL) were analyzed statistically and numerically. The observations were acquired on three cruises as part of the Pilot Ocean Prediction Study of the California Current eddies centered ca. 37 to 39N, 125 to 127W during March and August 1982. Mixed layer depth, averaging 33 + or - 14m, had a horizontal correlation scale of no more than 35Km, which has significance for relating thermal structure information form individual temperature profiles to that of Fleet Numerical Oceanography Center's (FNOC) analyses based on a grid length of approximately 300km. Simulations and sensitivity tests were made using the Garwood bulk mixed layer model and the Mellor Level-2.5 diffusion model with the initial and boundary conditions acquired at sea and from FNOC. Upper ocean thermal structure analyses and forecasts were also obtained from the Navy's TOPS/TOPS-EOTS diffusion model, which has since become operational at FNOC. Comparisons of observations, analyses, and model solutions reveal consistent cooling and deepening by the former two models and excessive warming by the latter model. These significant differences are believed to be related to model resolution, model sensitivity, oceanic and atmospheric data quality, and spatial variability. (Author).
Mixed layer Marine/North Pacific Ocean/Surface waters/Temperature/Depth/Variations/Correlation/Meteorological phenomena/Statistical analysis/Mathematical models/Theses/Mixed layer Marine/NTIS.

1899. Chaney HW. Aspects of the biology of the cheilostome bryozoan Thalamoporella californica [dissertation]. Los Angeles, California, USA: University of Southern California; 1983. Unknown.
Aspects of the reproduction, growth and population biology of the cheilostome bryozoan, Thalamoporella californica Levinsen, 1909 were investigated in a combined laboratory and field study. Occurring as an epiphyte on marine algae this bryozoan utilizes a dual growth pattern, either forming an encrusting colony or a series of erect, dichotomous branches. Stages of development, from formation of embryos to the growth of the young colony, were described by an SEM study. Thalamoporella autozooids are unisexual with female autozooids producing conspicuous, bilobate ovicells which contain up to four embryos. A lecithotrophic, coronate larva developed which then settles within a few hours. The metamorphosis of the larva into a preancestrula begins with a rapid eversion of the internal sac. Reproduction occurs throughout the year at varying intensities. Rate of astogenetic growth is greatest during late summer when seasonal water temperatures are high. Histocompatibility between Thalamoporella colonies was studied by examining interzooecial pores with SEM. Colonies produced by larvae originating from the same "mother" colony (siblings) can fuse with each other, forming an unusual pore pattern. No communication pores form when non-sibling colonies grow together. Several life history parameters, including zooid dimensions, colony growth rates,

percentage of females per colony, and ovicell capacity, were. measured from samples collected along a subtidal shelf off Santa Catalina Island, California during a two year period. Seasonal variations were noted in each of these parameters. The number of female autozooids is particularly sensitive to changes in ambient water temperature. Thalamoporella californica is perceived as a durable, long-lived species capable of overgrowing other epiphytes it encounters and shifting to additional substrates by alternating its growing pattern. (Copies available from Micrographics Department, Doheny Library, USC, Los Angeles, CA 90089.). reproduction/growth/population biology/epiphyte/Cheilostome/bryozoan/Bryozoa/Thalamoporella californica/marine biology.

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1902. Varoujean DH, Baltz DM, Allen B, Power D, Schroeder DA (Performer: Nero and Associates, Inc., Portland, OR. Funder: Minerals Management Service, Reston, VA.) Seabird Oil Spill Behavior Study. Volume 1. Executive Summary. Final rept. ; 1983. Report No.: MMSYNTE83007. 21p.
See also PB84-179548. PC A02/MF A01 Also available in set of 3 reports PC E99, PB84-179522. Contract: DI1412000129102.
This volume contains a summary of findings of a two year (1980-1982) study on the behavior of seabirds encountering oil-contaminated water. An information survey, undertaken in the study, indicated that out of nearly 300 references to seabird/oil research only 12 articles addressed the topic of seabird behavior in the presence of oil. Available evidence does, however, indicate that seabirds avoid or try to avoid making contact with petroleum oil. Field observations and experiments conducted in the study areas of natural oil seeps in the Santa Barbara Channel California, revealed that: (1) abundance of seabirds in the study area was relatively low when compared to that in oil-free areas of the Channel; (2) the age and/or the residency status of Brown Pelicans (Pelecanus occidentalis), Western Gulls (Larus occidentalis) and Heermann's Gulls (Larus heermanni) were related to the frequency of interaction of these birds with oil.
Birds/Animal behavior/Oil pollution/Fuel oil/Toxicity/Abundance/Crude oil/Responses/Age/Surveys/California/Birds/Animal behavior/Oil pollution/Seabirds/Oil spills/Santa Barbara Channel/Water pollution effects Animals/Seabirds/NTIS.

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sediments/algal flora/foraminifers/sedimentation/stratigraphy/clastic sediments/biostratigraphy/environment/Holocene/turbidite/hemipelagic environment/Quaternary/continental borderland/microfossils/biogenic structures/sedimentary structures/Neogloboquadrina pachyderma/cores/Santa Catalina Basin/Santa Catalina Island/Surficial geology/quaternary geology.

1905. Dohl TP, Bonnell ML, Ford RG. Distribution and abundance of common dolphin, Delphinus delphis, in the Southern California Bight: A quantitative assessment based upon aerial transect data. U.S. Natl. Mar. Fish. Serv. Fish. Bull. 1986;84:333-343.
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MAMMAL/AQUATIC ANIMALS/CRUDE OIL/ECOLOGY/WATER POLLUTION/SOUTHERN CALIFORNIA BIGHT/Porpoises/CETACEA/DISTRIBUTION PROPERTY/ABUNDANCE/WHALES/OFFSHORE DRILLING/ANIMAL MIGRATIONS/ENVIRONMENTAL IMPACTS/DOLPHINS/marine mammals/Bonnell/Dailey/TEXT/MINERALS MANAGEMENT SERVICE.

1907. Kantha LH, Blumberg AF, Herring HJ, Stegen GR. The use and testing of a model for upper ocean dynamics. THE OCEAN SURFACE: WAVE BREAKING, TURBULENT MIXING AND RADIO PROBING. 1985;:pp. 547-552.
A one-dimensional turbulent Ekman layer model is used to simulate the upper-ocean dynamics in Santa Barbara Channel. Comparison of simulated and measured currents showed excellent agreement below subtidal frequencies.
upper ocean/Ekman layers/turbulent boundary layer/nearshore dynamics/mathematical models/oceanography/INE/Santa Barbara Channel/models/ASFA.

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(Performer: Nero and Associates, Inc., Portland, OR. Funder: Minerals Management Service, Reston, VA.) Seabird Oil Spill Behavior Study. Volume 2. Technical Report. Final rept. ; 1983. Report No.: MMSYNTE83008. 71p.
See also Volume 1, PB84-179530 and Volume 3, PB84-179555. PC A04/MF A01 Also available in set of 3 reports PC E99, PB84-179522. Contract: DI1412000129102. This volume provides a technical discussion of a two year (1980-1982) study on the behavior of seabirds encountering oil-contaminated water. An information survey, undertaken in this study, indicated that out of nearly 300 references to seabird/oil research only 12 articles addressed the topic of seabird behavior in the presence of oil. Available evidence does, however, indicate that seabirds avoid or try to avoid making contract with petroleum oil. Field observations and experiments conducted in the study areas of natural oil seeps in the Santa Barbara Channel, California, revealed that (1) abundance of seabirds in the study area was relatively low when compared to that in oil-free areas of the Channel; (2) the age and/or the residency status of Brown Pelicans (Pelecanus occidentalis), Western Gulls (Larus occidentalis) and Heerman's Gulls (Larus heermanni) were related to the frequency of interaction of these birds with oil.
Birds/Animal behavior/Oil pollution/Fuel oil/Abundance/Toxicity/Crude oil/Responses/Surveys/California/Birds/Animal behavior/Oil pollution/Seabirds/Oil spills/Santa Barbara Channel/Water pollution effects Animals/Seabirds/Oil spills/NTIS.

1911. OKUTANI T. A NEW SPECIES OF ENOPLOTEUTHID SQUID, ABRALIOPSIS, WATASENIA FELIS, FROM THE CALIFORNIA CURRENT. VELIGER 1968;11(1, P.72-79, JULY 1,1968. NO ABS., 3 FIGS., 2 TABLES, 15 REFS. 2 IN FR., 4 IN GER., 1 IN JAPANESE. GRANT- NSF GB 2861) UNKNOWN.
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Barite is commonly used as a weighting agent in oil- and gas-well drilling mixture; therefore, the distribution pattern of Ba in marine sediments near drilling sites may provide an indicator of anthropogenic chemical contamination from these operations. Present average content of Ba in benthic sediments from the Southern California Bight was determined to be 637 ppm, with a range from 43 to 1,899 ppm; that of the mainland and the channel island intertidal sediments averaged 879 and 388 ppm, respectively.
Barium/Sediments/Pollutant detection/Barium compounds/Chemical pollution/barite/water pollution control/offshore operations/pollutant indicators/bottom sediments/Outer Continental Shelf/monitoring/baseline studies/metals/barite/oil well/marine sediments/anthropogenic effects/sediment analysis/Southern California Bight/California Channel Islands/pollution/water quality/marine biology/petroleum/oceanography/environmental biology/resource management.

1913. Dohl TP, Norris KS, Le Boeuf BJ, Hunt Jr. GL. Final report. Summary of marine mammal and seabird surveys of the Southern California Bight area 1975-1978. Synthesis of Findings. U.S. Dep. of Interior, Bureau of Land Management, Pacific OCS Region, Los Angeles 1980;II:414.
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1914. McGowan MF. Northern anchovy, Engraulis mordax , spawning in San Francisco Bay, California, 1978-79, relative to hydrography and zooplankton prey of adults and larvae. FISH. BULL 1986;84(4):879-894.
Eggs and larvae of Engraulis mordax were sampled by nets monthly for one year. Either eggs or larvae were caught every month. Both were most abundant when water temperature was high. Mean egg abundance did not differ among stations but larvae were more abundant within the San Francisco Bay at high and low salinity than near the ocean entrance to the Bay. Larvae longer than 15 mm were collected over the shoals in spring and autumn but were in the channel during winter. Zooplankton and microzooplankton were abundant relative to mean California Current densities. Adult spawning biomass in the Bay was 767 tons in July 1978, based on egg abundance and fecundity parameters of oceanic animals. San Francisco Bay was a good spawning area for northern anchovy because food for adults and larvae was abundant and because advective losses of larvae would have been lower in the Bay than in coastal waters at the same latitude.
spawning/environmental conditions/USA/California/San Francisco Bay/ichthyoplankton surveys/spawning grounds/Engraulis mordax/food availability/abundance/hydrography/salinity effects/temperature effects/INE/San Francisco Bay/ASFA.

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Serial For reference to paper by Howell, D. G., et al., see Geology (Boulder), Vol. 2, No. 2, 1974. B; Bibliography and Index of Geology (1969-present). California/Structural geology/Faults/south/Displacements/Strike slip/borderland/possibilities/evidence/Tertiary/United States/GEOREF.

1916. Smith JA (Performer: Naval Postgraduate School, Monterey, CA). Empirical and Dynamic Modes in the CCS (California Current System). ; 1984. Report No.: NPS6884003. 48p.
CTD data from the California Current System are analysed in terms of both empirical orthogonal functions (EOFs) and quasigeostrophic vertical modes (QGMs). A single EOF accounts for about 97% of the total variance in hydrostatic pressure perturbations to 3000m. The first four pressure EOFs correspond quite well to the first four QGMs. The QGMs are orthogonal with respect to integration over the total water depth, while the EOFs are orthogonal over the depth interval where there are data; thus, a subsets of increasingly deeper cast data are used; the EOFs and QGMs become more alike. The EOF amplitudes must also be uncorrelated over the sample of profiles used, while those of the QGMs need not be; yet, the EOF analysis roughly selects the first four QGMs, even from just eight casts to 3000m. Apparently, the variance contained in each successive QGM decreases precipitously; thus, the variance in QGM 1 overwhelms any correlated part of QGM 2. Likewise, the variance left over in QGM 2 is still sufficient to overwhelm QGM 3 (and so on). (Note also that low-frequency internal waves, e.g. internal tides, have virtually identical modal structure to the QGMs; these may also contribute to the EOFs). In the upper 100 meters, the EOFs vary markedly from survey to survey. The density analysis can produce an EOF which doesn't fit into the 'normal' QGM sequence, but rather is strongly surface trapped, being confirmed roughly to the top 100 meters. This mode, which may represent mixed or Ekman layer variability, can account for up to 20% of the total density

variance. (Author).
Ocean currents/Hydrostatic pressure/Depth indicators/Dynamic range/California/Ocean currents/QGM Quasigeostrophic Vertical Modes/CCS California Current System/NTIS.

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TEMPERATURE GRADIENTS/CALIFORNIA CURRENT/UPWELLING/OceanAbstracts.

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isotopes/sulfur/geochemistry/cycles/S-34 S-32/vegetation/Plantae/USSR/terrestrial environment/marine environment/atmosphere/circulation/atmospheric precipitation/rainfall/sea water/reduction/soils/fractionation/San Miguel Island/Cocos Islands/geology/geochemistry/chemistry.

1919. Pinardi N. Quasigeostrophic energetics and oceanic mesoscale dynamics. DISS. ABST. INT. PT. B - SCI. & ENG 1986;47(5).
The quasigeostrophic energetics and dynamics of different midlatitude open ocean regions are studied. The approach resides in the blend of models and data to identify the physical mechanisms which control the dynamics of the mesoscale/synoptic variability in the ocean. The study of a successful forecast experiment in the California Current mesoscale system provided a unique example of merging of two baroclinic eddies. Results are discussed. The Polymode Synoptic Dynamical Experiment (SDE) data set is studied and the dynamics of intense thermocline jets and eddy formation processes is interpreted. The Gulf Stream prototype data assimilation studies are presented. Satellite infrared images are used to initialize the model with realistic shape and position of the surface Gulf stream front.
current prediction/mesoscale features/oceanic eddies/satellite sensing/quasi-geostrophic motion/INE/California Current/ANW/Gulf Stream/ASFA.

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Serial B; Bibliography and Index of Geology (1969-present).
Pacific Ocean/Oceanography/Sea water/sedimentation/Santa Barbara Basin/Marine geology/North/United States/California/turbidity currents/effects/bottom water/composition/Transport/changes/measurement/data/1969 1970/GEOREF.

1921. Rienecker MM, Mooers CNK, Colton MC, Wittman PA (Performer: Naval Postgraduate School, Monterey, CA). Hydrographic Data from the OPTOMA (Ocean Prediction Through Observations, Modeling and Analysis) Program OPTOMA2, Legs I and II, 31 July - 14 August, 1982. Rept. for Oct 82-Mar 84. ; 1984. Report No.: NPS6884002. 72p.
The OPTOMA (Ocean Prediction Through Observations, Modeling and Analysis) Program, a joint NPS/Harvard program sponsored by ONR, seeks to understand the mesoscale (fronts, eddies, and jets) variability and dynamics of the California Current System and to determine the scientific limits to practical mesoscale ocean forecasting. To help carry out the aims of this project, a series of cruises has been planned in two subdomains, NOCAL and CENCAL. The cruise OPTOMA2 was undertaken, in the R/V ACANIA, for two weeks in August, 1982 and covered part of the NOCAL domain which is

roughly 200 km square centered 150 km off the California coast. Hydrographic data were acquired during two legs: Leg I was carried out during the period 31 July to 5 August and sampled an area 130 km cross-shore by 190 km alongshore with additional transects to and from the domain. Leg II was carried out during the period 8 to 14 August and sampled an area roughly 150 km cross-shore by 100 km alongshore. Each leg consisted of a series of parallel transects directed alongshore, separated by roughly 45 km and along which hydrographic stations were occupied every 8.8 km. In addition, there were diagonal transects and tracks to and from the domain.
Oceanographic data/North Pacific Ocean/Temperature/Salinity/Depth/Profiles/Graphs/Tables Data/Oceanographic data/OPTOMA project/NTIS.

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Address: University of California, Santa Barbara 93106.
The purpose of the paper is to characterize the major challenges to governments and to the public that are posed by the accelerated pace in oil development now taking place offshore California. In recent years, huge oil discoveries have been made off the South/Central Coast of California in the Santa Barbara Channel and in the Santa Maria Basin. A number of oil development proposals are now being considered by relevant federal, state, and local authorities. The article first characterizes the magnitude of the current oil build-up, placing it in historical perspective. Next, it describes the major issues posed by accelerated development, and the complex of federal, state, and local laws that govern offshore oil extraction. The analysis highlights management dilemmas faced by local authorities in coping with the increase in oil activity.
Offshore drilling/Crude oil/Government policies/Economic development/coasts/History/National government/State government/Local government/Law(Jurisprudence)/Geophysical prospecting/Sales/Leasing/Constraints/Land use/Drilling platforms/Petroleum industry/Maps/Oil recovery/oil and gas industry/government policy/legislation/Santa Barbara Channel/Santa Maria Basin/government policy/petroleum/.

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California/sedimentation/Pacific Ocean/foraminifera/Hickey/physical oceanography/distribution /marine transport/statistical analysis/UnitedSates/offshore/continental borderland/benthonic tax/rates/Holocene/Quaternary/modern/biocenoses/thanatocenoses/te st/size distribution/Northeast Pacific/transport/MINERALS MANAGEMENT SERVICE.

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Dailey/Gorsline/Introduction/Geology/Geologic Features/Text/MINERALS MANAGEMENT SERVICE.

1928. Robinson AR, Carton JA, Pinardi N, Mooers CNK. Dynamical forecasting and dynamical interpolation: An experiment in the California Current. J. PHYS. OCEANOGR 1986;16(9):1561-1579.
In order to perform real-time dynamical forecasts and hindcasts, three high-resolution hydrographic surveys were made of a (150 km) super(2) domain off northern California, providing two sets of initialization and verification fields. The data was objectively analyzed and regularly gridded for model compatibility. These maps initially show an anticyclonic eddy segment in the northeast and part of another in the northwest. Two weeks later only the northwest anticyclonic eddy remained, with the domain center dominated by a 0.6 m s super(-1) jet. Two weeks after that only a larger northwest eddy with fairly weak velocities remained. Numerical forecasts with persistent boundary conditions and forecast experiments with boundary conditions linearly interpolated between surveys were performed. The real-time forecast successfully predicted the formation of the zonal jet prior to its observation. Dynamical interpolation shows unambiguously that the two anticyclonic eddies have merged and formed a single eddy. Even the forecast with incorrect boundary conditions demonstrates the internal dynamical processes involved in the merger event.
current prediction/dynamic analysis/hydrographic data/INE/California Current/ASFA.

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Abstract B; Bibliography and Index of Geology (1969-present).
Pacific Ocean/Stratigraphy/Cenozoic/biostratigraphy/northeast/California Current System/biofacies/currents/isotherms/paleoclimatology/foraminifera /planktonic/upper Cenozoic/GEOREF.

1930. Rienecker MM, Mooers CNK, Colton MC, Wittman PA (Performer: Naval Postgraduate School, Monterey, CA). Hydrographic Data from the OPTOMA (Ocean Prediction Through Observations, Modeling and Analysis) Program: OPTOMA1, 8 to 13 March, 1982. Rept. for Oct 82-Apr 84. ; 1984. Report No.: NPS6884005. 36p. See also AD-A141 547. PC A03/MF A01.
The OPTOMA (Ocean Prediction Through Observations, Modeling and Analysis) Program, a joint NPS/Harvard program sponsored by ONR, seeks to understand the mesoscale (fronts, eddies, jets) variability and dynamics of the California Current System and to determine the scientific limits to practical mesoscale ocean

forecasting. To help carry out the aims of this project, a series of cruises has been planned in two subdomains, NOCAL and CENCAL. The cruise OPTOMA1 was undertaken, on the R/V ACANIA, in March, 1982 and covered part of the NOCAL domain which is roughly 200 km square centered 150 km off the California coast. From March 8 to 13, hydrographic data were acquired along a series of tracks. In the rectangular domain, roughly 90 km across-shore by 120 km alongshore, the series of parallel transects directed alonshore were separated by about 18 km. Along-track station spacing was about 8.8 km. In addition, there were tracks to and from the domain. Oceanographic data/North Pacific Ocean/Temperate regions/Temperature/Depth/Profiles/Salinity/Graphs/Tables Data/Oceanographic data/OPTOMA Project/NTIS.

1931. STEWART DD. EXPENDABLE BATHYTHERMOGRAPH DATA ON SUBSURFACE THERMAL STRUCTURE IN THE EASTERN NORTH PACIFIC OCEAN. U.S. FISH AND WILDLIFE SERVICE. SPECIAL SCIENTIFIC REPORT -- FISHERIES. NO. 548, 72 PAGES, AUG.1967. ABS., 9 FIGS., 13 TABLES, OBSERVATION CHARTS P.21-70, 3 REFS 1967
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1932. Clark R, Halvorson WL. The recovery of the Santa Barbara Island live-forever. Fremontia 1987;14(4):3-6 endangered species/protected species/national parks/conservation areas/islands/pest control/plant ecology/Crassulaceae/Santa Barbara Island/terrestrial biology/botany/mammalogy/entomology.

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vertical profiles/hydrocarbons/organic carbon/nitrogen/analysis/INE/ASFA.

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Contract: N0001483C2004.
This project is concerned with an experimental determination of wide-band propagation parameters in the HF spectrum. Propagation characteristics of both sky-wave and ocean-surface surface-wave modes were the subject of the investigations. To provide near-full-scale measurement ranges, ocean propagation paths from San Clemente Island to Pt. Mugu, California, (site of the Navy Pacific Missile test Center) and to Pt. Arguello (Vandenberg Air Force Base) were used. Generally, field operations were conducted over periods of two to three weeks at times which allowed October 18 through November 1, 1982; January 10 through January 17; and May 1 to May 14, 1983.
Surface waves/Ionospheric propagation/Air Force facilities/High frequency/Propagation/Spectra/Broadband/Oceans/Parameters/Paths/California/Surface waves/Ionospheric propagation/NTIS.

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The satellite images of phytoplankton pigments off California show a high degree of heterogeneity. However, recurrent phytoplankton pigment structures can be identified in the California Current. The major ones are: two sharp boundaries several hundreds of Kilometers long; low pigment eddies far offshore interwoven with higher pigment structures immediately inshore; a low pigment intrusion in the Southern California Bight, and a higher pigment region farther offshore; eddies "attached" to shallow coastal areas; and California Current rings spawned far offshore. Clear similarities of the phytoplankton pigment distributions to the field of dynamic height and to an infrared image of sea surface temperature indicate the very important role of ocean circulation and of phytoplankton nutrient content of the waters, in the generation and maintenance of the observed patterns.
satellite sensing/phytoplankton/pigments/ocean circulation/Pacific Ocean/California Current/satellites/remote sensing/indicators/INE/California Current/ASFA.

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Engineering geology/Soil mechanics/Sediments/deep sea/properties/measurement/remote underwater manipulator/Pacific Ocean/Materials/profiles/ocean floors/La Jolla Canyon/San Clemente Basin/San Diego Trough/GEOREF.

1939. Blevins RW, Donnelly HL, Stadter JT, Weiss RO, Perez YPL (Performer: Johns Hopkins Univ., Laurel, MD. Applied Physics Lab. Funder: Department of Energy, Washington, DC.) At Sea Test of a Large Diameter Steel, Cold Water Pipe. ; 1979. Report No.: DOEET20342T8. 20p.
Portions are illegible in microfiche products. Contract: AI0177ET20342. During December 1978 and January 1979, a series of tests were conducted off Santa Catalina Island, California, on a large-diameter steel pipe. The pipe was 5 ft (1.52 m) in diameter and made up in 20-ft (6.10 m) sections to obtain a total length up to 500 ft (152.4 m). Deep Oil Technology's X-1 semi-submersible platform was used to support the pipe through a gimbal joint and the platform was moored with spring buoys in 1000 ft (304.8 m) of water. The objectives were to evaluate the at-sea performance of various configurations and to use the test results to verify or improve existing time and frequency domain analyses of cold-water pipes for Ocean Thermal Energy Conversion (OTEC) plants. The configurations tested were platform alone; platform with 120-ft (36.58 m) pipe, with 300-ft (91.44 m) pipe, with 500-ft (152.4 m) pipe and with 384-ft (117.0 m) pipe including a U-joint at 162 ft (49.38 m). The results of the analyses indicate that the frequency locations of the spectral peaks are generally well predicted, but

comparison of the peak values is in poorer agreement. (ERA citation 09:025742). Ocean Thermal Power Plants/Acceleration/Bending/Experimental Data/Frequency Analysis/Offshore Platforms/Performance/Pipes/Spectra/Steels/Stresses/Ocean Thermal Power Plants/ERDA/140800/NTIS.

1940. STEWART GL. MICRO-ZOOPLANKTON IN THE EUPHOTIC ZONE AT FIVE LOCATIONS ACROSS THE CALIFORNIA CURRENT. CANADA. FISHERIES RESEARCH BOARD. JOURNAL 1967;24(10, P.2053-2068, OCT.1967. ABS., 2 FIGS., 5 TABLES, 28 REFS. 1 IN FR., 3 IN GER. GRANTS- NSF GB-3175 AND GB- 4408)
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EUPHOTIC ZONES/STANDING STOCK/ZOOPLANKTON/CALIFORNIA CURRENT/FOOD CHAIN/MICROORGANISMS/OceanAbstracts.

1941. Coan E. The recent Crassatellinae of the Eastern Pacific with some notes on Crassinella. Velliger 1984;26(3):153-169
Address: DEP. INVERTEBRATE ZOOL., California ACAD. SCI., GOLDEN GATE PK., SAN FRANCISCO, California 94118.
The 3 eastern Pacific species of the Crassatellinae belong in Eucrassatella Iredale, 1924, Hybolophus Stewart, 1930 is regarded as a synonym of this genus, as is the recently proposed Eucrassinella Cruz, 1980. The rare E. fluctuata (Carpenter, 1864) occurs off the Channel Islands of southern California [USA] at a mean depth of 88 m; a synonym is the Pliocene-Pleistocene Crassatellites lomitensis Oldroyd, 1924. Crassatella marginata Keep, 1887, rec Carpenter MS, which has been synonymized with E. fluctuata, is instead based on specimens of the bernardinid genus Halodakra, perhaps H. salmonea (Carpenter, 1864). F. gibbosa (Sowerby1, 1832) occurs from the Gulf of California to Peru at a mean depth of 32 m. Added to its synonymy are E. (Hybolophus) g. tucilla Olsson, 1932, E. manabiensis and E. aequitorialis Cruz, 1980. C. corbuloides Reeve, 1842, which has been synonymized with E. gibbosa, is instead an Australian taxon. The Venezuelan E. antillarum (Reeve, 1842) is synonymized with the eastern Pacific E. digueti (Lamy, 1917). In the eastern Pacific this species occurs at a mean depth of 45 m from the Gulf of California to Ecuador. Newly added to its synonymy is C. laevis A. Adams, 1854, from the Caribbean. Lectotypes are selected for all of the synonymous taxa of Eucrassatella. There has been an overrecognition of full, cognate species between the Panamic and Caribbean faunal provinces. Increased consideration should be given to the use of subspecies or describing the morphological differences between. populations without naming them. The Caribbean C. aduncata Weisbord, 1974, is related to the eastern Pacific C. adamsi Olsson, 1961; C. maldonadoensis (Pilsbry, 1897) from Uruguay is very similar to the eastern Pacific C. nuculiformis Berry, 1940.
new synonymy/pliocene/pleistocene/Crassatellinae/Eucrassatella/California Channel Islands/Caribbean/Uruguay/marine paleontology.

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The distribution of the species of the dinoflagellate Ceratium are related to the oceanographic conditions observed in January 1983 across the eastern North Pacific central gyre, the California Current and the transition zone between them. A change in dominance occurs in the central gyre not accompanied by concomitant changes in the observed physical or chemical features. Ceratium "recognized" the edge of the California Current although it seems unaffected in its abundance and species structure by a major warm

temperature anomaly.
dinoflagellates/environmental conditions/USA/California/Pacific Ocean/ Northeast/community structure/Ceratium/distribution/INE/California Current/environmental effects/IS/North Pacific Central Gyre/relationship/ASFA.

1943. Colburn I, Carey S. The petrology of some upper Cretaceous sandstones from the Transverse Ranges. Cretaceous Stratigraphy of the Santa Monica Mountains and Simi Hills. Soc. Econ. Paleontol. Mineral., Pac. Sect., Guideb. ; 1973. p. p.75. Serial B; Bibliography and Index of Geology (1969-present).
California/Sedimentary petrology/Sandstone/Cretaceous/south/Transverse Ranges/San Miguel Island/Santa Monica Mountains/United States/upper Cretaceous/Chico Formation/Jalama Formation/Sedimentary rocks/Clastics/terrigenous/petrography/composition/GEOREF.

1944. McMurtrie JT. Spatial Structures of Optical Parameters in the California Current as Measured with the Nimbus-7 Coastal Zone Color Scanner. Master's thesis. [dissertation] ; 1984. 151p.
Performer: Naval Postgraduate School, Monterey, CA
Optical variability across the continental slope and shelf off Central California was studied using Nimbus-7 Coastal Zone Color SCanner (CZCS) data. CZCS estimates of k(490), the irradiance attenuation coefficient at 490 nm, were expressed as optical depth 1/k(490). A modified atmospheric correction algorithm was used to account for water radiance at 670 nm. Time sequences of 1/k(490) were assembled and partitioned into four zonal transects, at different latitudes, spanning May through November in 1979, 1980 and 1982. Empirical Orthogonal Functions (EOFs) were calculated for each partition. The first EOFs are dominated by scales of order 180 km, with in all cases, a band of low optical depth water in the first 100 km adjacent to the coast. Scales decrease in successive EOFs, to about 40 km in the fifth EOF. The feasibility of joining EOFs from different partitions was demonstrated as a precursor for future applications to piecewise analysis of oceanic satellite data. (Author).
Continental slopes/Pacific Ocean/Optical properties/Water/Depth/Atmospheres/Corrections/California/Attenuation/Radiance/ Parameters/Optics/Continental shelves/Scanners/Coastal regions/Meteorological satellites/Artificial satellites/Continental slopes/NIMBUS 7 satellite/NTIS.

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TOPOGRAPHY/CALIFORNIA CURRENT/SEASONAL VARIATION/OceanAbstracts.

1946. Coblentz BE. Reproduction of feral goats on Santa Catalina Island, California. Bull. South. Calif. Acad. Sci. 1982;81(3):128-137 Address: Dep. Fish. & Wildl., Oregon State Uni., Corvallis, OR 97331. Natality of feral goats (Capra hircus) on Santa Catalina Island appeared to be a density-dependent response to forage quality and quantity. Conception rates ranged from 1.11 corpora lutea/pregnancy in a poor forage area to 1.80 corpora lutea/pregnancy in a good forage area. Body weight, dressed weight, hind foot length, horn length, and kidney fat index of goats from the good forage area were significantly

greater (P < 0.05) than those from the poor forage area. Partial control of goats on the island increased natality; total removal of feral goats was recommended.
feral populations/reproduction/population density/density-dependent response/feral animals/habitat quality/pregnancy rate/physical condition/feral goats/Capra hircus/Santa Catalina Island/terrestrial biology/mammalogy.

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momentum transfer/heat exchange/moisture diffusion/turbulent diffusion/oceanic boundary layer/cruise stations/INE/Santa Barbara Channel/ASFA.

1948. Almgren AA. Upper Cretaceous foraminifera in southern California. Cretaceous Stratigraphy of the Santa Monica Mountains and Simi Hills. Soc. Econ. Paleontol. Mineral., Pac. Sect., Guideb. 1973 1973:p.31-44
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California/Paleontology/Foraminifera/Cretaceous/south/La Jolla/San Diego/San Miguel Island/Santa Ynez/Santa Ana Mountains/Santa Monica Mountains/Simi Hills/Biostratigraphy/Paleoecology/zoning/United States/upper Cretaceous/Cenomanian/Turonian/Coniacian/Santonian/Campanian/Maestrichtian/Jalama Formation/Rosario Formation/Chico Formation/GEOREF.

1949. Platz BW, Szabo D, Murray JJ (Performer: Coast Guard, Washington, DC. Oceanographic Unit). Oceanographic Observations North Pacific Ocean Station November and Pacific Standard Monitoring Sections P3, P4, P5, and P6, July 1966-June 1974. Terminial Report. Final rept. ; 1982. Report No.: USCG37382. 69p. Includes 15 microfiche inserts. PC A04/MF A01.
Observed and interpolated temperature and salinity data with computed sigma-t values are reviewed for all oceanographic stations occupied by U.S. Coast Guard cutters at Ocean Station NOVEMBER (30 deg 00 N, 140 deg 00 W) and Pacific Standard Monitoring Sections P3, P4, P5, and P6 from July 1966 through June 1974. The analysis of OS NOVEMBER for these eight years compares favorably with seasonal analyses made previously. The water properties show certain seasonal trends with near-surface density appearing to be primarily controlled by temperature. The mixed layer demonstrates an annual growth and decay dependent on changes in atmospheric conditions. The depth of this layer varies from 150 m in March to 10 m in September. Temperatures have an annual periodicity; salinity has a semi-annual periodicity. There is great year-to-year variability in the seasonal layer. Anomalous decreases in temperature were usually accompanied by decreases in salinity. Vertical sections of temperature and salinity for Standard Sections P3, P4, P5, and P6 are examined to determine the seasonal variations of the boundaries between the Pacific Central Water, the Pacific transition zone, and the California Current. These water masses and the limits of their boundaries are identified by the

characteristic rising of isotherms and isopycnals, T vs S relationships, and intense horizontal salinity gradients.
Oceanographic data/North Pacific Ocean/Temperature/Salinity/Density/Atmospheric temperature/Seasonal variations/Graphs/Oceanographic data/Ocean Station November/NTIS.

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CIRCULATION/CALIFORNIA CURRENT/SEASONAL VARIATION/OceanAbstracts.

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Address: Dep. Fish. Wildl., Oregon State Univ., Corvallis, OR 97331. A quadrimodal breeding pattern in the feral goat on Santa Catalina Island, California, is reported. Breeding peaks, as indicated by observations of females that were courted and bred, occurred at intervals of 2-4 months, and were most commonly 3 months apart. Details are given of the social organization of the goats on the Island and the changes that occurred in the prebreeding period. Evidence suggests that the goats are polygynous breeders, males tending a single oestrus female at a time. Reasons for, and coordination of the quadrimodal breeding pattern are discussed.
reproductive behavior/social organization/feral animals/goats/mammals/Santa Catalina Island/terrestrial biology/mammalogy.

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1953. Wittman PA, Mooers CN. Hydrographic data from the OPTOMA (Ocean Prediction Through Observation, Modelling and Analysis) Program OPTOMA 19, 8-13 February 1986. NPS; MONTEREY, CA (USA); REP. U.S. NAV. POSTGRAD. SCH 1986; The OPTOMA (Ocean Prediction Through Observation, Modeling and Analysis) Program seeks to understand the mesoscale (fronts, eddies, and jets) variability and dynamics of the California Current System and to determine the scientific limits to practical mesoscale ocean forecasting. The cruise OPTOMA19 was undertaken in Feb. 1986 and covered a domain 240 km square centered 190 km off the coast from Pt. Arena. This report presents the hydrographic data which were acquired during the period 8 to 13 February. The cruise track consisted of alongshore transects. Data acquired during OPTOMA19 include XBT and CTD profiles. Wind velocity, air temperature, dew point, and 2 meter thermalsalinograph measurements were recorded every 2 minutes.
hydrographic data/mesoscale features/INE/California Current/ASFA.

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Thesis; Abstract B; Bibliography and Index of Geology (1969-present). Southern California. Doctoral, 1974.
California/Sedimentary petrology/Diagenesis/south/offshore/Sedimentation/Experimental studies/cores/sediments/textures/pore

water/geochemistry/continental borderland/mineral composition/continental margin/Marine geology/Pacific Ocean/United States/data /GEOREF.

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Intertidal and offshore samples were collected in the Southern California Bight. The purpose of this study was to determine existing levels of petroleum hydrocarbons and trace metals associated with OCS development, plus enhancing or establishing the data base of abundance, composition, diversity and general health of the marine flora and fauna of the area. Rocky intertidal habitats were studied to determine community composition, biogeographical and seasonal variation. Sediment and macrobiota samples from intertidal sites were analyzed for selected trace metals and hydrocarbon characteristics; temporal and spatial variations are discussed.
Crude oil/Ecology/Marine biology/Water pollution/Southern California Bight/Continental shelves/Crustacea/Mollusca/Echinodermata/Annelida/Abundance/Distribution Property/Hydrocarbons/Metals/Environmental impacts/Invertebrates/Tables Data/Sites/Crude oil/Ecology/Marine biology/Water pollution/Southern California Bight/Outer continental shelves/Baseline studies/Species diversity/NTIS.

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The National Oceanic and Atmospheric Administration proposes the designation of the waters surrounding the four northern Channel Islands and Santa Barbara Island as a marine sanctuary. The proposed sanctuary would extend six nautical miles seaward from the mean high tide line. If these waters are designated as a marine

sanctuary, the following activities would be subject to the proposed regulations described in this document: oil and gas operations, discharging or depositing any substance, alteration of or construction on the seabed, navigation and operation within one nautical mile of the Islands of vessels not engaged in fishing. All regulations shall only be applied consistent with international law. Channel Islands/Santa Barbara Island/Environmental impact statements final/Construction/Regulations/Economic impact/Fishes/Birds/Mammals/Cetacea/Aquatic plants/Invertebrates/Shellfish/Navigation/Law enforcement/Natural gas/Crude oil/California/Channel Islands/Santa Barbara Island/Environmental impact statements final/Marine sanctuary/Marine sanctuary/NTIS.

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The water column and pore water chemistry of several basins in the Southern California Borderland have been studied in order to understand mixing rates in the waters of these basins, fluxes across the sediment-water interface, and the rates at which biogenic silica and carbon are mineralized in basin sediments. In situ benthic fluxes have also been measured in two of these basins with a benthic flux chamber (lander) that was built for this study. Copies available exclusively from Micrographics Department, Doheny Library, USC, Los Angeles, CA 90089-0182, USA. water mixing/sediment-water exchanges/silicon cycle/carbon cycle/INE/ USA/Southern California Borderland/ASFA.

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Performer: Naval Postgraduate School, Monterey, CA
Satellite infrared imagery off the California coast, near Pt. Sur,

show thermal patterns associated with an upwelling center; the patterns frequently curl cyclonically when interacting with the warmer California Current. This pattern shows sharp thermal fronts, easily identified in satellite IR images, that are strongly correlated with nutrient fronts during the early stages of upwelling. With sea truth data available, it was feasible to calibrate satellite derived sea surface temperature, by applying radiative transfer theory, and to infer nutrient concentrations from their linear inverse correlations with temperature. Thus, it was possible to calibrate satellite thermal fields to produce maps of nutrient distributions. When the inferred relationships were applied over representative regions of the upwelling center, standard deviations of 0.5C, 1.7 microns and 0.1 microns were computed for temperature, nitrate and phosphate, respectively. (Author).
Infrared images/Calibration/Nutrients/Ocean surface/Correlation techniques/Artificial satellites/Patterns/Upwelling/Surface temperature/Radiative transfer/Theory/Concentration Composition/Distribution/Maps/Standard deviation/Oceanographic data/Nitrates/Phosphates/Coastal regions/California/Theses/Infrared images/Calibration/Nutrients/Ocean surface/Correlation techniques/NTIS.

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The Southern California ASW Range (SOAR) Phase 1B will provide a 100 square mile Anti-Submarine Warfare Training Range in 4,500 feet of seawater west of San Clemente Island, California. An underwater survey of the near shore area of SOAR was conducted in April and May of 1985. The survey was to provide geotechnical and environmental data for the shore landing of underwater cables to be installed in 1987 (SOAR Phase 1B). The survey was conducted in two parts (a) A diver conducted cable inspection of two existing cables and geotechnical data gathering in the near shore area, (b) A hydrographic survey including bathymetry, sub-bottom profile, side scan sonar and current meter data. Both portions of the survey confirmed the presence of two sand covered channels adjacent to West Cove Beach, the proposed cable landing site. They offer potentially good shore landing cable routes to the eastern portion of the survey area where sand thicknesses exceed 60 feet. The western part of the survey area in about 200-300 FSW where sand thicknesses are relatively thin should be avoided although dynamic wave-induced motion of the cable should not be a problem at this depth. The survey provided a good image of the bottom and sub-bottom physical characteristics of the area permitting the development of a cable route to deepwater that provides maximum cable protection. The results of the survey also provide data necessary for cable design. and nearshore protection requirements.
cable laying/site surveys/geotechnical data/hydrographic surveys/diving surveys/submarine cables/San Clemente Island/West Cove Beach defense/military.

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animal migrations/chemical oceanography/Eganhouse/California Current/Dissolved gases/minnows/reproduction/biology/Hickey/physical oceanography/MINERALS MANAGEMENT SERVICE.

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Significant effort is underway aimed at providing a scientific basis for the management and conservation of living resources within seven LMEs--the Insular Pacific, Eastern Bering sea, Gulf of Alaska California Current, Gulf of Mexico, Southeast Atlantic Shelf, and Northeast Atlantic Shelf. In each of the LMEs three resource assessment strategies have been implemented to monitor variability and forecast abundance of resource population: (1) utilization of yield statistics for estimating population trends, (2) yield-independent surveys of adult and early-life stages on mesoscale spatial (20-100 km) and temporal (weeks-months) sampling frequencies, and (3) process-oriented studies of ecosystem structure and function leading to improved resource forecasts.
ecosystems/marine resources/resource management/environment management/methodology/environmental monitoring/measuring techniques/marine ecosystems/variability/ASFA.

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California/Paleontology/Radiolaria/Holocene/offshore/Santa Catalina Basin/Ecology/Depth/assemblages/marine/Pacific Ocean/United States/GEOREF.

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Sea level data from Monterey, Calif., during the period 1963 through 1976 were compared with data from coastal stations from Peru to Alaska. Sea level fluctuations at Monterey were correlated with data from these stations, particularly those to the south. The causes of sea level fluctuations at Monterey were investigated by correlation, regression, and spectral analysis of sea level with atmospheric pressure, zonal and meridional wind stress, Ekman and Sverdrup transport, surface temperature and salinity, and dynamic height data from nearby locations. Of these variables, dynamic height was the best predictor of sea level fluctuations.

Atmospheric pressure, surface temperature, and meridional wind stress were of secondary importance. The prediction was better during the Davidson Current period than during the upwelling period.
Monterey Bay/Sea level/Tide gages/Ocean tides/Time series analysis/Abnormalities/Fisheries/Air water interactions/Coasts/Sea states/Spectrum signatures/California/Monterey Bay/Sea level/NTIS.

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California Current pelagic fishes have been monitored for 30 to 50 years, and a paleosedimentary record extends back 200 to 2000 years. Large natural fluctuations in abundance occur at all time scales. Overharvest of sardines removed a major component of the ecosystem; the extent to which it was replaced by other species is not clear. Large predatory fishes have declined in abundance due to exploitation. Pinnipeds were depleted in the last century, but now are abundant and are increasing rapidly. Seabird reproductive success is closely related to availability of small forage fish such as anchovy. Despite a wealth of scientific information, species interactions are poorly understood, and are difficult to separate from independent differential responses to varying

environmental conditions. The biological basis of fishery management is likely to remain single-species models in the foreseeable future. Ecosystem management requires coordinated consideration of both fished and non-fished species, but faces conflicting jurisdictions and other institutional difficulties. ecological balance/ecosystem management/marine fisheries/Pacific Ocean/ California Current/biomass/environmental changes/marine ecosystems/INE/ California Current/ISE/California Current/environmental conditions/changes/ASFA.

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See also Volume 3, Book 6, PB83-149799, and Volume 3, Book 8, PB83-174839. PC A22/MF A01.
Intertidal and offshore samples were collected in the Southern California Bight. The purpose of this study was to determine existing levels of petroleum hydrocarbons and trace metals associated with OCS development, plus enhancing or establishing the data base of abundance, composition, diversity and general health of the marine flora and fauna of the area. This report (Book 7) contains a review of literature on known and historical locations of kelp beds, the results of four aerial surveys, and an analysis of seasonal changes in the distribution of kelp plants in the southern California area.
Crude oil/Ecology/Marine biology/Water pollution/Southern California Bight/Surveys/Continental shelves/Aquatic plants/Infrared mapping/Sites/Area/Abundance/Distribution Property/Hydrocarbons/Metals/Environmental impacts/Invertebrates/Tables Data/Sites/Crude oil/Ecology/Marine biology/Water pollution/Southern California Bight/Outer continental shelves/Baseline studies/Species diversity/Kelp/Macrocystis/Kelp/NTIS.

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The Southern California Acoustic Range (SOAR) is designed to provide a 100 square mile Anti Submarine Warfare training range in 4000 feet of sea water west of San Clemente Island, California. SAR will provide accurate tracking of air, surface and submerged

targets. This plan is a working document that details the mobilization, execution and demobilization of the underwater portion of the SOAR project. The overall scenario of the project is to accomplish the following; (a) Prefabrication and assemble project materials at NOSC, San Diego; (b) Conduct training near Coronado beach; (c) Mobilize the OCP SEACON and UCT-2 personnel and equipment at West Cove, San Clemente Island; (d) Land the SSL cable and deploy the SSL system at sea; (e) Land the WQC cable and deploy the WQC transducer at sea; (f) Conduct a complete as-built survey (g) Demobilize SEACON and return all equipments and (h) Prepare a detail completion report.
Acoustic ranges/Naval training/Antisubmarine warfare/Aerial targets/Surface targets/Installation/Naval planning/Deep oceans/Inlets(Waterways)/West(Direction)/Prefabrication/Sea water/Underwater targets/Documents/California/Mobilization/Scenarios/South(Directi on)/Tracking/San Clemente Island/West Cove navigation/communications detection/naval planning/military.

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Pacific Ocean/Paleontology/Foraminifera/Cenozoic/northeast/Deep Sea Drilling Project/Site 173/Rotaliina/paleoecology/temperature/Globigerinita/Globigerina/ Globorotalia/C atapsydrax/Oceans/circulation/Currents/California Current/evolution/Oligocene/Miocene/Pliocene/Pleistocene/marine/s ubarctic/tempe rate/subtropical/GEOREF.

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Intertidal and offshore samples were collected in the Southern California Bight. The purpose of this study was to determine existing levels of petroleum hydrocarbons and trace metals associated with outer continental shelf development, plus enhancing or establishing the data base of abundance, composition, diversity and general health of the marine flora and fauna of the area. Book 8 contains those studies dealing with the chemistry of the Bight,

primarily high-molecular-weight hydrocarbons in sediments; seawaters; particulate and dissolved organic carbon analysis; and physical oceanography. Crude oil/Ecology/Marine biology/Water pollution/Southern California Bight/Chemical analysis/Intertidal zone/Hydrocarbons/Sediments/Oceanographic data/Carbon/Particles/Water chemistry/Sea water/Environmental impacts/Physical properties/Tables Data/Sites/Crude oil/Ecology/Marine biology/Water pollution/Southern California Bight/Outer continental shelves/Baseline studies/Species diversity/NTIS.

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Shores/Inshore areas/Ocean bottom/Antisubmarine warfare/California/Dynamics/Environments/Hydrographic surveying/Naval shore facilities/Images/Inspection/Landing/Bottom/Cables/measuring instruments/Motion/Physical properties/Protection/Requirements/Sand/Scanning sonar/Sea water/Acoustic ranges/Side looking sonar/Surveys/Thickness/Training/Underwater/Underwater equipment/Waves/Underwater cables/Cable landing areas/San Clemente Island/SOAR(Southern California Acoustic Range)/California Channel Islands/Santa Barbara Channel/San Clemente Island/physical oceanography.

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Intertidal and offshore samples were collected in the Southern California Bight. The purpose of this study was to determine existing levels of petroleum hydrocarbons and trace metals associated with OCS development, plus enhancing or establishing the data base of abundance, composition, diversity and general health of the marine flora and fauna of the area. Book 9 contains those studies dealing with the chemistry of the Bight, primarily high-molecular-weight-hydrocarbons in benthic fauna, intertidal flora and fauna, and results of GC/MS analysis. Crude oil/Ecology/Marine biology/Water pollution/Southern California Bight/Hydrocarbons/Intertidal zone/Chemical analysis/Aquatic plants/Aquatic animals/Abundance/Distribution Property/Chromatographic analysis/Gas chromatography/Mass spectra/Sampling/Crude oil/Ecology/Marine biology/Water pollution/Southern California Bight/Outer continental shelves/Baseline studies/Species diversity/NTIS.

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These data have been used by many investigators working on problems associated with the California Current.
Information systems/Oceanographic data/Fisheries/Animal migrations/Reproduction Biology/Minnows/Coasts/California Current/Computer programming/Surveys/Ocean temperature/Salinity/Oxygen/Dissolved gases/Nutrients/Mexico/United States/Information systems/Oceanographic data/Fisheries/Spawning/Baja California Mexico/NTIS.

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California/Areal geology/San Francisco Bay/north/Vacaville Quadrangle/Antioch Quadrangle/Mount Vaca Quadrangle/Carquinez Quadrangle/Mare Island Quadrangle/Sonoma Quadrangle/Santa Rosa Quadrangle/Petaluma Quadrangle/Point Reyes Quadrangle/Economic geology/Mineral resources/regional/United States/Maps/geologic/Contra Costa County/Marin County/Napa County/Solano County/Sonoma County/GEOREF.

2012. Helander CJ (Performer: California State Dept. of Motor Vehicles, Sacramento. Funder: National Highway Traffic Safety Administration, Washington, DC.
Funder: California Office of Traffic Safety, Sacrmento.) Intervention Strategies for Accident-Involved Drivers: An Experimental Evaluation of Current California Policy and Alternatives. Final rept. ; 1983. Report No.: CALDMVRSS8385. 65p. Sponsored in part by National Highway Traffic Safety Administration, Washington, DC., and California Office of Traffic Safety, Sacramento. PC A04/MF A01. The project was designed to evaluate current and alternative strategies for selecting and treating accident-involved drivers in California. The current accident-based selection criteria were contrasted with an expanded selection strategy which included convictions as well as accidents as criteria for selection. The standard diagnostic reexamination treatment was compared to two alternative behavior modification treatments--an accident-avoidance session and a mailed educational pamphlet/self-administered test. Interaction between treatments and selection criteria revealed that accident-involved drivers with minimal conviction histories were amenable to treatment intervention, while accident-involved drivers with more extensive conviction histories were not. Motor vehicle operators/Accident investigations/Behavior/Rehabilitation/Treatment/Surveys/Motor vehicle operators/Accident investigations/NTIS.

2013. FLEMINGER A. DISTRIBUTIONAL ATLAS OF CALANOID COPEPODS IN THE CALIFORNIA CURRENT REGION, PART 1. CALIFORNIA COOPERATIVE OCEANIC FISHERIES INVESTIGATIONS. ATLAS. NO. 2, DEC.1964. RECEIVED CUS, FEB.1966. 329 PAGES, NO ABS., CHARTS P.1-313, 5 REFS 1964 UNKNOWN.
DATA COMPILATION/PLANKTON/SPECIES COMPOSITION/POPULATION DENSITY/ NORTHEAST PACIFIC OCEAN/PERIODICITY/NEW RECORDS/CALANOIDA/CRUISE REPORTS/COPEPODS/CALIFORNIA CURRENT/OceanAbstracts.

2014. Corbett EJ. Seismicity and crustal structure studies of Southern California: tectonic implications from improved earthquake locations [dissertation]. California: California Institute of Technology; 1984. 247. The 5.1 M(,L) Santa Barbara earthquake of 13 August 1978 was located 3 km southeast of Santa Barbara at a focal depth of 12.7 km. The temporal-spatial development of the aftershock zone may indicate that the initial rupture plane was considerably smaller than that of the eventual aftershock zone. The aftershock hypocenters outline a nearly horizontal plane (dipping 15(DEGREES) or less) at 13-km depth and the preferred focal mechanism indicates north-over-south thrusting. These observations are consistent with a tectonic model in which much of the slip occurred on a nearly horizontal plane, and this earthquake may be taken as evidence for mid-crustal horizontal shearing in the western Transverse Ranges.^ To further test the decollement hypothesis, Caltech catalog locations were reviewed to determine the depth distribution of earthquakes in the Transverse Ranges. The seismogenic zone is thickest along the southern front of the Transverse Ranges and is thinnest in the southern Mojave Desert and at the east end of the Transverse Ranges. The seismicity of the western Transverse Ranges is typified by north-dipping planar structures and the eastern Transverse Ranges are typified by pervasive seismicity extending down to the floor of the seismogenic zone. The San Bernardino Mountains are underlain by a well-defined bottom of the seismogenic zone that dips. southward from 5-km depth under the Mojave Desert to 15-km depth where it intersects the San Andreas fault.^ Data from a large quarry explosion on Catalina Island were utilized to derive a 3-layer Continental Borderland velocity structure to improve the locations of the 1981 Santa Barbara Island earthquakes. The Santa Barbara Island earthquake (5.3 M(,L)) occurred on September 4, 1981. Aftershocks exhibited a clear northwest-southeast alignment that coincides with the submarine escarpment of the Santa Cruz-Catalina fault and was consistent with focal mechanisms. The aftershock zone was initially small, but grew bilaterally with time. This seismic activity suggests strike-slip motion on the Santa Cruz-Catalina fault, with the Santa Monica basin and Catalina Island behaving as a coherent block being displaced southeastward from the Transverse Ranges. faults/continental borderlands/1978 Santa Barbara earthquake/San Andreas fault/Santa Barbara Island earthquake Santa Catalina Island/Santa Barbara Island geology/Geophysics.

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Education/Oceanography/Curricula/methods/materials/surveys/surface/subsurface/low cost/college level/California/Marine geology/Santa Catalina Island/Pacific Ocean/United States/Los Angeles County/GEOREF.

2016. POSTMA H. WATER CIRCULATION AND SUSPENDED MATTER IN BAJA CALIFORNIA LAGOONS. NETHERLANDS JOURNAL OF SEA RESEARCH. 1965;2(4, JULY 1965. RECEIVED CUS, DEC.8,1965. P.566-604 IN ENGLISH, NO ABS., 13 FIGS., 5 TABLES, 11 REFS) UNKNOWN. SUSPENDED MATTER/CIRCULATION/TIDAL CURRENTS/TEMPERATURE MEASUREMENTS/SALINITY MEASUREMENTS/SEDIMENT/EDDY DIFFUSION/LAGOONS/TRANSPORT/ BAJA CALIFORNIA/LIGHT MEASUREMENTS/OceanAbstracts.

2017. Corille RE. An extra mid tibial spur in an island population of Trypoxylon tridentatum (Hymenoptera: Sphenida: Larrinae: Trypoxylonini). Pan Pac. Entomol. 1979;55(1):73 Address: DIV. ENTOMOL. PARASITOL., UNIV. CALIF., BERKELEY, CALIF. 94720. An additional midtibial spur was found on several of the larrine sphecid T. t. tridentatum Packard on Santa Cruz Island, Santa Barbara County, California [USA]. midtibial spur Hymenoptera/Sphenida/Larrinae/Trypoxylonini/Trypoxylon tridentatum Santa Cruz Island terrestrial biology/entomology.

2018. Williamson SW, Favuzzi J, Cox JL. Patchiness and nutritional condition of zooplankton in the California Current. FISH. BULL 1986;84(1):157-176. Zooplankton and water samples were collected from 81 stations off the California coast in April 1981 during CalCOFI cruise 8104 aboard the RV David Starr Jordan . Abundance, weight (wet and dry), digestive enzyme activity (laminarinase), and biochemical composition of three zooplankton species were determined. The indices measured provided estimates of zooplankton nutritional history on time scales of 1 day to 3 weeks. Upwelling was taking place along the California coast, from Point Conception to San Francisco during the study period. The resulting low surface temperatures were most evident south of San Francisco and just north of Point Conception. Just south of these areas patches of high phytoplankton standing crop (up to 14.7 mg chlorophyll a/m super(3)) were found. The two herbivorous species, Euphausia pacifica) and Calanus pacificus , showed highest laminarinase activity in areas with the highest density of phytoplankton: enzyme activity was particularly high in the waters off Point Conception. Zooplankters in the southern and offshore regions of the sampling grid showed very low digestive enzyme activity. Nematoscelis difficilis , which is not a herbivore, did not show these patterns.
California Current/zooplankton/spatial distribution/nutrient status/plankton surveys/enzymatic activity/biochemical composition/animal nutrition/Euphausia pacifica/Calanus pacificus/Nematoscelis difficilis/INE/California Current/spatial variations/patchiness/ASFA.

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California/Stratigraphy/Eocene/Oligocene/paleogeography/south/Channel Islands/north/San Nicolas Island/Santa Monica Mountains/Simi Hills/Peninsular Ranges/northwest/Tertiary/United States/plate tectonics/faults/conglomerate/Poway Suite/Sedimentary rocks/Clastics/terrigenous/genesis/clasts/fans/submarine/cones/Tectonics/Struct ure/schists/block/Tectonophysics/Subduction zones/rift/rates/age/models/Poway Conglomerate/Poway Group/GEOREF.

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2021. Cowen RK. The effect of sheephead Semicossyphus pulcher predation on red sea urchin Stronglyocentrotus franciscanus populations: an experimental analysis. Oecologia (Berl.) 1983;58(2):249-255
Address: SCRIPPS INST. OCEANOGRAPHY, UNIV. CALIF., MAIL CODE A-008, LA JOLLA, CALIF. 92093.
An experimental evaluation of the effect of sheephead (Semicossyphus pulcher) predation on red sea urchins (Strongylocentrotus franciscanus) was initiated at San Nicolas Island, California [USA] in Sept. 1980. All sheephead (n = 220) were removed from an area of .apprx. 12,700 m2 and subsequent changes in sea urchin numbers and microhabitat utilization were monitored along permanent transects for 24 mo. The sea urchins within the transects were also measured in situ to determine changes in the size frequency distribution of the population. Although sea urchins rank only 7th in relative importance in the sheephead's diet at San Nicolas Island, there has been a significant increase in sea urchin numbers in the experimental area (26% increase/yr) but there has been no change in the control site. There has been a slight increase in the proportion of sea urchins occupying exposed vs. sheltered microhabitats in the removal site. Changes in the size frequency distribution of the urchins were minimal (probably due to an observation period of only 1 yr); the size frequency distribution was unimodal and skewed to the left, indicating weak recruitment of urchins. Comparisons of sheephead densities and the percent of sea urchins in exposed microhabitats (i.e., available to predation by sheephead) were also made at 4 areas around San Nicolas Island and 3 areas in Baja California. In areas with low sheephead densities (0-35/ha), sea urchins were highly exposed, and in areas where. sheephead densities were high (200-500/ha), no urchins were exposed. Sheephead are capable of regulating the density and microhabitat distribution of sea urchin populations. These results are discussed in relation to other factors which may affect sea urchin populations. size frequency distribution/predation/sheephead /Semicossyphus pulcher/red sea urchins/Strongylocentrotus franciscanus/San Nicolas Island/ marine biology.

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In September and October 1980 the authors examined the relationships between food availability, depth, and chemical composition among 12 midwater fish species, from three adjacent areas of the eastern North Pacific: the eastern gyre, the California Current, and the transitional region between them. By comparing trends in chemical composition across a geographical productivity gradient, the influence of food availability could be examined both with and without depth as a dependent variable. In general, caloric density, lipids, and water content showed consistent trends along both vertical and horizontal gradients of food availability. Lipids and caloric contents were lowest among bathypelagic species and among fishes from the gyre. Water content was highest in the gyre and among deeper-living species. food availability/biochemical composition/marine fish/vertical distribution/pelagic environment/INE/California Current/INE/North Pacific Subtropical Gyre/INE/North Pacific/ASFA.

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California/Engineering geology/Geologic hazards/petroleum/gas/seepage/faults/Santa Barbara Channel/Environmental geology/Pollution/natural/United States/GEOREF.

2025. REID JL,J. PHYSICAL OCEANOGRAPHY OF THE REGION NEAR POINT ARGUELLO. CALIFORNIA. UNIVERSITY. INSTITUTE OF MARINE RESOURCES. IMR REFERENCE. NO. 65-19, JULY 1965. 39 PAGES, PLUS 53 FIGS., NO ABS., 25 REFS 1965
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PROGRESS REPORT/OXYGEN/DESCRIPTIVE/REGIONAL STUDIES/POINT ARGUELLO/ CALIFORNIA CURRENT/TEMPERATURE DISTRIBUTION/SALINITY DISTRIBUTION/ SURFACE CURRENTS/UPWELLING/SOUTHERN CALIFORNIA COAST/NUTRIENTS/OceanAbstracts.

2026. Cowen RK. Ecology and population biology of the sheephead, Semicossyphus pulcher, (feeding habits, sex-change, recruitment, predation, Labridae) [dissertation]. San Diego, California, USA: University of California; 1985. 147.
Various aspects of the feeding ecology, reproductive biology and population dynamics of the sheephead, Semicossyphus pulcher (Labridae), were investigated. The principal goal of the study was to identify the role of the sheephead in their community and how that role may be modified through interactions with both physical and biological processes. An experimental evaluation of the effect of sheephead predation on red sea urchins was initiated at San Nicolas Island, California in September 1980. All sheephead were removed from an area of approximately 12,700 m('2) and subsequent changes in sea urchin numbers and microhabitat utilization were monitored along permanent transects for 24 months. Following the removal, there was a significant increase in sea urchin numbers in the experimental area (26% increase/year) but there was no change in the control site. Further there has been a slight increase in the proportion of sea urchins occupying exposed versus sheltered microhabitats in the removal site. Comparisons of sheephead densities and the percent of sea urchins in exposed microhabitats at other sites corroborate the finding that

sheephead are capable of regulating the density and microhabitat distribution of sea. urchin populations. Further analysis of the feeding ecology of four populations of sheephead was examined with respect to such factors as site-specific prey availability, density of the sheephead population, and size of the sheephead. The pattern of recruitment of sheephead was examined throughout a major portion of its range over a period of 7-9 years using both field transects and age-structure data. The observed pattern of recruitment was compared to both spatial and year-to-year variations in the current regime within the region using both average flow data (CalCOFI data base) and satellite imagery. In the final chapter, the change in age and size of sexual changeover in sheephead was examined along an environmental gradient. The combined results of all these studies demonstrate the extent that both within-site and between-site processes may act to influence the role of an organism within its community. Various environmental conditions, e.g. food resources and current regimes, may influence an organism's growth rate, reproductive biology, role as predator and distribution. Thus, seemingly non-related interactions may have a profound influence on an organism's ecology. (Abstract shortened with permission of author.).
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Benthopelagic zooplankton were collected and preserved in situ in the benthic boundary layer of the Santa Catalina Basin, using a multiple sampling opening-closing net system attached to the DSRV Alvin. Gut content analysis performed with transmission electron microscopy (TEM) showed that the majority of benthopelagic calanoid copepods examined were predominantly detritivores. They had ingested detritus and associated bacteria, including metal-precipitating bacteria; no attached enteric bacteria were observed in the copepods guts. The gut particles indicated generalized feeding and qualitatively resembled material present in the environment at the time of collection, i.e. suspended particles, large fecal pellets, particles from the surface layer of the sediment, and phaeodia of phaeodarian radiolarians.
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and Analysis) program: OPTOMA 16, 20 May-23 June 1985. REP. U.S. NAV. POSTGRAD. SCH 1985; The OPTOMA (Ocean Prediction Through Observations, Modeling and Analysis) Program, seeks to understand the mesoscale (fronts, eddies, and jets), variability and dynamics of the California Current System and to determine the scientific limits to practical mesoscale ocean forecasting. Data acquired during Leg MI, Leg MII and Leg A include expendable bathythermographic data and current temperature density data profiles. Bucket surface temperature and water samples for salinity were taken at most CTD stations. These surface values were used for calibration purposes as well as contributions to the data base. Leg A also acquired continuous 2m thermosalinograph measurements, continuous meteorological data such as atmospheric pressure at a height of 2m and wind speed and direction at a height of 20m, and acoustic Doppler velocity data.
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This not reports possible cleaning by a juvenile California sheephead, a behavior previously unreported for this species.
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Sediments and organisms were examined for concentrations of organic and metal contaminants from near the Los Angeles County (JWPCP) municipal outfall at Palos Verdes (PV) station 7-3, the Los Angeles City (Hyperion) municipal outfall at Santa Monica Bay (SMB) station 6-4, and reference station SMB 2-3 near Malibu Beach. Flows and mass emission rates of suspended solids, PCBs, Cd and Zn were similar at the two outfalls. Mass emission rate of copper was almost twice as high from Hyperion as from JWPCP, while mass emission rate of DDTs was an order of magnitude higher from JWPCP than from Hyperion. Surficial sediments at PV 7-3 were enriched in most contaminants relative to SMB 6-4 and relative to the mass emission rates of contaminants from the JWPCP and Hyperion outfalls. The degree of contamination of organisms by DDTs increased with proximity to PV 7-3 but contamination by PCBs was similar at PV 7-3 and SMB 6-4.

outfalls/heavy metals/PCB/DDT/marine pollution/wastewater treatment/industrial wastes/domestic wastes/sediment pollution/pollution effects/marine organisms/marine fish/marine invertebrates/cadmium/zinc/copper/INE/USA/California/Southern California Bight/ASFA.

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Sensible heat, water vapor, aerosols, gaseous pollutants, and electric charge are transported vertically in the marine boundary layer by turbulent processes. The standard eddy correlation method for measuring fluxes from aircraft requires inertial navigation systems, considerable computer power, and large aircraft with gust probes on specially engineered booms to correct for aircraft motions. The development of a method for obtaining routine, high quality, relatively inexpensive measurements of at least one boundary-layer flux profile from light aircraft could permit enhancement of boundary-layer research on a new statistical scale. The flux of electric charge (called the eddy current) can be inferred from simple dc measurements of electric field intensity and conductivity from a light aircraft. Recent aircraft measurements off the California coast show good correlation of surface layer eddy current peak values with the surface water vapor flux and the convective mixed layer velocity, w sub(*). It is suggested that the eddy current could be used to infer the flux profiles of other passive scalars. Atmospheric electrical measurements from aircraft have the potential for providing important new information for pollution modeling and studies of boundary-layer meteorology.
atmospheric boundary layer/eddy kinetic energy/aircraft/turbulent transfer/kinetic energy/OceanAbstracts.

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after the spent female leaves. Male defense of the egg-laden nest is vigorous against all conspecifics and some alga-searching fish predators, but minimal or non-existent for other fish species.
territoriality/courtship/spawning/parental care/age/body weight/nuptial color pattern/nest defense/spawning behavior/reproductive behavior/parental behavior Pisces/Clinidae/giant kelpfish/Heterostichus rostratus/Gelidium nudifrons/Santa Catalina Island/marine biology/ichthyology.

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optical water types/satellite sensing/variability/time series/INE/USA/ California/ASFA.

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Serial Sediment cores, profiles from past 150 yr, as well as 1400-1500 yr B.P.; distinct increase in mercury toward surface. B; Bibliography and Index of Geology (1969-present).
California/Geochemistry/Mercury/sediments/Santa Barbara Basin/Abundance/Holocene/Santa Barbara/offshore/Composition/Chemical composition/distribution/variations/varves/cores/United States/Geochronology/Varved clay/Interpretation/GEOREF.

2054. Coyer JA. The invertebrate assemblage associated with the giant kelp Macrocystis pyrifera at Santa Catalina Island, California, USA: a general description with emphasis on amphipods, copepods, mysids and shrimps. U.S. Natl. Mar. Fish. Serv. Fishery Bulletin 1985;82(1):55-66
The motile invertebrate assemblage associated with the giant kelp, M. pyrifera, fronds was examined monthly from June 1975-Dec. 1976, at Santa Catalina Island, California. Replicate samples were collected from each of 3 vertical zone (canopy [C], middle [M], bottom [B]). The number of species collected from all zones was 114 and ranged from 51 to 75 for any given month. Amphipods, copepods,

mysids and shrimps comprised the majority of invertebrate abundance (86 [C], 92 [M], 93% [B]) and biomass (90 [C], 89 [M], 86% [B]). Gammarid amphipods dominated the assemblage in numbers (34 [C], 60 [M], 51% [B]), biomass (34 [C], 68 [M], 67% [B]), and number of species (20). The assemblage displayed 3 patterns of vertical stratification within the Macrocystis forest: The mean number of species progressively decreased from the bottom to the canopy (several species displayed zone preferences); more individuals and a greater total biomass were present in the lower zones than in the canopy; and the mean lengths of gammarids, mysids, and shrimps were significantly larger and proportionately greater numbers of large individuals were present in the canopy than in either of the lower zones. vertical zone stratification giant kelp/Macrocystis pyrifera/amphipods/copepods/mysids/shrimps/Santa Catalina Island/marine biology.

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In the Saronikos Gulf, below about 100 m the water is almost stagnant, essentially isothermal (around 14 degree C) and it has practically uniform salinity. The level and the mechanism of enrichment in nutrients is discussed. The age of the water estimated from nutrient budget calculations is between one and eight years. The replacement time of water is similar to that found in the Santa Barbara basin, but different from those of the Cariaco Trench and the Black Sea. nutrients (mineral)/residence time/MED/Greece/Saronikos Gulf/ASFA.

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Serial B; Bibliography and Index of Geology (1969-present).
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The mollusk assemblage associated with giant kelp (Macrocystis pyrifera) fronds off Santa Catalina Island, California was examined monthly from June 1975 through December 1976. Mollusks comprised 1.0, 1.6, and 2.9% (by number) of all invertebrates associated with kelp fronds in the canopy, middle, and bottom zones of the kelp forest, respectively. Forty one species (36 gastropods, 5 bivalves) were collected, ranging from 14-28 for any given month. The mean number of species present was greater in the bottom (16.9) and middle zones (15.6) than in the canopy (9.3). Most species (29) were rare in occurrence (< 1/kg kelp) and small (< 4 mm) in size. Throughout the study, more mollusks were found in the bottom zone than in the middle; fewest numbers were present in the canopy. Most species reflected this general pattern; only the nudibranch Polycera tricolor was more abundant in the canopy than in the lower zones. As a group, mollusks were most abundant on Macrocystis fronds during summer-fall.
taxonomic diversity/abundance/vertical distribution/seasonal variation Mollusca/Gastropoda/bivalves/Bivalvia/nudibranch/Polycera tricolor/Macrocystis pyrifera/Phaeophyta/Macrocystis pyrifera/Santa Catalina Island marine biology/ecology.

2058. Larraneta MG, Vazquez A. A relationship between the decrease in solar constant and the north-south flow in the

California Current. INTERNATIONAL SYMPOSIUM ON THE MOST IMPORTANT UPWELLING AREAS OFF WESTERN AFRICA (CAPE BLANCO AND BENGUELA). SIMPOSIO INTERNACIONAL SOBRE LAS AREAS DE AFLORAMIENTO MAS IMPORTANTES DEL OESTE AFRICANO (CABO BLANCO Y BENGUELA). 1985;1:213-221. The following hypothesis is exposed: Variations of the oceanic currents depend mainly on these two factors: (a) the variation of the solar energy flux; and (b) the energy dissipated from Earth's variable rotation. In oceanic currents having an E-W direction the main factor will be polar motion, but in currents N-S this factor will be variations of the solar energy flux. Percent of decrease in solar constant and coefficient of variation for the first Empirical Orthogonal Function in the California Current, as an example of N-S current, have been used. Relationship between these two factors appears to be significant, and the time lag between changes of the solar energy flux and response of the current flow seems to be about 3-9 months. A seasonal variation of the velocity of the Kuroshio seems to confirm this solar energy role in oceanic currents.
oceanic currents/earth rotation/solar radiation/current velocity/INE/ California Current/ISE/California Current/seasonal variations/ASFA.

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California/Economic geology/Petroleum/gas/seeps/Santa Barbara Basin/continental shelf/north/United States/hydrocarbons/natural/GEOREF.

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Report summarizes existing data describing the physical, chemical, and biological aspects of the intertidal, subtidal, and adjacent land areas. Current patterns of land/water use, actual or potential pollution threats, and special water quality requirements also are addressed.
surveys Santa Catalina Island/Little Harbor to Ben Weston and Binnacle Rock to Jewfish Point/marine biology/pollution.

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crude oil/ecology/marine biology/water pollution/metals/southern california bight/continental shelves/crustacea/mollusca/echinodermata/annelida/abundance/hydro carbons/enviro nmental impacts/tables
data/sites/Thompson/invertebrates/outer continental

shelves/baseline studies/species diversity/Pieper zooplankton/Eganhouse/chemical oceanography/MINERALS MANAGEMENT SERVICE.

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Serial; Abstract B; Bibliography and Index of Geology (1969-present). California/Structural geology/Vertical tectonics/Santa Barbara Channel/Tectonics/Uplifts/Quaternary/United States/Sangamon/Changes of level/GEOREF.

2064. Fuhrman JA, Azam F. Thymidine Incorporation as a Measure of Heterotrophic Bacterioplankton Production in Marine Surface Waters: Evaluation and Field Results. MAR. BIOL 1982;VOL. 66, NO. 2:pp. 109-120
Mar. Sci. Res. Cent., State Univ. New York Stony Brook, Long Island, NY 11794, USA.
To assess bacterioplankton production in the sea, a procedure for measuring growth based on incorporation of tritiated thymidine into DNA has been developed; the accuracy of this procedure was tested under a variety of laboratory and field conditions. By autoradiography, the authors have found that for all practical purposes their technique is specific for the nonphotosynthetic bacteria and that virtually all of the "active" bacteriaq (one-third of more of the total countable bacteria) take up thymidine. They also measured (1) the intracellular isotope dilution of thymidine assessed by parallel experiments with labeled phosphorus, and (2) DNA content of natural marine bacteria (0.2 to 0.6 mu m size fraction); a conversion factor derived from these data permitted estimation of production from thymidine incorporation results. Data from Southern California Bight waters derived with this method are presented.
nucleosides/bacteria/plankton/production/heterotrophs/measuring methods/DNA/uptake/California Coast/thymidine/Southern California Bight/OceanAbstracts.

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competition/predation/feeding biology/Strongylocentrotus purpuratus/purple sea urchin/Strongylocentrotus franciscanus/red sea urchin/Lytechinus anamensus/white sea urchin/Anacapa Island/marine biology/ecology.

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to be expected in wild, free living seabirds.
oil spills/oil/pathology/histopathology/oil pollution/pollution effects/Ptychoramphus aleuticus/Uria aalge/exposure/ASFA.

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Address: (not present address, though) Div. Sci. & Math., Marymount Palos Verdes Coll., Rancho Palos Verdes, CA 90274.
Seasonality, survivorship and individual growth patterns of Pelagophycus porra were studied. Bi-weekly measurements were obtained from a cohort of seventy plants growing at 17-21 m depth off Santa Catalina Island, California, beginning with the undivided lamina stage and continuing until plant death or loss. Pelagophycus is an annual, as 86% of the cohort disappeared within 12 months. Stipe elongation rates of the cohorts had a maximum mean rate of 0.multiplied by.7 cm/d from July through November. The zone of greatest blade elongation was 10-30 cm from the blade-stipule junction. Blade growth ranged from 5.multiplied by.1-6.multiplied by.5 cm/d during July and August, and 2.multiplied by.7-3.multiplied by.2 cm/d from January through March. Rates of stipe elongation and blade growth in naturally occurring Pelagopycus x Macrocystis hybrids were similar to Pelagophycus , but longevity was lower. population studies/growth patterns/survival/seasonality/survivorship/growth patterns/stipe length/blade elongation/hybrids Laminariales/Lessoniaceae/elk kelp/Pelagophycus porra/Pelagophycus x Macrocystis hybrids Santa Catalina Island/marine biology/phycology/botany.

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Marine Phys. Lab., A-005, Scripps Inst. Oceanogr., La Jolla, CA 92093, USA. Small-scale (100 to 2,400 m) horizontal distributions of major taxonomic categories (class and order) of zooplankton were measured at a depth of 90 m with an opening-closing plankton net over a 3 d period in October 1978 in the California Current. Some zooplankton categories showed evidence of diurnal vertical migration, while others had long-period temporal changes in mean abundance. Variance-to-mean ratio for large copepods and euphausiids was higher at night than during the day, while the opposite was true for chaetognaths and pteropods. Within a given category, the variance-to-mean ratio generally increased with a category's abundance. Spatial abundance variations were characterized by trends (i.e., fluctuations larger than length of the net hauls) in some taxonomic categories. Correlation analysis

of taxonomic counts implied that significant biological interactions occurred. Comparisons of wet weight biomass to taxonomic counts indicated that biomass was usually less variable than taxonomic counts. horizontal distribution/zooplankton/Copepoda/Euphausiacea/Chaetognatha/abundance/California current/US West Coast/pteropoda/OceanAbstracts.

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Characteristics of the diet of black surfperch were compared between islands where it occurs with and without a congener, the striped sufrperch. Several hypotheses were considered to explain observed dietary differences between allopatric and sympatric populations of black sufrperch. diets/foraging behavior/competition/allopatry/sympatry Embiotoca lateralis/black surfperch/Embiotoca lateralis/striped surfperch/Santa Cruz Island/Santa Catalina Island/San Clemente Island/marine biology/ecology.

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Serial Crustal drift of 1 cm/y, shallow magma chambers (basaltic). B; Bibliography and Index of Geology (1969-present). Azores/Volcanology/San Miguel Island/Volcanoes/Atlantic Ocean/history/genesis/Igneous rocks/Volcanic/Acidic/composition/Geophysical surveys/Seismic surveys/ground/magmas/Basaltic/Sea floor spreading/rates/GEOREF.

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Archeology/prehistoric marine mammals/mammalia Point Bennett, San Miguel Island paleontology/marine biology/marine archaeology/mammalogy/anthropology.

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eganhouse/geochemistry/chemical oceanography/continental

shelf/sediments/tectonics/seismic surveys/deformation/Santa Barbara Island/Santa Rosa-Cortes Ridge/borderland/transport/slump/structures/faults/MINERALS MANAGEMENT SERVICE.

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Address: Calif. Dep. Transp., Los Angeles, Calif. engineering geology/shorelines/erosion/littoral drift/sedimentation/erosion control/stabilization Santa Barbara County/Ventura County/Punta Gorda/Santa Barbara Channel/engineering geology/environmental geology.

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An analysis of the relationship between organic matter and liquid and plastic limits, and grain-specific gravity of a marine sediment was accomplished by making a stepwise adjustment in the organic content of that sediment. The sample use was from Santa Barbara Basin (off southern California) and is typical of fine-grained marine sediments: it is a clayey silt with a common suite of minerals and other constituents. During the experiment, texture and composition (except organic content) were constant; only the quantity of natural, indigenous organic matter was changed. A strong linear relationship exists between the independent variable, the amount of organic carbon present in the sample, and the dependent variables. Liquid limit, plastic limit, and plasticity index all increased with increasing organic content over the range studied (0.57-3.20% organic carbon). Grain-specific gravity decreased. All had linear correlation coefficients (r) greater than !0.90! and r super(2) values greater than 90%, except the plasticity index (83%). sediment properties/geotechnology/organic matter/plasticity/soil mechanics/INE/USA/California/Santa Barbara Basin/ASFA.

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tectonic models. B; Bibliography and Index of Geology (1969-present).
California/Stratigraphy/Tertiary/lithostratigraphy/south/United States/continental drift/lower Tertiary/Sedimentary rocks/Clastics/terrigenous/Conglomerate/Tectonophysics/Plate tectonics/models/GEOREF.

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The principal objectives of this study were (i) to determine the extent of coupling between phytoplankton and microheterotrophs on the shelf off Southern California, (ii) to compare different measures of primary and bacterial secondary production, and (iii) to assess whether sampling times should be as strictly controlled for microheterotroph as for autotroph studies. Two diel cycles (May and October) were studied by sampling an isotherm as the ship followed paired submerged drogues. We found significant diel changes of chlorophyll, super(14)C bicarbonate incorporation, bacterial abundance and thymidine incorporation, frequency of dividing bacterial cells (FDC), abundance of non-pigmented flagellates, particulate organic carbon and nitrogen and their ratios, and dissolved oxygen.
plankton/circadian rhythms/nannoplankton/chlorophylls/abundance/enviromental factors/amino acids/dissolved oxygen/quantitative distribution/light effects/INE/USA/Southern California Bight/ASFA.

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geophysical surveys/tectonophysics/seismic surveys/mantle/refraction methods/marine methods/elastic waves/P-waves/velocity structure/traveltime/oceanic crust/upper mantle/plate tectonics Santa Barbara Channel geology/solid earth geophysics/.

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distant islands. CAN. J. ZOOL 1985;63(9):2162-2164.
Captive male California sea lions were twice flown to offshore breeding islands and released. Three animals returned to their pen in San Diego Bay after discharge on San Clemente Island, about 115 km away. Two of four returned to the same facility from San Nicolas Island, about 240 km away. The fastest sea lion returned in 2 days from San Clemente and in 4 days from San Nicolas. This is the first evidence for such specific east--west navigation by sea lions and suggests that these animals are good navigators.
homing behavior/navigation behavior/animal navigation/marine mammals/Zalophus californianus/INE/USA/California/San Diego Bay/ASFA.

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Serial; Abstract Neogene east-west structural trends, three environments, fan channels, distal sheet sands (Quaternary), fault blocks, submarine terrace deposits. B; Bibliography and Index of Geology (1969-present). California/Sedimentary petrology/Sedimentation/Quaternary/Santa Barbara Basin/United States/tectonics/Environment/Basins/deposition/Structure/Evolution/Changes of level/GEOREF.

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SIO, La Jolla, CA.
Prey (chiefly euphausiids and copepods) eaten by two myctophids (lanternfishes) are compared from incidence in fish stomachs and from abundance in the environment. One lanternfish species, Triphoturus mexicanus , lives in the California Current, and the other, T. nigrescens , lives in the central Pacific Ocean. Although these two environments are very different physically and biologically, the feeding habits of the two lantern-fishes are surprisingly similar. Prey biomass is 94% euphausiids, 3% copepods, and 3% other organisms for T. mexicanus and 88% euphausiids, 4.5% copepods, and 7.5% other organisms for T. nigrescens ; the difference between the fish species is not significant when tested statistically.
Triphoturus/Osteichthyes/Myctophidae/Diet/Feeding habits/California Coast/Pacific Ocean Central/California Current/T/mexicanus/T/nigrescens/lantern fish/OceanAbstracts.

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text/chemical oceanography/Eganhouse/Venkatesan/MINERALS MANAGEMENT SERVICE.

2092. Spiegel Z. Problems of the Triassic stratigraphy in the Canadian River Basin, Quay, San Miguel and Guadalupe Counties, New Mexico. N. M. Gel. Soc., Annu. Field Conf. Guideb. 1972(23):p.79
Serial B; Bibliography and Index of Geology (1969-present). New Mexico/Stratigraphy/Triassic/lithostratigraphy/Canadian River Basin/Quay County/San Miguel County/Guadalupe County/United States/Chinle Formation/Santa Rosa Sandstone/Redonda Formation/upper Triassic/Sedimentary rocks/GEOREF.

2093. Fleischer P. Mineralogy of hemipelagic basin sediments, California continental borderland. Technical report. 1971;:211.

minerals/continental shelves/marine geology/California/clay minerals/carbonates/x-ray diffraction analysis/egan/ocean bottom sampling/particle size/identification/quantitative analysis/rivers/calcium compounds/sedimentation/geochemistry/silt/sand/potassium compounds/Eganhouse/chemical oceanography/MINERALS MANAGEMENT SERVICE.

2094. Brinton E, Townsend AW. Euphausiids in the Gulf of California--The l957 Cruises. Conf. Nonconsumable Living Resources of the Calif. Current: Interact. with Consumable Resources & Their Exploit.CALIF. COOP. OCEANIC FISH. INVESTIG. REPTS 1980;VOL. 21, NO Marine Life Res. Group, SIO, La Jolla, CA.
Euphasiid crustaceans in the Gulf of California were examined from four bimonthly CalCOFI grid cruises during February through August of 1957. Of the nine species found to regularly inhabit the Gulf, Nematoscelis difficilis and Nyctiphanes simplex are common to the warm-temperate California Current. These have the broadest ranges in the Gulf. Euphausia eximia , a species having high densities at zones considered marginal to the eastern tropical Pacific, also varies little in range during the year, consistently occupying the southern half of the Gulf. Tropical Nematoscelis gracilis shows a range complementary to that of N. difficilis . The distributions and abundances of the species and their life stages, are described in relation to seasonal variation in flow and temperature in the Gulf.
Nematoscelis/Nyctiphanes/Euphausia/Euphausiacea/Crustacea/Range extension/Zoogeography/Gulf of California/California Current/Seawater temperatures/Life histories/Seasonal variations/Distribution/Abundance/N/difficilis/N/simplex/E/eximia/OceanAbstracts.

2095. Crandall GJ, Luyendyk BP, Reichle MS, Prothero WA. A marine seismic refraction study of the Santa Barbara Channel, California. Mar. Geophys. Res. 1983;6(1):15-37
Address: Hughes Aircraft, 4833 Fallbrook Ave. (MS, W-75) Canoga Park, CA 91304, USA.
Seismic data from a 186 km-long refraction profile in the Santa Barbara Channel have been interpreted using several velocity inversion techniques. Travel-time inversion gives a V sub(p) of 6.3 km sec super(-1) at 7.2 km depth above 7.2 km sec super(-1) at 14.4 km depth at the western end of the channel. At the eastern end, solutions suggest three sediment refractors overlying V sub(p) of 6.4 km sec super(-1) at 7.3 km depth, above 7.0 km sec super(-1) at 11.6 km depth, above mantle arrivals with V sub(p) of 8.3 km sec super(-1) at 21.8 km depth. The velocity structure determined by these methods suggests that the channel has a sedimentary fill of from 4 to 7 km and a layer of mafic plus ultramafic rock 14 to 17 km thick. The greatest thicknesses of sediments are restricted to east of Point Conception. The velocity data also suggest that the Franciscan formation may not be present beneath the channel. Rather, the crust here may represent a thickened portion of the Coast Range ophiolite.
seismic refraction profiles/sediment density/sedimentary structures/sedimentary rocks/seismic data/Santa Barbara Channel/geology/seismology.

2096. Alvarino A. The depth distribution, relative abundance and structure of the population of the Chaetognatha Sagitta scrippsae Alvarino 1962, in the California Current off California and Baja California. AN. INST. CIENC. MAR LIMNOL. UNIV. NAC. AUTON. MEX. (ZOOL.) 1983;10(1):47-84.
Samples of Sagitta scrippsae were obtained in 1969 off California and Baja California, from day and night hauls at identical

locations and depth strata, in winter, spring, summer, and fall cruises. The greatest number of specimens was collected from August-September. S. scrippsae occurred off California and Baja California in waters deeper and farther west and south in August-September and was present in the 0-25 stratum only in February-March 1969. The distribution of S. scrippsae off California and Baja California shows a positive correlation with the intensity of the California current, gradually decreasing in numbers as the California current losses its distinctiveness. Therefore, the species could be considered as an indicator of the northern flow off California and Baja California, and to estimate the degree of mixing taking place in the California current system.
vertical distribution/indicator species/current direction/Sagitta scrippsae/seasonal variations/population number/population structure/ISE/Mexico/Baja California/INE/USA/California/INE/California Current/ISE/California Current/ASFA.

2097. Soutar A. Micropalaeontology of anaerobic sediments and the California Current. The micropalaeontology of oceans, illus. (incl. sketch map). Camb. Univ. Press. Cambridge, 1971. 1971:p. 223-230
Fish scales, calcareous and siliceous microfossils present in varves, seasonal changes, relation to sardine industry. B; Bibliography and Index of Geology (1969-present).
Pisces/Distribution/Scales/ecology/Holocene/Pacific Ocean/California Current/Sediments/Environmental analysis/Anaerobic/Sedimentary structures/Planar bedding structures/Varves/Sedimentary petrology/GEOREF.

2098. Antonelis GA, Fiscus CH. Pinnipeds of the California Current. Nonconsumable Living Resources of CA Current: Interactions with Consumable Resources & Their Exploit.CA COOP. OCEANIC FISH. INVEST. REPTS;VOL. 21, NO Marine Mammal Div., Northwest and Alaska Fish. Ctr., NMFS, Sand Point Way, NE Seattle, WA.
There are six species of pinnipeds-California sea lion, Zalophus californianus ; northern sea lion, Eumetopias jubatus ; northern fur seal, Callorhinus ursinus ; Guadalupe fur seal, Arctocephalus townsendi ; harbor seal, Phoca vitulina richardsi ; and northern elephant seal, Mirounga angustirostris - that inhabit the study area of the California Cooperative Oceanic Fisheries Investigations (CalCOFI). The numbers of animals in each population are given; the size, distribution, and seasonal movements are described. The known prey species of the pinnipeds are listed for each species.
Zalophus/Eumetopias/Callorhinus/Arctocephalus/Phoca/Mirounga/Pinnipedia/Mammalia/Size composition/Zoogeography/California Current/Abundance/Migration/Predation/Diet/OceanAbstracts.

2099. Crawford D. U. S. offshore; U. S. geology tells potential tale. Offshore 1982;42(2):47-49, 51-52, 55
survey organizations/Atlantic Coastal Plain/Gulf Coastal Plain/current research/economic geology/U.S. Geological Survey/fuel resources/petroleum/natural gas/offshore/exploration/continental shelf/outer shelf/resources/reserves Atlantic Coastal Plain/Atlantic Ocean/Gulf Coastal Plain/Gulf of Mexico/Santa Barbara Channel/Alaska/Gulf of Alaska/economic geology/energy sources.

2100. Casey RE, Partridge TM, Sloan JR. Radiolarian life spans, mortality rates, and seasonality gained from Recent sediment and plankton samples. Planktonic Conf., Proc. 1971;1(2):p.159-165
Serial Life spans of one month found for two species, seasonality noted in upper 200 meters and in varved sediments of Santa Barbara

Basin (Pacific Ocean), possible correlation with exotics and their invading water masses, seasonality also found in Miocene varved sediments. B; Bibliography and Index of Geology (1969-present). Radiolaria/Faunal studies/Holocene/Pacific Ocean/Santa Barbara Basin/growth/reproduction/seasonality/Paleontology/Miocene/United States/California/GEOREF.

2101. Tont SA, Delistraty DA. Effects of Climate on Terrestrial and Marine Populations. Nonconsumable Living Resources of CA Current: Interactions with Consumable Resources & Their Exploit.CA COOP. OCEANIC FISH. INVEST. REPTS;VOL. 21, NO SIO, La Jolla, CA.
Climate appears to be a major extrinsic regulatory agent for some organisms, most notably the more r-selected ones. Random meteorological events are reflected in environmental and population variability and instability. The variability associated with marine populations in the California Current system is largely due to climatic fluctuation. The interplay of short (upwelling) and longer term (water mass influx) changes in the physical environment have been shown to regulate diatom blooms.
Population dynamics/Marine organisms/California Current/California Coast/Climates/Environmental conditions/Upwelling/Water masses/Dia toms/climatic-biological interaction/OceanAbstracts.

2102. Crippen RE, Luyendyk BP, Hajic EJ. High resolution structural mapping in the Santa Barbara Channel. Geological Society of America, Cordilleran Section, 78th annual meeting. Abstracts with Programs - Geological Society of America 1982;14(4):157
Address: Univ. Calif., Dep. Geogr., Santa Barbara, CA Conference: Geological Society of America, Cordilleran Section, 78th annual meeting. Anaheim, CA, April 19-21, 1982.
oceanography/geophysical surveys/continental shelf/surveys/sonar methods/geophysical methods/acoustical surveys/reflection/seismic surveys/tectonics/Monterey Formation/folds/Santa Cruz Island Fault/Dume Fault/anticlines/Santa Rosa Island Fault/high-resolution methods/fold geometry/seismic reflection/faults Anacapa Passage/Santa Barbara Channel/marine geology/oceanography.

2103. Blumberg AF, Kantha LH, Herring HJ, Mellor GL. A hindcast of the circulation in the Santa Barbara Channel during spring 1983. APPLICATIONS OF REAL-TIME OCEANOGRAPHIC CIRCULATION MODELING: SYMPOSIUM PROCEEDINGS. 1986;:285. A joint program of field observations and numerical modeling has been undertaken in the Santa Barbara Channel to acquire a better understanding of its circulation. The program is designed to provide the best description possible of the circulation in the region on synoptic, seasonal and climatological time scales. The modeling component is structured to augment and supplement the field observational effort undertaken by Science Applications International Corporation (SAIC/NW). Parallel development of the field observational and modeling efforts is intended to provide for an optimal design of both. The numerical modeling component is centered on the use of a three-dimensional prognostic shelf circulation model. A second-moment turbulence closure model has been used to provide for a realistic parameterization of the vertical mixing processes. The model variables are the three components of velocity, temperature, salinity, turbulence kinetic energy and turbulence macroscale. The circulation patterns presented utilize the data sets collected during a pilot observational program carried out in April-June, 1983, for initialization and forcing. shelf dynamics/continental shelves/wave hindcasting/INE/Santa Barbara Channel/mathematical models/ASFA.

2104. Delaca TE, Lipps JH. The mechanism and adaptive significance of attachment and substrate pitting in the foraminiferan Rosalina globularis d'Orbigny. J. Foraminiferal Res. 1972;2(2):p.68-72
Serial Attaches to any firm substrate by organic membrane, may cause pits to form on substrate, provides protection from turbulent shallow waters, Pleistocene, Holocene, California. B; Bibliography and Index of Geology (1969-present).
Foraminifera/Rotaliina/Pleistocene/Holocene/California/morphology /biology/ecolo gy/Rosalina globularis/United States/Bodega Head/Santa Barbara Island/Marine/Paleontology/GEOREF.

2105. McGowan JA, Miller CB. Larval Fish and Zooplankton Community Structure. Nonconsumable Living Resources of CA Current: Interactions with Consumable Resources & Their Exploit.CA COOP. OCEANIC FISH. INVEST. REPTS;VOL. 21, NO
SIO, La Jolla, CA.
The macrozooplankton samples from two CalCOFI cruises have been analysed for the abundance of most of the important species of zooplankton. The data show that there are large changes in the degree of numerical dominance from place to place and that the identity of the dominant species varies strongly from sample to sample. In all of these samples larval fish were rare to very rare as compared to other species. Many of these other species must be competitors of larval fish, and some are known predators.
Fish larvae/Zooplankton/Abundance/Competition/Predators/California Current/Cruises/Species composition/macrozooplankton/OceanAbstracts.

2106. Crittenden R, Muhs DR. Cliff-height and slope-angle relationships in a chronosequence of Quaternary marine terraces, San Clemente Island, California. Zeitschrift fur Geomorphologie 1986;30(3):291-301
Address: Dept of Geog, Sci Hall, Univ of Wisconsin, Madison, WI 53706. Indicates a regular increase in slope angle with the logarithm of the cliff height and cliffs of a given height show a decline in maximum slope angle with time. Overall, the relationships are weaker than for stream terraces and fault scarps in unconsolidated materials, but the method can probably be used successfully to distinguish early, middle and late Quaternary fault scarps or sea cliffs in consolidated materials.
slope angle/cliff height/stream terraces/fault scarps/Quaternary/sea cliffs/geomorphology/shore features/marine terraces/angular unconformities/chronostragraphy/absolute age/corals/molluscs/San Clemente Island/geology/geomorphology/geochronology.

2107. Ford RG. A risk analysis model for marine mammals and seabirds: A Southern California Bight scenario, final report. Prep. for: U.S. Dep. of the Interior, Minerals Management Service. OCS Study MMS 85-0104. 1985;:236. MINERALS MANAGEMENT SERVICE.

2108. Mooers CNK. Experience with real-time mesoscale ocean prediction (analysis and forecast) in the EEZ off California. APPLICATIONS OF REAL-TIME OCEANOGRAPHIC CIRCULATION MODELING: SYMPOSIUM PROCEEDINGS. 1986;:189-210. Since March 1982, the OPTOMA (Ocean Prediction Through Observation, Modeling, and Analysis) Program, a joint NPS/Harvard project sponsored by ONR, has been: exploring the capabilities and limitations to practical mesoscale ocean prediction with an ODPS (Ocean Descriptive/Predictive System) in a 150km by 150km "test block" of ocean off Northern California; and, using the resultant fields from ODPS to improve our

understanding of the kinematics, dynamics, and energetics of the California Current System (CCS). The ODPS consists of (quasi-geostrophic) dynamical and (objective analysis) statistical models developed at Harvard, plus observing systems, including shipborne, airborne, moored buoy, and satellite remote sensing components. Altogether, approximately equals 30 synoptic realizations have been acquired, which form the basis for calculating dynamical and statistical modes, and the correlation functions needed in the statistical model. Two real-time ocean prediction experiments have been conducted to date, a pilot experiment for 1 mo. in summer 1983 and a prototype experiment for 2 mo. in summer 1984, with promising results.
Exclusive Economic Zone/mesoscale features/ocean circulation/oceanography/forecasting/realtime systems/California/INE/USA/ California/prediction/real-time ocean prediction/ASFA.

2109. Morin RW. Late Quaternary biostratigraphy of cores from beneath the California Current. Micropaleontology. 1972;17(4):p.475-491 Serial Planktonic foraminifera, Radiolaria, five faunal changes occur at or slightly above or below lithic Pleistocene-Holocene boundary, paleoclimatology, period of warming noted above boundary, Pacific Ocean. B; Bibliography and Index of Geology (1969-present).
Foraminifera/Biostratigraphy/Planktonic/paleoclimatology/Quaternary/Pacific Ocean/California Current/Radiolaria/Stratigraphy/GEOREF.

2110. Anderson DW, Gress F, Mais KF, Kelly PR. Brown Pelicans as Anchovy Stock Indicators and Their Relationships to Commercial Fishing. Nonconsumable Living Resources of CA Current: Interactions with Consumable Resources & Their Exploit.CA COOP. OCEANIC FISH. INVEST. REPTS;VOL. 21
Dept. Wildlife and Fish. Biol., Univ. CA, Davis.
Pelicanus/Aves/Bioindicators/Fish stocks/Endangered species/Anchovies/Engraulidae/California Coast/Commercial fisheries/Abundance/Food resources/P/occidentalis californicus/Southern California Bight/OceanAbstracts.

2111. Crouch JK, Bachman S. Regional post-late Miocene thrust faulting in offshore central California; implications for wrench-style tectonics. 1984 AAPG annual convention with divisions; SEPM/EMD/DPA. AAPG Bulletin 1984;68(4):467 Address: Nekton, San Diego, CA Conference: AAPG annual convention with divisions; SEPM/EMD/DPA. San Antonio, TX, United States, May 20-23, 1984.
geophysical surveys/tectonics/seismic surveys/Miocene/Neogene/Tertiary/faults/thrust faults/wrench faults/offshore/basins/Hosgri Fault/folds/compression/Cenozoic Point Conception/Santa Maria Basin/Santa Barbara Channel/Hosgri Fault/structural geology.

2112. Robinson AR, Carton JA. Real-time data assimilation, mesoscale dynamics and dynamical forecasting. APPLICATIONS OF REAL-TIME OCEANOGRAPHIC CIRCULATION MODELING: SYMPOSIUM PROCEEDINGS. 1986;:pp. 79-92. The Harvard group is carrying out research on the optimal estimation of oceanic fields, focusing on real data assimilation in dynamical models. Their conceptual basis is the Descriptive-Predictive System which consists of an observational network, a statistical model, and a dynamical model to be used both for practical forecasting and for dynamical analysis. Among the present studies are: a hierarchy of coupled models for studies of the general circulation, transport and dispersion, developed in conjunction with Sandia National Laboratories; a real-time experimental prediction program in the California current, in

conjunction with the Naval Postgraduate School; development of an ocean-going forecasting system and studies of sampling design for optimal initialization of the forecasts; and studies of Gulf Stream dynamics and forecasting, including assimilation of satellite altimeter and Rafos float data.
data processing/dynamic analysis/statistical analysis/ocean circulation/oceanography/realtime systems/real-time data/Oceanic Descriptive-Predictive System/ASFA.

2113. Wilson HM. New seismic tools led to Santa Ynez oil. Oil Gas J. 1972;70(26):p.116
Serial Analysis of seismic data from the Santa Barbara channel, California. B; Bibliography and Index of Geology (1969-present). California/Economic geology/Petroleum/Santa Barbara channel/Santa Ynez/United States/exploration/seismic surveys/Geophysical surveys/marine/GEOREF.

2114. Eppley RW, Cullen JJ. Chlorphyll Maximum Layers of the Southern California Bight and Possible Mechanisms of Their Formation and Maintenance. OCEANOLOGICA ACTA 1981;VOL. 4, NO. 1:pp. 23-32
Inst. Marine Resources, SIO, La Jolla, California 92093, USA. One hundred forth-three vertical profiles of in vivo fluorescence taken in the Southern California Bight from 1974 through 1979 were studied in relation to other information from the same stations. Subsurface fluorescence maximum layers are usually present, and are generally located well above the 1% light level in the vicinity of the nitracline. Fluorescence maxima are usually chlorophyll maxima, and chlorophyll maxima are often biomass maxima. Cholorophyll maximum layers often contribute significantly to water column primary production, but the majority of chlorophyll maxima are not primary production maxima. Density structure of the water column does not have overriding proximate control on the position of chlorophyll maxima below the mixed layer. Although the layers are often found where light and nutrient conditions are favorable for growth, they are not maintained as the result of enhanced growth rate in that stratum. Chlorophyll measurements/Fluorescence/Biomass/California Coast/P rimary production/Density/Southern California Bight/maximum layers/OceanAbstracts.

2115. Crouch JK, Bachman S. Seismic reflection profiles from offshore central California; evidence for post-Miocene imbricate thrust faulting. 1984 AAPG annual convention with divisions; SEPM/EMD/DPA. AAPG Bulletin 1984;68(4):467 Address: Nekton, San Diego, CA, USA Conference: AAPG annual convention with divisions; SEPM/EMD/DPA. San Antonio, TX, May 20-23, 1984.
geophysical surveys/petroleum/seismic surveys/offshore/exploration/Miocene/Neogene/Tertiary/thrust faults/faults/imbrication/planar bedding structures/sedimentary structures/tectonics/neotectonics/San Andreas Fault/discoveries/anticlines/folds/wrench faults/structural traps/traps/geophysical profiles/Central California/Santa Maria Basin/Santa Barbara Channel/Point Conception/San Andreas Fault/economic geology/energy sources.

2116. Mueller JL. Optical variability in the eastern North Pacific Ocean as measured by the NIMBUS-7 coastal zone color scanner. PROCEEDINGS OF THE PACIFIC CONGRESS ON MARINE TECHNOLOGY, HONOLULU, HAWAII, APRIL 24-27, 1984. 1984;:pp. OST2/11-12.
Sequences of Nimbus-7 Coastal Zone Color Scanner (CZCS) images have been processed to map bio-optical variability in the eastern North Pacific Ocean. Phytoplankton pigment concentrations)chlorophyll-a

plus phaeopigments-a) and k(490) (the vector irradiance attenuation coefficient at a wavelength of 490 nm) were calculated from the radiances measure in cloud free portions of each available CZCS image. These parameters were then mapped onto a Mercator grid extending from 28 N to 42 N and from 117 W to 143 W at a nominal resolution of 5 km. Emphasis was placed on Oct and Nov of 1979 and 1982 as part of the analysis phase of the ONR sponsored Optical Dynamics Experiment (ODEX). The objective of the ODEX program is to develop a 1-dimensional model for predicting optical propagation in the upper ocean away from coastal current systems. A strong optical front separates turbid coastal water from transparent offshore water at a location near the base of the continental slope. Along the zonal transect at 35 N, this front is clearly visible near 123 W in CZCX-derived optical depth. In the offshore continuation of the 35 N transect, the Acania's CTD profiles clearly indicated that the water masses between the optical front of 123 W and beyond 130 W have temperature-salinity characteristics associated with the California Current System. Vertical profiles of in situ. optical propertiescence also varied systematically over the zonal t/satellite sensing/photosynthetic pigments/phytoplankton/water masses/water currents/CTD observations/image processing/remote sensing/satellites/oceanography/chlorophylls/marine environment/INE/California Current/variability 35 N./NIMBUS-7/ASFA.

2117. Fleischer P. Sepiolite associated with Miocene diatomite, Santa Cruz Basin, California. Am. Mineral. 1972;57(5-6):p.903-913
Serial B; Bibliography and Index of Geology (1969-present). Minerals/Sheet silicates/Sepiolite/genesis/authigenesis/diatomite/chemical analysis/Pacific Ocean/Santa Cruz Basin/Sedimentary rocks/Clastics/nonterrigenous/diagenesis/California/Mineralogy/GEOREF.

2118. O'Connell CP. Percentage of Starving Northern Anchovy, Engraulis mordax , Larvae in the Sea as Estimated by Histological Methods. FISHERIES BULL. 1980 Apr;VOL. 78, NO. 2:pp. 475-489
Southwest Fish. Ctr. La Jolla Lab., N.M.F.S., La Jolla, CA. The proportion of starving larvae of northerm anchovy, Engraulis mordax , was estimated for the Southern California Bight in March 1977 from histological examination of larvae for 64 1 m net tow samples. The number of larvae in the tows varied from O to about 400. Approximately 6 per tow were sectioned and examined with the light microscope. Twenty-six specimens were identified as emaciated from anomalies of the trunk musculature and digestive tract. Some of the emaciated larvae occurred as isolated cases at widely scattered locations, but most were from a few nearshore tows, indicating "patches" of starving larvae.
Engraulis/Anchovies/Engraulidae/Osteichthyes/Fish larvae/Starvation/Stock assessment/Histology/California Coast/US West Coast/Southern California Bight/E/mordax/OceanAbstracts.

2119. Mooers CNK, Robinson AR. Mesoscale ocean variability in the California Current system. PROCEEDINGS OF THE PACIFIC CONGRESS ON MARINE TECHNOLOGY, HONOLULU, HAWAII, APRIL 24-27, 1984. 1984;:pp. OST2/6-7. A joint NPS/Harvard investigation of the scientific requirements for, and the limitations of, practical limited-area, open ocean forecasting of the mesoscale ocean eddy field commenced two years ago under ONR sponsorships. The investigation is called the OPTOMA (Ocean Prediction Through Observation, Modeling, and Analysis) Program. Ocean prediction (analysis and forecast) experiments are being undertaken in "test

blocks" (ca. 200 X 200 km) of ocean off Northern and Central California. A series of ten week-long, quasi-synoptic shipboard hydrographic XBT and CTD surveys have been conducted, along with some AXBT surveys by aircraft and the acquisition of some satellite IR remote sensing imagery, to develop a statistical (objective analysis) model. The dynamical model used in the forecasts is a quasi-geostrophic, eddy-resolving numerical model, which is initialized with the aid of observations. The first prototype (real-time) prediction experiment was performed in June/July 1983; the second is planned for the same time frame in 1984. The first major, comprehensive (i.e., with thermodynamical as well as dynamical models) prediction experiment is planned over a larger space-time domain for 1986. The initial survey revealed new features in the California Current System (CCS), which were corroborated in the subsequent surveys. The CCS regime is now firmly established.
mesoscale eddiesose-packed/synoptic/mesoscale eddies/intense mean/current prediction/ocean circulation/INE/California Currents/and strong surface thermal fronts/ISE/California Current/variability/mathematical models/OPTOMA/ASFA.

2120. Normark WR, Piper DJW. Sediments and growth pattern of Navy Deep Sea Fan, San Clemente Basin, California borderland. J. Geol. 1972;80(2):p.198 Serial B; Bibliography and Index of Geology (1969-present). Sediments/Environmental analysis/Quaternary/Invertebrata/marine geology/California/Oceanography/Navy Fan/San Clemente Basin/Sedimentation/Environment/United States/GEOREF.

2121. Knight MD. Larval Development of Euphausia eximia (Crustacea: Euphausiacea) with Notes on Its Vertical Distribution and Morphological Divergence Between Populations. FISHERY BULL. 1980 Apr;VOL. 78, NO. 2:pp. 313-335 SIO, La Jolla, CA.
Larval development of E. eximia is examined. A comparison of larvae of E. eximia from across the species' range showed significant differences in morphology between forms from the California Current terminus off Baja California and from the South Equatorial and Peru Currents. Significant differences in morphology were found as well during a preliminary survey of adults. The vertical distribution of larval stages in day and night samples from two locations off Baja California and one in the South Equatorial Current showed development of diurnal vertical migration in the second half of the furcilia phase after acquisition of the full complement of setose abdominal pleopods.
Euphausia/Crustacea/Malacostraca/Euphausiacea/Larvae/Ontogeny/Morphology/Baja California Coast/Vertical distribution/California Current/South Equatorial Current/Peru Current/E/eximia/krill/OceanAbstracts.

2122. Culver RL. Infrasonic ambient ocean noise spectra from freely drifting sensors. Summary report. : Scripps Institution of Oceanography, La Jolla, CA. Marine Physical Lab. MPL-U-52/85; SIO-REF-85-22; 1985. 51. Self-contained Swallow Floats can record very low frequency (VLF) ambient ocean noise over extended periods of time. The autonomous buoys measure and record the components of particle velocity in the 1-10 Hz band. They can be ballasted to neutral buoyancy at a desired depth. The buoys generate and receive high frequency acoustic signals which may be used to determine their relative positions. The deployment of several of these units forms a freely drifting array of sensors. Individual element time series may be combined coherently off-line using a beamformer, e.g., the MPL dynamic Beamformer. The Swallow float design minimizes self-noise which can limit accurate ambient ocean noise

measurements. The floats drift freely and are not subject to flow noise or cable strumming. They measure particle velocity and are therefore insensitive to variations in local pressure. MPL has conducted Swallow float deployments annually since 1982. The 1982 deployment tested only the acoustic positioning system. Between 12 and 14 July 1983, three Swallow floats were deployed at a location approximately 50 miles west of San Diego. California and southeast of San Clemente Island (32'N, 118'W). Sea state during the deployment varied between 1 and. 2. Water depth was approximately 1900 meters. Two of the floats deployed to a depth of about 1400 meters and the third deployed to the bottom. Measurements recorded by float 3 which deployed to 1400 meters have been analyzed and results are reported in this thesis. Ambient noise/Beam forming/Buoys/Deployment/Depth/Detectors/Drift/Dynamics/Floats/Measurement/Nois e/Oceans/Particles/Parts/Position (Location)/Sea states/Theses/Time series analysis/Velocity/Very low frequency/Water/Oceanographic data/Acoustic arrays southeast of San Clemente Island/physical oceanography.

2123. Freel MR, Aceituno ME. Seabirds and marine mammals of the Southern California Bight. POCS Ref. Pap. No. I. Prep. for U.S. Dep. Interior, Minerals Management Service (BLM), Pacific OCS Region, Los Angeles, CA. 1978;:106. MINERALS MANAGEMENT SERVICE.

2124. Putt M, Prezelin BB. Observations of diel patterns of photosynthesis in cyanobacteria and nanoplankton in the Santa Barbara Channel during "El Nino". J. PLANKTON RES 1985;7(6):779-790.
During the 1983 El Nino, filter fractionation showed that over 80% of the chlorophyll-based phytoplankton biomass in the Santa Barbara Channel was < 5 mu m. Larger nanoplankton (5-30 mu m), accounted for the chlorophyll in the remaining fraction but, unlike other years, no significant quantities of net plankton > 30 mu m were detected. The population as a whole was dominated by chroococcalean cyanobacteria which were two times more abundant (123 plus or minus 24 x 10 super(3) ml super(-1)) than previously reported for the California Current System (Krempin and Sullivan, 1981). Numbers of other types of bacteria were uniformly low (277 plus or minus 44 x 10 super(3) cells ml super(-1)). Cyanobacteria and larger nanoplankton exhibited similar diurnal patterns of photosynthesis, i.e., maximal rates of light-saturated photosynthesis (P sub(max)) occurred mid-day and day-night amplitudes were > 2.0.
El Nino phenomena/phytoplankton/primary production/Cyanophyta/USA/California/Santa Barbara Channel/marine environment/photosynthesis/diurnal variations/INE/Santa Barbara Channel/diel variations/El Nino phenomenon/ASFA.

2125. Ridlon JB. Pleistocene Holocene Deformation of the San Clemente Island Crustal Block, California. Geol. Soc. Am., Bull. 1972;83(6):p.1831 Serial Seismic-reflection profiles, submarine wave-cut terrace, Eel Ridge Submarine Canyon. B; Bibliography and Index of Geology (1969-present). California/Oceanography/Ocean basins/structure/seismic surveys/San Clemente Island/Geophysical surveys/United States/reflection/Quaternary/Eel Ridge Canyon/GEOREF.

2126. Estrada M, Blasco D. Two phases of the phytoplankton community in the Baja California upwelling. LIMNOLOGY AND OCEANOGRAPHY 1979 Nov;24(6):1065-1080 Instituto Investigaciones Pesqueras, Paseo Nacional s/n Barcelona, Spain I (INVESTIGATIVE/OBSERVATION).
Principal component analysis was applied to quantitative data on 60 species (which are listed) of phytoplankton from the cruises MESCAL

I and MESCAL II. Dinoflagellate dominance in the phytoplankton was associated with upwelling of water of relatively low salinity and lower nutrients from below the minimum salinity core of the California Current. Diatom dominance was related to upwelling of deeper saline and high nutrient water from the California Undercurrent. AM. Algae/Phytoplankton/Baja California Coast/Upwelling/Quantitative data/Dinoflagellates/Pyrrophyta/Salinity/California Current/Diatoms/Chrysophyta/Nutrients/Undercurrents/principal component analysis/60 phytoplankton species/MESCAL I cruise/MESCAL II cruise/California Undercurrent/OceanAbstracts.

2127. Cummings D, Johnson TA, Gaal RA. Shallow structural geology, offshore Santa Maria River to Point Arguello, Central California. Geological Society of America, Cordilleran Section, 83rd annual meeting with the Paleontological Society of America, Pacific Coast Section. Abstracts with Programs - Geological Society of America 19(6). ; 1987. 369.
Address: Leighton and Assoc., Irvine, CA, USA; Calif. State Lands Comm. Conference: Geological Society of America, Cordilleran Section, 83rd annual meeting with the Paleontological Society of America, Pacific Coast Section. Hilo, HI May 20-22, 1987. tectonics/offshore/Hosgri fault zone/faults/Lompoc-Solvang Fault/Santa Ynez River Fault/Lions Head Fault/San Andreas Fault offshore Santa Maria River to Point Arguello, Central California/Santa Barbara County/geology/structural geology.

2128. Tegner MJ, Butler RA. Drift-tube study of the dispersal potential of green abalone (Haliotis fulgens) larvae in the southern California Bight: Implications for recovery of depleted populations. MAR. ECOL. (PROG. SER.) 1985;26(1-2):73-84.
Drift tubes were released over the major past and present green abalone (Haliotis fulgens) beds in southern California, USA, to investigate the dispersal potential of this species' relatively short-lived larvae. Of the 1225 drift tubes released at the Channel Islands only 0.4% were found within a time span appropriate for green abalone larval life. The present status of mainland stocks suggests that recolonization by larvae originating elsewhere will be uncommon. Thus, in the absence of local brood stock, the present fishery closure is not likely to promote recovery of mainland populations of H. fulgens in the near future. molluscan larvae/biological drift/Haliotis fulgens/recruitment/INE/ California Gulf/depleted stocks/ASFA.

2129. Wardlaw NC. Unusual Marine Evaporites with Salts of Calcium and Magnesium Chloride in Cretaceous Basins of Sergipe, Brazil. Econ. Geol. 1972;67(2):p.156
Serial Thick units of tachyhydrite, genetic processes, geochemistry, Aptian, Muribeca Formation, Ibura member, Santa Rosa de Lima and Taquari basins. B; Bibliography and Index of Geology (1969-present).
Evaporites/South America/Brazil/Sergipe/Cretaceous/Aptian/composition/genesis/Mineral deposits/Tachyhydrite/Economic geology/Santa Rosa de Lima Basin/Taquari Basin/GEOREF.

2130. Simoneit BRT, Kaplan IR. Triterpenoids as molecular indicators of paleoseepage in Recent sediments of the Southern California Bight. MARINE ENVIRONMENTAL RESEARCH 1980 Apr;3(2):113-128
Univ. of California, Inst. of Geophysics and Planetary Physics, Los Angeles, CA 90024 I (INVESTIGATIVE/OBSERVATION) ; X (EXPERIMENTAL). Petroleum-derived hydrocarbons were identified in sediments by

analysis of the n-alkanes, aromatic hydrocarbons, and branched and cyclic components (humps). The detection of low levels of petroleum input to sediments can be ambiguous due to the presence of syngenetic biolipids. Triterpenoids, especially the (17alphaH,21betaH)-hopanes, were proposed as sensitive molecular markers of petroleum pollution. Recent sediments from the bight to subbottom depths of =30 cm (preanthropogenic) contain lipids of syngenetic origin with major humps of branched and cyclic material and triterpenoids consisting mainly of the (17alphaH,21betaH)-hopanes ranging from C27 to C35. Extended hopanes (>C31) are found as 1:1 mixtures of the 22R and 22S diastereomers. The 17alpha(H),18alpha(H), 21beta(H)-28,30-bisnorhopane is the dominant triterpane and appears to be a potential molecular marker characteristic of the Southern California petroleums. Extended tricyclic diterpanes ranging from C19 to C27 are also present and their structures make them further possible indicators of petroleum. The sediments appear to contain petroleum products from both seepage and anthropogenic activity. Recent sediments from other areas worldwide contain predominantly (17betaH,21betaH)-hopanes and hopenes, indicating recent synthesis and no petroleum pollution. AM.
Sediments/Hydrocarbons/Quaternary/Lipids/Biogenic elements/California Coast/Petroleum/Pollutant detection/Paleooceanography/Oil pollution/Recent/Southern California Bight/triterpenoids/paleoseepage/molecul ar markers/OceanAbstracts.

2131. Cushing J, Daily M, Noble E, Roth VL, Wenner A. Fossil mammoths from Santa Cruz Island, California. Quatern. Res. 1984;21(3):376-384 Address: Dep. Biol. Sci., Univ. California, Santa Barbara, CA 93106. Mammoth remains on Santa Cruz Island, one of the four Northern Channel Islands of California, are very sparse, in marked contrast to those reported from Santa Rosa and San Miguel Islands of the same island group. A probable major reason for this scarcity is that Quaternary deposits are greatly restricted on Santa Cruz Island. It is proposed, contrary to popular opinion, that fossils found on Santa Cruz Island were derived from animals which died on the island, and were not transported there by humans. Reasons for this conclusion are that the size and geological context of the fossils are similar to those of the largest mammoth fossils of Santa Rosa Island, and that, in spite of extensive investigations by many persons, mammoth remains have not been found in middens, either on the islands or on the adjacent mainland. Quaternary/mammoths /Elephantidae/Santa Cruz Island/paleoecology/paleontology.

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MINERALS MANAGEMENT SERVICE.

2133. Coelho ML. Review of the influence of oceanographic factors on cephalopod distribution and life cycles. BIOLOGY AND ECOLOGY OF SQUIDS Illex illecebrosus AND Loligo pealei IN THE NORTHWEST ATLANTIC.; NAFO SCI. COUNC. STUD. 1985;(9):47-57.
The general relationship between the ecology of cephalopods and their environments is briefly reviewed from available information on the fisheries, biology and physical environments of various species which constitute the major cephalopods resources of the world's oceans. The relationship is further examined by reviewing the features of two large-scale oceanographic systems and a relatively small-scale system. The large-scale systems are the Kuroshio Current in the Northwest Pacific relative to the ecology

of Todarodes pacificus and the Gulf Stream in the Northwest Atlantic relative to the ecology of Illex illecebrosus . The small-scale system is the California Current in the Northeast Pacific relative to the ecology of Loligo opalescens , for which association between life-history features and the physical oceanographic regime can also be identified.
geographical distribution/life cycle/marine ecology/Cephalopoda/Todarodes pacificus/Illex illecebrosus/Loligo opalescens/current forces/environmental effects/World Oceans/ASFA.

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Serial Holocene lutites, size analyses, mineral composition, provenance. B; Bibliography and Index of Geology (1969-present).
California/Sedimentary petrology/Sediments/Santa Barbara Basin/Clastics/terrigenous/Size/mineral composition/provenance/Clay mineralogy/Areal studies/United States/Marine geology/GEOREF.

2135. Tsuchiya M. Inshore circulation in the Southern California Bight, 1974-1977. DEEP-SEA RESEARCH 1980 Feb;27(2A):99-118
SIO, P.O. Box 1529, La Jolla, CA 92093 I (INVESTIGATIVE/OBSERVATION). Nine cruises were made between Dana Point and Del Mar to study the circulation in the inshore region within =40 km of the coast. Observations were usually along 3 lines, 37 km apart, nearly normal to the coast. On each line STD stations were occupied at intervals of 2 km over the sharp bottom slope in the inshore area and at intervals of 7 km in the deep water farther offshore. The geostrophic flow at the sea surface relative to 500 db was toward the S-SE along the coast in Mar. 1975, Mar. and June 76, and Apr. 77, and toward the N-NW in Sept. 74, Sept. and Dec. 75, and Oct. 76. It was weak and showed hardly any significant pattern near the end of Jan. 1977. This variation appears to represent the seasonal variation of the California Current, which extends close to the coast in Mar. and Apr. and stays offshore during the rest of the year. At depths of 200-300 m, near the core of the California Undercurrent, the geostrophic flow relative to 500 db was predominantly to the N-NW throughout the study period. Although there was a significant variation in its speed, it was not possible to determine its time scale. In Oct. 1976 and Jan. 77, temperature in the upper 300 m was higher (by 2-3degC at 0-100 m) than that normally expected during these months. At the same time, temperature-salinity curves shifted toward high salinity in the temperature range 9-12 or 13degC (depth 100-300 m) in Oct. 1976, and the shift (maximum exceeded 0.3o/oo)extended from 9degC (300 m) to the surface temperature in Jan. 77. This anomalous distribution is probably a coastal manifestation of a large-scale warming of the surface water in the eastern North Pacific that persisted from Sept. 1976 through Feb. 77. AM.
California Coast/Circulation processes/STD/Geostrophic flow/California Current/Seasonal variations/Southern California Bight/Dana Point/Del Mar/OceanAbstracts.

2136. Cushing J, Wenner AM, Noble E, Daily M. A groundwater hypothesis for the origin of fire areas on the northern Channel Islands, California, USA. Quaternary Research 1986;26(2):207-217
Address: DEP. BIOL. SCI., UNIV. CALIF., SANTA BARBARA, CALIF. 93106. Pleistocene areas of red sediments and carbonized vegetation on the Northern Channel Islands, California, have in the past been interpreted as caused by fires of either natural or human origin. Some are associated with darkened mammoth and bird fossils, and

these fossils have been considered as having been burned by early man. Reevaluation of these so-called "fire areas" indicates that the above phenomena are the result of low-temperature (.ltoreq. 100.degree. C), nonheating processes occurring in groundwater. Evidence for this conclusion is derived from field observations on fossil carbonized vegetation, and the geology of the areas. Additional evidence derives from experiments on the red sediments and fossil wood, X-ray diffraction analyses, magnetic analyses, studies on the clay minerals smectite and illite, and the demonstration that fossil mammoth bone contains sufficient Fe and Mn to account for their discoloration. Much of the carbonization of vegetation probably occurred in water rather than in fire.. Radiocarbon dates from the islands will probably need to be reevaluated. These data provide evidence contrary to the concept of the occurrence of significant fires, either natural or set by early man, on the Northern Channel Islands.
carbonized vegetation/low-temperature process/clay/mineral/Pleistocene/red sediment/radiocarbon date/x-ray diffraction/Quaternary/fire areas/geomorphology/ground water/paleobotany/sediment layers/fossil wood/radiocarbon dating/clay mineralogy/stratigraphy/areal studies/geochemistry/bones/x-ray data/smectite/clay minerals/sheet silicates/Mammalia/Elephantoidea/Proboscidea/Mammuthus/mammoth fossils/Aves/bird fossils/Homo sapiens fossils northern California Channel Islands/Santa Rosa Island/Santa Cruz Island physical anthropology/paleobotany/geography/paleontology/surficial geology/quaternary geology/geochemistry/chemistry.

2137. Wittman PA, Rienecker MM, Kelley EA, Mooers CNK. Hydrographic data from the OPTOMA (Ocean prediction Through Observations, Modeling and Analysis) program: OPTOMA9, 20-25 February 1984, OPTOMASF 3-4 March 1984, OPTOMA10 23-24 April 1984. 1985;
The OPTOMA (OCEAN Prediction Through Observations, Modeling and Analysis) Program, a joint Naval Postgraduate School/Harvard program, seeks to understand the mesoscale (fronts, eddies, and jets) variability and dynamics of the California Current System and to determine the scientific limits to practical mesoscale ocean forecasting. To help carry out the aims of this project, a series of cruises has been planned. The cruises OPTOMA9, OPTOMASF, and OPTOMA10 were undertaken to sample subdomains of the California Current System west of Monterey and west of Pt. Arena. This report presents the hydrographic data, acquired by XBT and CTD casts, from the cruises. Key words: Physical oceanography; Dynamic oceanography. hydrographic data/mesoscale features/dynamical oceanography/cruises/INE/ California Current/prediction/modeling/OPTOMA program/ASFA.

2138. Lerman A, Chung Y, Craig H. Transient Events and Time to Steady State in Oceanic Basins. Eos (Am. Geophys. Union, Trans.). 1972;53(4):p.403 Serial; Abstract B; Bibliography and Index of Geology (1969-present). Pacific Ocean/Oceanography/Sea water/Santa Barbara Basin/continental shelf/continental slope/Geochemistry/Radon/oxygen/nutrients/GEOREF.

2139. Hickey BM. The California current system-hypotheses and facts. PROGRESS IN OCEANOGRAPHY 1979;8(4):191-279 Univ. of Washington, Dept. of Oceanography, Seattle, WA 98195 I (INVESTIGATIVE/OBSERVATION).
The seasonal variation of the various currents which comprise the California Current System-the California Current, the California Undercurrent, the Davidson Current and the Southern California Countercurrent-are described and the dynamical relationships among

these currents are investigated qualitatively. Although the majority of information was derived from existing literature, previously unpublished data are introduced to provide direct evidence for the existence of a jet-like Undercurrent over the continental slope off Washington, to illustrate 'event'-scale fluctuations in the Undercurrent and to investigate the existence of the Undercurrent during the winter season. The existing literature is thoroughly reviewed and synthesized. In addition, geostrophic velocities are computed along several sections from the Columbia River to Cape San Lazaro from dynamic heights given by Wyllie (1966), Budinger, Coachman and Barnes (1964), and Reed and Halpern (1976). From these data and from long-term monthly wind stress data and vertical component of wind stress curl data (denoted curl tau) given by Nelson (1977), new conclusions are made. These conclusions are presented and discussed. AM.
California Current/Geostrophic velocity/Seasonal variations/Counterc urrents/Undercurrents/Washington Coast/US West Coast/Wind stress/H ydrodynamics/Oregon Coast/California Coast/Pacific Ocean Northeast/California Undercurrent/Davidson Current/Southern California Countercurrent/California Current System/OceanAbstracts.

2140. Cybulski JS. Possible pre-Columbian treponematosis on Santa Rosa Island, California, USA. Am. J. Phys. Anthropol. 1981;54(2):212 Address: NATIONAL MUSEUM OF MAN, CAN. CONFERENCE PAPER: 50TH ANNUAL MEETING OF THE AMERICAN ASSOCIATION OF PHYSICAL ANTHROPOLOGISTS, DETROIT, MICH., USA, APRIL 22-25, 1981.
adult crania/paleo pathology/skull/gulch site/radio-carbon dating/treponematosis/Santa Rosa Island/physical anthropology.

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2142. Fuhrman JA, Ammerman JW, Azam F. Bacterioplankton in the coastal euphotic zone: Distribution, activity and possible relationships with phytoplankton. Mar. Biol. (Berl.) 1980;60(2-3):201-208.
southern california bight/usa/plankton/microbe/atp/growth/predation/glucose/primary production/thymidine/density/Bray/Murray/Algae/Spermatophytes/pie per/microbiolo gy/geesey/hickey/physical oceanography/Hardy phytoplankton/TEXT/chemical oceanography/MINERALS MANAGEMENT SERVICE.

2143. Wittmann PA, Rienecker MM, Kelley EA, Mooers CNK. Hydrographic data from the OPTOMA (Ocean Prediction through Observations, Modeling and Analysis) Program: OPTOMA 11, 5 June-5 August 1984. NPS; MONTEREY, CA (USA) 1985; The six cruises and one aircraft flight comprising OPTOMA 11 were undertaken in June, July and August 1984 to sample two subdomains of the California Current. This presents the hydrographic data, acquired by XBT, AXBT and CTD casts, from the cruises and the flight.
hydrographic data/T/S diagrams/cruises/aerial surveys/INE/California Current/ASFA.

2144. Stearns JG(. The offshore petroleum resource. Calif., Resour. Agency, Dep. Conserv. 192 p., illus. (incl. maps), 1971 1971
Resource development, pollution aspects, Santa Barbara Channel. B;

Bibliography and Index of Geology (1969-present).
California/Economic geology/Petroleum/Santa Barbara Channel/United States/resources/pollution/Environmental geology/GEOREF.

2145. Shanks AL, Trent JD. Marine snow: Microscale nutrient patches. LIMNOLOGY AND OCEANOGRAPHY 1979 Sep;24(5):850-854
SIO, Marine Life Research Group, A-800, P.O. Box 1529, La Jolla, CA 92093 I (INVESTIGATIVE/OBSERVATION).
Aggregates and the water surrounding them were sampled along the California coast in Monterey Bay, near the San Onofre Power Plant, and at 3 other stations in the Southern California Bight. Measurements of NH3, NO2, NO3, and PO4 indicate significant differences in nutrient concentrations associated with marine snow from those of the surrounding water. In 8 sets of nutrient measurements, NH3 was more concentrated in aggregates in 7 sets, NO2 in 3 sets, and NO3 in 1 set. Phosphate was more concentrated in 1 set, but less concentrated in 3 sets. Aggregates represent nutrient micropatches ranging from <1 mm to several centimeters in diameter. AM FT.
Marine snow/Nutrients/Ammonia/Nitrites/Nitrates/Phosphates/Seawater analysis/California Coast/Monterey Bay/nutrient micropatches/Southern California Bight/San Onofre Power Plant/OceanAbstracts.

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The SCCCAMP field measurement program, conducted 3 September to 7 October 1985, is the most comprehensive mesoscale photochemical study of its type ever undertaken. The study area encompasses 2 x 10 super(4) km super(2) of coastal and interior south-central California including the Santa Barbara Channel. A review of earlier experimental and analytical studies in the area is followed by the organizational framework and planning for this cooperative program. The availability of the composite data base is indicated.
atmospheric boundary layer/photochemistry/research programs/monitoring/atmospheric chemistry/Santa Barbara Channel/photochemistry/chemistry/atmospheric chemistry.

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California/Geophysical surveys/Geodetic surveys/Santa Barbara Channel/Deformation/Field studies/Horizontal strain/faults/United States/ground/GEOREF.

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Univ. of California, Santa Barbara, CA 93106 I (INVESTIGATIVE/OBSERVATION) ; X (EXPERIMENTAL).
Predation/Colonial organisms/Tubulipora/Patiria/Ectoprocta/California Coast/Pacific Ocean East/Starfish/Colonization/Southern California Bight/bryozoans/abstract only/P/miniata/OceanAbstracts.

2149. Smith CR. Food for the deep sea: Utilization, dispersal, and flux of nekton fall at the Santa Catalina Basin floor. DEEP-SEA RES 1985;32(4A):417-442. The submersible Alvin and free vehicles were used to assess experimentally the fate and flux of nekton falls at a depth of 1310 m in the Santa Catalina Basin. Parcels of dead fish placed on the basin floor rapidly attracted

large aggregations of fish and invertebrate scavengers. The most strongly attracted megafaunal scavenger was the ophiuroid Ophiophthalmus normani , the dominant megabenthic species in the background epifaunal assemblage. O. normani attained densities of 700 m super(-2) in aggregations containing thousands of individuals. Benthic standing-crop and turnover-rate estimates for nekton falls suggest that perhaps 11% of benthic community respiratory requirements are met by nekton carcasses reaching the basin floor; the flux of energy to the deep sea through such fall events thus merits further study.
food availability/abyssobenthic zone/nekton/benthos/sinking/INE/USA/ California/Santa Catalina Basin/ASFA.

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California/Petrology/Schists/Catalina schist/Santa Catalina Island/Metamorphic rocks/Mineral assemblages/structural analysis/Interpretation/Foliation/schistosity/United States/GEOREF.

2151. Tegner MJ. Regulation of red sea urchin population in southern California. p. pp. 8-9.
SIO, P.O. Box 1529, La Jolla, CA 92093 I (INVESTIGATIVE/OBSERVATION). Sea urchins/California Coast/Strongylocentrotus/Population dynamics/ Spatial distribution/Channel Islands/Fisheries management/Predation/ Mortality/Pacific Ocean East/S/franciscanus/southern California bight/size-frequency distribution/abstract only/Santa Barbara and San Clemente islands/re cruitment rates/Santa Rosa and San Miguel islands/OceanAbstracts.

2152. Davis P. The late Quaternary geomorphology of Santa Catalina Island and Avalon Canyon, California. E.M. Gath, M.M. Bottoms. Geology of Santa Catalina Island. : South Coast Geol. Soc.; 1985. 60-72.
stratigraphy/shore features/Quaternary/changes of level/landform evolution/upper Quaternary/guidebook/eustacy/glaciation/marine terraces Santa Catalina Island/Avalon Canyon/surficial geology/quaternary geology/geomorphology.

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Sulfur content and fine structure were studied for tissues of three species of clams, Lucinoma annulata, Calyptogena elongata and Lucina floridana , which inhabit sulfide-rich environments and whose gills harbor symbiotic sulfur bacteria. When examined by freeze-etch microscopy, sulfur globules were found only within bacteria and not in the animal host cytoplasm. Sulfur globules were confined to the periplasmic space of the bacteria. C. elongata and Lucina floridana resembled Lucinoma annulata in the physical form and distribution of elemental sulfur. The absence of elemental sulfur in the animal cytoplasm suggests that its formation from sulfide is not a detoxification scheme to protect animal tissue from sulfide toxicity. The sulfur deposits probably represent inorganic energy reserves that permit the symbiotic bacteria to function even during the temporary absence of external sulfide.
symbionts/sulfur/bacteria/gills/ultrastructure/Bivalvia/Lucinoma annulata/Lucina floridana/INE/USA/California/Santa Barbara Basin/ASW/ USA/Florida/Saint Joseph Bay/USA Coasts/Calyptogena

elongata/ASFA.

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California/Structural geology/Tectonics/Santa Barbara Channel/Evolution/Cenozoic/United States/sedimentation/structure/upper Cenozoic/Controls/Tectonic controls/faults/folds/Distribution/Systems/Synclinoria/GEOREF.

2155. Pedrick RA, Ingham MC, McLain DR, Favorite F, Lynn RJ. Marine environmental conditions off the coasts of the United States, January 1977-March 1978. MARINE FISHERIES REVIEW 1979 May;41(5-6):31-69
NMFS, Resource Assessment Div., 3300 Whitehaven St. NW, Washington, DC 20235 D (DESCRIPTIVE) ; I (INVESTIGATIVE/OBSERVATION).
The marine environmental conditions off the US coasts were examined by oceanographers to determine climate relationship to marine fisheries resources. In the analysis marine environmental conditions off the Atlantic and Gulf coasts, Jan. 1977-Mar. 1978 include the following: atmospheric variations circulation and air temperature, river runoff, wind-driven transport, oceanographic variation on Gulf of Maine, Georges Banks, Middle Atlantic conditions, South Atlantic conditions, Gulf of Mexico, Eastern Gulf Loop Current, and Mississippi River Discharge. In the analysis of marine environmental conditions off the Pacific coast, Jan. 1977-Mar. 1978, the following elements were discussed: atmospheric variations, gradient and vector winds, ocean surface transport and upwelling, sea surface temperature, Eastern Bering Sea, Aleutian Islands to Icy Bay, Icy Bay to Strait of Juan De Fuca, Strait of Juan De Fuca to Gulf of California, California current and transition zone, Eastern Tropical Pacific Conditions, and tuna fishing conditions. FT.
Environmental conditions/Climatology/Fisheries resources/US East Coast/Gulf Coast/Atmosphere-ocean system/River discharges/US West Coast/Wind circulation/Surface temperatures/California Current/Gulf s/OceanAbstracts.

2156. Davis PH, Spies RB. The Infaunal Benthos of a Natural Oil Seep in the Santa Barbara Channel. Marine Biology 1979;50(3):227
Benthos/infaunal/natural oil seep/Santa Barbara Channel/marine biology/petroleum/water quality/resource management/pollution.

2157. van PH. (Gecarcinus (Johngarthia) planatus Stimpson, 1860 (Crustacea, Gecarcinidae) new record for Colombia and notes on its zoogeography in the American Pacific.). AN. INST. INVEST. MAR. PUNTA DE BETIN. 1983;(13):143-148. The gecarcinid crab Gecarcinus (Johngarthia @planatusis a new record for Gorgona Island, thus extending its distributional range more than 3,200 km to the south. The zoogeography of the crab and the role of the California Current and Equatorial Countercurrent in its distribution, are briefly discussed.
new records/biogeography/Gecarcinus (Johngarthia) planatus/animal morphology/geographical distribution/crustaceanlarvae/current direction/ISE/Colombia/ASFA.

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Soc. Am., Abstr. 1972;4(3):p.161-162
Serial; Abstract B; Bibliography and Index of Geology (1969-present). Pacific Ocean/Stratigraphy/Quaternary/paleoclimatology/San Clemente Basin/foraminifera/Radiolaria/Rotaliina/Faunal studies/Temperature/Sedimentation/Rates/Marine/Sediments/Carbonate sediments/Composition/GEOREF.

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Tracor, Inc., San Diego Lab., 3420 Kenyon St., San Diego, CA 92110
I (INVESTIGATIVE/OBSERVATION) ; M (METHODOLOGICAL). Engraulis/Trachurus/Scomber/Anchovies/Mackerels/Fish schools/Epip elagic fauna/California Coast/Vertical distribution/Population density/California Current/Sonar systems/Measuring methods/Echo sounding/Depth data/locating methods/bottom bounce data/E/mordax/T/symmetricus/S/ japonicus/OceanAbstracts.

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SIO, P.O. Box 1529, La Jolla, CA 92093 I (INVESTIGATIVE/OBSERVATION) ; T (THEORETICAL/MATHEMATICAL).
Results are depicted in a set of semimonthly vertical sections of mean temperatures to 500 m and in a set of corresponding sections of 30-d mean temperature changes to 200 m. Seasonal cycles at selected depths are included along with mean monthly vertical profiles for 7 typical locations along the route. The analyses reveal geographic and temporal facets of the mean thermal structure, including the following: depth of the surface mixed layers in winter; growth and decay of the seasonal thermocline; decrease in depth of the permanent thermocline from Oahu to the California coast; a region of temperature inversions or very weak vertical temperature gradients that develop between 50 and 100 m during the spring in the Transition Zone; and the location and movement of warming and cooling regions during the year. Vertical mixing is probably the dominant process along most of the route for transmitting the annual surface warming and cooling cycle downwards to depths of 100 to 150 m. Advective processes are active in the California Current. AM.
Seasonal cycles/Temperature variations/Vertical profiles/Pacific Ocean Northeast/Surface waters/Thermocline/California Coast/Hawaii Coast/California Current/Bathythermographs/Mathematical models/Vert ical exchange/San Francisco/Honolulu/OceanAbstracts.

2165. Goodman D, Eppley RW, Reid FMH. Summer phytoplankton assemblages and their environmental correlates in the Southern California Bight. J. MAR. RES 1984;42(4):1019-1049.
Weekly observations of chemical and physical variables, and of phytoplankton abundances, were made over a 21-week period at three stations in the Southern California Bight. Principal component analysis was employed to resolve four phytoplankton assemblages among the 25 taxa with the highest variances for their log transformed abundances. Two of these components were described by the abundance of tax characteristic of upwelling assemblages--both dominated by diatoms. A third assemblage was dominated by the "red tide" dinoflagellate, Gonyaulax polyedra , along with some small diatoms and a coccolithophorid. Canonical correlation analysis of the four phytoplankton components against 13 environmental variables revealed distinct sets of temperature-salinity-nutrient conditions associated with periods of abundance of each assemblage. The species assemblages defined by the principal components analysis exhibited episodes of abundance of a duration of 2-3 weeks at a given location. Current meter records, from nearby stations, but from another year, suggest that a persistence time of 2-3 weeks at a stationary site corresponds to a spatial patch scale of 20-40 km. California Bight/phytoplankton/species composition/water temperature/water salinity/nutrient concentrations/salinity/nutrients/nutrients (mineral)/INE/Southern California Bight/abundance/environmental conditions/community composition/ASFA.

2166. Berger WH, Soutar A. Preservation of Plankton Shells in an Anaerobic Basin off California. Calif., Univ. Scripps Inst. Oceanogr., Contrib. 1970;40(part 2):p.1332-1330
Serial Calcareous assemblages, accumulation rates and mechanisms, comparison with oxygenated assemblages: reprint of an article originally appearing in Geol. Soc. Amer., Bull., Vol. 81, p.

275-282, 1970. B; Bibliography and Index of Geology (1969-present).
California/Oceanography/Sediments/Santa Barbara basin/Organic sediments/Genesis/accumulation/preservation/environmental analysis/plankton tests/United States/GEOREF.

2167. Methot RD,J, Kramer D. Growth of northern anchovy, Engraulis mordax, larvae in the sea. U. S. NATIONAL MARINE FISHERIES SERVICE. FISHERY BULLETIN 1979 Apr;77(2):413-423
NMFS, Southwest Fisheries Center, La Jolla Lab., P.O. Box 271, La Jolla, CA 92038 I (INVESTIGATIVE/OBSERVATION).
E. mordax larvae from 12 samples collected at 13.0deg-16.2degC in the Southern California Bight were aged using daily growth increments in sagittal otoliths, and growth rates were calculated from size at age data. In 9 samples, growth rate at 8 mm was very similar, ranging from 0.34 to 0.40 mm/d. Growth in the other 3 samples ranged from 0.47 to 0.55 mm/d. There was no correlation between growth rate and temperature within this set of field samples, but the range of growth rates was similar to the range expected from laboratory rearing experiments in this temperature domain. In no case was growth in the sea as slow as growth in the laboratory on severely limited rations. Anchovy larvae which obtain enough food to survive apparently obtain enough food to grow rapidly. AM. Growth rates/Anchovies/Engraulis/California Coast/Fish larvae/Labo ratory rearing/Temperature responses/In situ measurements/Age determination/Otoliths/E/mordax/Southern California Bight/laboratory rearing vs/sea rearing/daily growth increments/OceanAbstracts.

2168. Davis WS, Junak S. Natural hybridization between self-compatible perennial Malacothrix and self-compatible annual Malacothrix on San Nicolas Island, California, USA. Am. J. Bot. 1985;72(6):949
CONFERENCE PAPER: ANNUAL MEETING OF THE BOTANICAL SOCIETY OF AMERICA, GAINESVILLE, FLA., USA, AUG. 11-15, 1985. Address: DEP. BIOL., UNIV. LOUISVILLE, LOUISVILLE, KY. 40292.
hybridization/perennial/annual/Malacothrix incana/Malacothrix polycephala/San Nicolas Island/terrestrial biology/botany.

2169. Keller BR. Structural discontinuity within the southern California continental margin: Seismic and gravity models of the western transverse ranges. DISS. ABST. INT. PT. B - SCI. & ENG 1985;46(3).
Crustal models of P wave velocity structure and bulk density along a north-south profile across the western Transverse Ranges of California are based on published seismic reflection profiles, a seismic refraction experiment using shots at sea to receivers on land and at sea, Ph and teleseismic arrivals at permanent seismic stations, and published gravity data on land and at sea. Moho depth decreases from 31 km under the Santa Ynez Range to 23 km under the outer Borderland, with a step or ramp shaped offset under Santa Barbara Channel. Variations observed in teleseismic arrival times are substantially accounted for by the crustal velocity model. The western Transverse Rangers are not in isostatic balance, the south side being heavier than the north side.
continental margins/seismic reflection profiles/seismic refraction profiles/discontinuity layers/INE/USA/California/ASFA.

2170. Pollard DD, Sylvester AG. Establishment of sea level datum in the Santa Barbara Channel region, California. Natl. Coastal Shallow Water Res. Conf. 1971;2:p.184
Serial; Abstract B; Bibliography and Index of Geology (1969-

present). Oceanography/Instruments/Sea level/measurement/GEOREF.

2171. Brinton E. Parameters relating to the distributions of planktonic organisms, especially euphausiids in the eastern tropical Pacific. PROGRESS IN OCEANOGRAPHY 1979;8(3):125-189
SIO, P.O. Box 1529, La Jolla, CA 92093 D (DESCRIPTIVE) ; I (INVESTIGATIVE/OBSERVATION) ; T (THEORETICAL/MATHEMATICAL). Zooplankton was sampled through 8 depth intervals above =500 m along a transect of the eastern tropical Pacific (ETP), 23degN to 3degS, encompassing the following 4 environments: the California Current-ETP transition off Baja California and the mouth of the Gulf of California, inhabited by California Current species at their southern limits and the galatheid 'red crab' Pleuroncodes planipes together with euphausiids (e.g., Euphausia eximia); the zone 22deg to 10degN harbors euphausiids of 2 groups: the vertically migrating tropical species (e.g. E. diomedeae); the zone of the North Equatorial Countercurrent maintains high densities of 3 groups: the widely-ranging, ETP-adapted tropical species and the 4 common Stylocheiron species at the equator (93degW), easterly ranging species (e.g. E. paragibba) and westerly Nyctiphanes simplex appear to migrate between equatorial currents which differ in direction with depth, thereby maintaining their narrow ranges along the equator. Ontogenetic strengthening of vertical migration capability is demonstrated by many species, with older larvae, juveniles, and adults showing ranges, respectively, increasing from a few meters to <=400 m. Regional distribution of euphausiid volume (wet displacement biomass) tended to agree with zooplankton volume, with maxima at the equator, 8degN, and at some localities off Baja California and the Gulf of California where red crab volume peaked. AM. Distribution/Population parameters/Euphausiacea/Pacific Ocean East/ Baja California Coast/Zooplankton/Habitats/California Current/Eupha
usia/Nyctiphanes/Stylocheiron/Pleuroncodes/Statistical analysis/Cr
abs/Density/Zoogeography/E/eximia/N/simplex/P/planipes/E/diomedea
e/species range/OceanAbstracts.

2172. Dawson WR, Bennett AF. Field and laboratory studies of the thermal relations of hatchling Western Gulls Larus occidentalis wymani. Physiol. Zool. 1981;54(1):155-164
Address: DIV. OF BIOL. SCI., UNIV. OF MICHIGAN, ANN ARBOR, MICH. 48109. Field and laboratory studies were undertaken on thermoregulatory capabilities during the 1st 24 h after hatching in chicks of the western gull (L. occidentalis wymani). Body temperatures (Tb) of 12 hatchlings brooded in their nests on San Nicolas Island, California [USA], averaged 38.0 .+-. 0.60 SE.degree. C between 0900-2000 h. Hatchlings unprotected by a parent heated rapidly (up to 1 C/min) in midday sun and commenced panting at Tb > 40.degree. C. Panting did not stabilize Tb and coordination and equilibrium were lost at 44-45.degree. C. One chick recovered from a Tb of 46.2 C. Still higher Tb could develop with prolonged exposure to direct sunlight. Unlike new hatchlings, unprotected older chicks (.gtoreq. 15 h) moved to the shelter provided by vegetation when risk developed of overheating in the sun. Unbrooded hatchlings (> 24 h) became hypothermic at night with air and soil temperatures of 16-17.degree. C. Laboratory observations indicated that chicks in this age class could tolerate Tb as low as 14-18.degree. C. Body temperatures at which various motor patterns reappeared during passive rewarming from such Tb were determined. During 1st day after hatching, western gulls had insulative capacities below those anticipated for adult birds of similar size, despite the luxuriant character of the chicks's down. Basal metabolic rate (BMR) for western gull. hatchlings (mean body mass, 58.0 g) was 8.26 mW/g, which approximated values predicted

for an adult nonpasserine bird of similar size. Chicks < 1 day old could increase metabolic rate to 1.9 times. BMR at cooler ambient temperatures (Ta). They increased evaporative cooling at 42.9-44.0.degree. C sufficiently to dissipate heat produced in metabolism. Parental attentiveness normally prevented large fluctuations of Tb of hatchling gulls under cool Ta at night or direct insolation during the day. Such protection was important during the latter period, owing to the relatively narrow interval between normal and upper lethal Tb for young chicks.
chick/nonpasserine bird behavior/panting/bioclimatology/motor patterns/feathers/age/thermoregulation/metabolism/panting/hypothe rmia/hyperther mia/parental care/Western Gull/Larus occidentalis wymani/San Nicolas Island/terrestrial biology/ornithology.

2173. Hauksson E, Teng T, Henyey TL, McRaney JK, Hsu L. Earthquake hazard research in the Los Angeles Basin and its offshore area (October 1, 1983 to September 30 1984). 1985;
The Geophysics laboratory at the University of Southern Califronia is conducting a comprehensive investigation of seismicity in the greater Los Angeles Basin and its offshore area under U.S.G.S. Contract No. 14-08-0001-21858. As a part of this investigation, U.S.C. operates a seismic network in the Los Angeles basin area. During the 1984 fiscal year the authors have concentrated on seismotectonic analysis of the seismicity recorded in the Los Angeles Basin during the last 10 years. A comprehensive study of earthquakes along the Newport-Inglewood fault is in progress and the authors report the latest results. The authors are also reanalyzing the January 1, 1979 Malibu earthquake and its aftershocks. A substantial swarm of small earthquakes that occurred in the Santa Barbara Channel during 20-25 April 1984 offers new understanding of active tectonics in southern California coastal zone offshore oil fields.
earthquakes/hazard assessment/seismicity/tectonics/geophysical exploration/coastal zone/INE/USA/California/Los Angeles Basin/INE/ Santa Barbara Channel/ASFA.

2174. Mikolaj PG. Natural oil seepage in the Santa Barbara Channel, California; physiocochemical aspects. Natl. Coastal Shallow Water Res. Conf. 1971;2:p.157
Serial; Abstract B; Bibliography and Index of Geology (1969-present). California/General/Pollution/Santa Barbara Channel/Environmental geology/Oil/seepage/natural/United States/GEOREF.

2175. Heinbokel JF, Beers JR. Studies on the functional role of tintinnids in the Southern California Bight. III. Grazing impact of natural assemblages. MARINE BIOLOGY 1979;52(1):23-32
Johns Hopkins Univ., Chesapeake Bay Inst., Baltimore, MD 21218 I (INVESTIGATIVE/OBSERVATION) ; X (EXPERIMENTAL).
Tintinnids were identified and enumerated in samples from 100 stations in the Southern California Bight. Spring and summer samples were collected at weekly intervals at 3 locations off La Jolla, California in 1967. Samples were taken at considerably wider spatial and temporal intervals during 4 cruises in the fall and winter of 1974-75. Ninety-one species of tintinnids were identified, comprising assemblages ranging in density to >18X106 tintinnids/m3. Previously published accounts of the feeding rates and behavior of tintinnids were applied to this tintinnid assemblage in order to estimate their impact on the flow of C through the planktonic food web. For both surveys, <4% of the daily primary production was consumed by the observed tintinnid stocks, although at 14 stations calculated ingestion by tintinnids was >10% and at 4 stations it was >20% of the measured daily primary

production. Other ciliates in the 1967 samples combined were approximately as abundant as the tintinnids; if their grazing rates were comparable, the consumption by the total ciliate assemblage would be double that of the tintinnids alone. The high tintinnid growth efficiencies previously observed and the relatively high efficiency with which tintinnids can be grazed by larger consumers indicates that relatively little of the energy and material fixed by the nanno-phytoplankton may be lost to the larger consumers by the insertion of a ciliate 'extra link' into the food chain. AM. California Coast/Pacific Ocean East/Ciliata/Feeding habits/Carbon/ Food chains/Primary production/Southern California Bight/tintinnids/grazing impact/La Jolla/plankt onic food web/OceanAbstracts.

2176. Dayton PK, Currie V, Gerrodette T, Keller BD, Rosenthal, R., Ven Tresca D. Patch dynamics and stability of some California USA kelp communities. Ecol. Monogr. 1984;54(3):253-290 Address: SCRIPPS INSTITUTION OF OCEANOGRAPHY, LA JOLLA, California 92093. J

This paper considers 3 concepts of stability as they relate to the dynamics of distinctive patch types of algal canopy guilds in southern and central California kelp communities: persistence of a patch through more than 1 generation of the dominant species, which was evaluated by using life tables and observations of patch borders; inertia or the resistance of different patches to invasion or disturbance, which was evaluated by artificially enhancing gametophytes by transplanting sporogenic material, by removing canopy, and by evaluating some important disturbance processes; and resilience or recoverability of a patch following a perturbation sufficient to allow invasion of different species, which was studied by defining some of the mechanisms of successful invasion or succession. By working in distinct habitats in southern (Pt. Loma and Santa Catalina Island) and central (Pt. Piedras Blancas) California, different types of physical stresses as they related to these stability concepts could be evaluated. Taller perennial canopy guilds were dominant competitors for light, but were more susceptible to physical wave stress. Dominance hierarchies in the competition for light appeared to be reversed in areas exposed to. increasing wave stress. The main causes of mortality at Pt. Loma were entanglement with storm-dislodged Macrocystis plants and, in some areas, sea urchin grazing. Mortality in central California was due to winter storms. In most cases, distinct patches resisted invasion for > 10 yr. The mechanisms of resistance involved (1) competition for light and, possibly, nutrients, and (2) limits to spore dispersal. When succession occurred, it was often mediated by many factors, including seasonality of spore production, which coincided with winter storm-related mortalities; mechanisms of kelp dispersal, which were most effective via drifting plants and fragments of fertile material held against the substrate by invertebrates; and survivorship of gametophytes and small sporophytes, which was influenced by local scour and grazing. Appropriate spatial scales, stability, and succession studies in these kelp communities were determined by the size of the disturbed area, which varied from the free space resulting from detachment of single plants to the free space resulting from catastrophes such as overgrazing or unusual storms. Temporal scales were influenced by seasonality of disturbance and algal reproductive condition and aperiodic episodes of cool, nutrient-rich water advected into the patch. There appeared to be conflicting morphological adaptations of the canopy guilds: exploitation of light was enhanced at higher canopy levels, whereas the lower canopy levels were better adapted to tolerate stress from wave surge. The adaptations of the algae appeared to form 4

distinct groups of tactics: ruderals or plants, such as Nereocystis and Desmarestia, with opportunistic life histories; kelps, such as Macrocystis, adapted to exploitative competition for light and. nutrients; kelps (Eisenia, Dictyoneurum) adapted to physical stress such as wave surge; and those algae, such as corallines and Agarum, adapted to heavy grazing. Within any given area, the relative patch stability was determined by biological relationships; between areas, the patch stability patterns were attributable to physical differences.
stability/kelp communities/persistence/life tables/disturbance/transplant/perturbation/succession/competition /dominance hierarchies/wave stress/sea urchin grazing/persistence/invasion resistance/resilience/mortality/light/nutrients/Macrocystis pyrifera/giant kelp/Pt. Loma/Santa Catalina Island/Pt. Piedras Blancas/marine biology/ecology.

2177. Colton MC, Mooers CNK. Meteorological data from the OPTOMA (Ocean Prediction through Observations, Modeling and Analysis) Program OPTOMA 11, Leg Dll. 30 June - 10 July, 1984. 1985;
The OPTOMA (Ocean Prediction Through Observations, Modeling and Analysis) Program seeks to understand the mesoscale (front, eddies, and jets) variability and dynamics of the California Current System and to determine the scientific limits to practical mesoscale ocean forecasting. This report presents the meteorological data acquired by twenty-six radiosondes launched during the hydrographic cruise OPTOMA11, Leg DII (30 June to 10 July, 1984). To compare the prevailing atmospheric and oceanic conditions, the radiosonde potential temperature and specific humidity profiles are plotted with nearly coincident XBT temperature profiles.
meteorological data/mesoscale features/ocean-atmosphere system/radiosondes/OPTOMA/ASFA.

2178. Fischer PJ. Natural hydrocarbon seeps, northern shelf, Santa Barbara Basin, California. Natl. Coastal Shallow Water Res. Conf. 1971;Abstr.(2):p.70 Serial; Abstract B; Bibliography and Index of Geology (1969-present). Pacific Ocean/Oceanography/Marine geology/Santa Barbara Basin/Petroleum/seepage/Sediments/Lithostratigraphy/Sedimentation /Transport/Marine transport/Continental shelf/United States/California/GEOREF.

2179. Cullen JJ, Renger EH. Continuous measurement of the DCMU-induced fluorescence response of natural phytoplankton populations. MARINE BIOLOGY 1979;53(1):13-20
SIO, Inst. of Marine Resources, P.O. Box 1529, La Jolla, CA 92093
I (INVESTIGATIVE/OBSERVATION).
The effect of 3X10-6 M DCMU (3-(3,4-dichlorophenyl)-1, 1-dimethylurea), a photosynthesis inhibitor, on in vivo chlorophyll a fluorescence was observed in nearshore waters of the Southern California Bight. Fluorescence readings in the presence and absence of this inhibitor are compared using parallel flow-through fluorometers. The increase in fluorescence induced by DCMU is expressed as the FRI (fluorescence response index). Theory and laboratory studies on batch cultures of phytoplankton suggest that the FRI is correlated with photosynthetic efficiency and/or physiological state, however other studies have produced results in apparent conflict with this interpretation. Although sufficient information does not exist to justify the use of fluorescence response as a precise physiological indicator in the field, very low FRI values may be a manifestation of photosynthetic debility in a sample. Vertical profiles showed a wide range of the FRI. At a

station close to shore, low FRI values were observed well below the 1% light level, but the fluorescence response of the phytoplankton throughout the euphotic zone was similar to that of growing cultures. Farther offshore, the FRI was depressed near the surface, but increased in the enhanced nutrient conditions of the lower euphotic zone. The patterns observed were strong, and consistent with hypotheses which relate low values of the FRI to diminished photosynthetic capacity. AM.
Phytoplankton/Fluorescence/Chlorophylls/Photosynthesis/Light fields/California Coast/Southern California Bight/DCMU/(3-(3,4-dichlorophenyl)-1, 1-dimethylurea)/chlorophyll a/fluorescence response index/photosynth esis inhibition/OceanAbstracts.

2180. Dayton PK, Tegner MJ. The importance of scale in community ecology: a kelp forest example with terrestrial analogs. P.W. Price, C.N. Slobodchickoff, W.S. Gaud. A new ecology: novel approaches to interactive systems. New York: John Wiley & Sons, Inc; 1984. 457-481.
This paper describes a study of community structure and demography of important kelp and invertebrate species. Included are discussion of stability of small patches in kelp forests, importance of urchin grazing, nutrient transport, larval transport, & the influence of man on the kelp forest ecosystem.
scale/community ecology/patch stability/invasion/competition/grazing/disturbance/Macrocystis pyrifera/giant kelp/Strongylocentrotus/sea urchin/Point Loma/San Diego County/Santa Catalina Island/Bird Rock/Point Piedras Blancas/San Luis Obispo County/marine biology/ecology.

2181. Wittmann PA, Kelley EA, Mooers CNK. Hydrographic data from the OPTOMA (Ocean Prediction Through Observations, Modeling and Analysis) Program: OPTOMA 15, 24 January to 23 February 1985. REP. U.S. NAV. POSTGRAD. SCH 1985; The two cruises, Leg DI and DII, and one AXBT flight Leg P were undertaken in January and February 1985. This report presents the hydrographic data acquired by XBT, AXBT and CTD casts, from the cruises and the flight.
hydrographic data/CTDs/water temperature/salinity/oceanographic data/INE/USA/INE/California Current/ASFA.

2182. Drake DE. The distribution and transport of suspended matter in Santa Barbara Channel, California. Natl. Coastal Shallow Water Res. Conf., Abstr. 1971(2):p.58
Serial; Abstract B; Bibliography and Index of Geology (1969-present). California/Sedimentary petrology/Transport/Santa Barbara Channel/Sedimentation/Marine transport/United States/Continental shelf/GEOREF.

2183. Christensen NJ, Rodriguez S. N. A study of sea level variations and currents off Baja California. JOURNAL OF PHYSICAL OCEANOGRAPHY 1979 May;9(3):631-638
Centro de Investigacion Cientifica y de Educacion Superior de Ensenada, Ensenada, Baja California, Mexico.
Baja California Coast/Currents/Sea levels/Pacific Ocean Northeast/Hydrographic data/Tidal data/California Current/California Countercurrent/OceanAbstracts.

2184. de Violini R. Tidal and lunar data for Point Mugu, San Nicolas Island, and the Barking Sands area during 1980. : Pacific Missile Test Center, Point Mugu, CA. PMTC-TP-80-04; 1979. 68.
Basic lunar and tidal data for Point Mugu, San Nicolas Island, CA, and the Barking Sands, HI, area during 1980 are provided. The data presented are (1) tidal data, (2) times of moonrise and moonset, and (3) times of lunar phases. Ocean tides/Moon/Seasonal

variations/Time/Oceanographic
data/Moonrise/Moonset/Ephemerides/California Channel
Islands/Hawaii/meteorology/ Oceanography/astronomy.

2185. Anderson SL. The ridgeback prawn fishery. ADVANCES IN AQUACULTURE AND FISHERIES RESEARCH. REPORT OF A CALIFORNIA SEA GRANT SYMPOSIUM, MAY 18 to 20, 1983, HELD AT THE UNIVERSITY OF CALIFORNIA, DAVIS.; REP. CALIF. SEA GRANT COLL. PROGRAM 1985;
The ridgeback prawn fishery is a small, newly developed fishery in the Santa Barbara Channel area. In 1979, 356,000 lb were landed. Landings have declined each year since 1979 to 141,000 lbs in 1982. Ex-vessel prices range from $0.85-2.25 per pound depending on market conditions. Most fishing occurs on day trips from Santa Barbara Harbor. Until recently, almost nothing was known about the ridgeback prawn Sicyonia ingentis . Our natural history investigations demonstrate repeated spawning activity by individual prawns throughout a long spawning season (June-September). No intervening molt or mating is required to produce a fertile spawn. Most females progress synchronously through a single molt cycle beginning in mid-May and ending in mid-November.
sexual reproduction/life history/fishery industry/shellfish fisheries/Sicyonia ingentis/INE/USA/California/Santa Barbara/ASFA.

2186. Schultz FE. Exploration history of the Santa Barbara Channel. in Exploration today; energy tomorrow (SEG Annual Int. Meet., 41st), [Program and Abstracts], Soc. Explor. Geophys. Houston, 1971. 1971:p.61-62 Abstract B; Bibliography and Index of Geology (1969-present). California/Geophysical surveys/Seismic surveys/Santa Barbara Channel/United States/marine/Petroleum/exploration/Mineral exploration/Seismic methods/history/GEOREF.

2187. Eppley RW, Renger EH, Harrison WG. Nitrate and phytoplankton production in southern California coastal waters. LIMNOLOGY AND OCEANOGRAPHY 1979 May;24(3):483-494
SIO, Inst. of Marine Resources, A-018, La Jolla, CA 92093.
The transport of nitrate (NO3-) into the euphotic zone appears to be a major factor regulating the standing stock and production of phytoplankton in southern California coastal waters. The rate of photosynthetic C assimilation is proportional to the rate of NO3- assimilation and to the ratio of NO3-:total N assimilated. The phytoplankton standing stock (g C/m3) and its production rate are related to the depth of the vertical NO3- concentration gradient. The chemical composition of the particulate organic matter, as the POC:PON ratio, is related to the C:N assimilation ratio of the phytoplankton. Regenerated production, measured as ammonium assimilation, is proportional to the NO3- assimilation rate, implying parallel and concurrent increases in the production of heterotrophic microplankton and phytoplankton attending new inputs of NO3- into the euphotic zone. The vertical diffusion of NO3-, when calculated from the vertical NO3-concentration gradients and NO3- assimilation rates, gives reasonable estimates of the vertical eddy diffusivity coefficient for NO3-. AM.
Nitrates/Phytoplankton/Primary production/California Coast/Coastal waters/Assimilation/Statistical analysis/Mathematical models/OceanAbstracts.

2188. de Violini R. Tidal and lunar data for Point Mugu, San Nicolas Island, and the Barking Sands area during 1979. : Pacific Missile Test Center, Point Mugu, CA. PMTC-TP-7912; 1979. 64.
Basic lunar and tidal data for Point Mugu, San Nicolas Island, and the Barking Sands area during 1979 are provided. The data presented are (1) tidal data, (2) times of moonrise and moonset, and (3)

times of lunar phases. Tides/Moon/Moonrise/Moonset/Ocean tides/Ephemerides/San Nicolas Island/Point Mugu/Barking Sands/oceanography/meteorology/oceanography/astronomy.

2189. Goodman D, Eppley RW, Reid FMH. Summer phytoplankton assemblages and their environmental correlates in the Southern California Bight USA. J. Mar. Res. 1984;42(4):1019-1050.
gonyaulax/polyedra/diatom/coccolithophorid/temperature/salinity/nutrient/upwell ing/current/principal component analysis/canonical/correlation analysis/algae/spermatophytes/Bray/Eganhouse/geochemistry/chemical oceanography/phytoplankton/salinity/nutrients/minerals/community composition/Hardy/phytoplankton/MINERALS MANAGEMENT SERVICE.

2190. Sholkovitz ER, Gieskes JM. A physical chemical study of the flushing of the Santa Barbara Basin. Limnol. Oceanogr. 1971;16(3):p.479 Serial First direct evidence for flushing in a California basin, 1970 cruises. B; Bibliography and Index of Geology (1969-present).
Pacific Ocean/Oceanography/Circulation/California/Santa Barbara Basin/Oceans/United States/flushing/1970/GEOREF.

2191. Omori M, Gluck D. Life history and vertical migration of the pelagic shrimp Sergestes similis off the southern California coast. U. S. NATIONAL MARINE FISHERIES SERVICE. FISHERY BULLETIN 1979 Jan;77(1):183-198
UNESCO, Div. of Marine Sciences, Place de Fontenoy, 75700 Paris, France. S. similis in the southern California eddy was observed with respect to reproduction, daily and ontogenetic vertical migrations, growth, and longevity. The period of highest spawning activity occurs between late Dec. and early Apr., but small pulses of spawning are occasionally observed in late spring and summer. The release of eggs takes place close to shore above the continental slope, then the eggs sink to O200 m. Nauplius larvae ascend and protozoeal and zoeal larvae stay mostly above 100 m. The daily vertical migration becomes evident after the second protozoeal stage. Adults are abundant between 50 and 200 m at night and 250 and 600 m in the daytime. The spawning activity of S. similis becomes highest during the period when the vertical thickness of the optimum temperature zone (10deg-15degC) is the greatest. The local population off the southern California coast may be joined by the subarctic population. It is possible that multiple spawnings occur from females of the southern California population. The lifespan of S. similis is 2.0-2.5 yr for females and j1.5 yr for males. Sexual maturity is reached at j1 yr in both sexes. Females reproduce in 2 successive spawning seasons, and males seem to accomplish multiple fertilizations. Growth trends are similar to those reported for S. similis off Oregon. Growth rates are described using growth curves fitted by the von Bertalanffy and logistic equations. AM. Life histories/Migration/Vertical distribution/Shrimps/Sergestes/C alifornia Coast/Spawning/Pacific Ocean Northeast/Ontogeny/Larval stages/Growth rates/Seasonal cycles/S/similis/OceanAbstracts.

2192. Delong RL. Population biology of northern fur seals at San Miguel Island, California [dissertation]. Berkeley, California, USA: University of California; 1982. 203.
The Adams Cove, San Miguel Island fur seal colony was discovered in 1968; the Castle Rock colony was discovered in 1972. Adams Cove fur seal population data for years 1969 through 1978 are presented. Total numbers of males increased from 12 in 1969 to 44 in 1978. Females outnumbered males more than 10 to 1 in all years and their numbers increased at an average of 19%

annually. Only 28 pups were born in 1969 and 635 were born in 1978. Of 33 females observed on San Miguel Island which had been tagged as pups, 23 were from the Pribilofs, 6 were from the Commanders, and 4 were from Robben Island.^ During the years 1969-1971 small adult males accomplished over 35% of breeding, but as large males became more abundant, they accounted for an increasing proportion of observed copulations, and excluded small adult males from access to reproductive females. The mean pupping date ranged from 21 to 29 June and averaged about 2 weeks earlier than on St. Paul Island. Parturient females were bred about 6 days after birth of the pup; nonparturient females entered estrus and were bred 7 days after their arrival on land.^ Interspecific competition for rookery space occurred between California sea lions and northern fur seals. Seventy-six percent of boundary displays initiated by territorial northern fur seal males were directed toward. California sea lions; 95% of 671 boundary displays resulted in sea lions being displaced. Interspecific breeding behavior was observed and an apparent hybrid California sea lion/northern fur seal was born to a fur seal female in 1972.^ The San Miguel environment is much warmer than that of the Pribilof Islands. Minimum temperatures at San Miguel Island are warmer than average maximum temperatures at St. Paul Island. Fur seals show the same behavioral thermoregulatory responses on the Pribilofs and at San Miguel Island. At San Miguel Island fur seal adults accommodate the thermoregulatory requirements by shifting reproductive activity primarily to the cooler hours of the day and night. Newborn fur seal pups died of heat prostration on hot days. Pups are susceptible to heat prostration until they learn to move to the splash zone when heat-stressed. population biology/thermoregulation/northern fur seals/Callorhinus ursinus/marine mammals/pinnipeds/ Otariidae/California sea lions/Zalophus californianus/San Miguel Island/Adams Cove/marine biology.

2193. Curran JF, Hall KB, Herron RF. Geology, Oil Fields, and Future Petroleum Potential of Santa Barbara Channel Area, California. in Future petroleum provinces of the United States; their geology and potential, Am. Assoc. Pet. Geol., Mem. 1971;1(15):p.192-211
Serial B; Bibliography and Index of Geology (1969-present). California/Economic geology/Petroleum/gas/Santa Barbara Channel/United States/structure/reserves/Sedimentary rocks/Lithostratigraphy/Tectonics/structural complexes/Tertiary/Mesozoic/Pleistocene/GEOREF.

2194. Gorsline DS. Sedimentologic history and characteristics of continental margin basins: California borderland. Am. Assoc. Pet. Geol. Bull. 1980;64(3):442-443.
California/sedimentation/sediments/Hickey/physical oceanography/deposition/environmental analysis/basins/continental margin/United States/continental borderland/mass movements/turbidity currents/marine transport/provenance/textures/fine-grained materials/coarse-grained materials/rates/marine environment/sedimentary basins Eganhouse/geochemistry/chemical oceanography/sedimentation/continental margin/borderland/turbidity currents/grain size/MINERALS MANAGEMENT SERVICE.

2195. Lasker R. The relation between oceanographic conditions and larval anchovy food in the California current: Identification of factors contributing to recruitment failure. p. pp. 212-230.

NMFS, Southwest Fisheries Center, P.O. Box 271, La Jolla, CA 92038. Anchovies/Larvae/Diet/California Coast/California Current/Engraulis/Environmental conditions/Feeding habits/Population dynamics/E/mordax/recruitment failure/OceanAbstracts.

2196. DeMartini EE, Coyer JA. Cleaning and scale-eating in juveniles of the kyphosid fishes, Hermosilla azurea and Girella nigricans. Copeia 1981;1981(4):785-789
Juvenile zebraperch and opaleye were observed in the field to clean and otherwise nip the sides of other fish. The most frequent clients of both species were atherinid fishes, probably Atherinops affins. Juvenile zebraperch were also observed servicing a small embiotocid fish, Cymatogaster sp., juvenile opaleye and other juvenile zebraperch. Gut analyses of observed cleaners and museum specimens confirmed that juveniles of both species ingest ectoparasites and scales of other fishes. Both cleaning behavior in general and the specific incidence of scale-eating , the latter indicated by the negative responses of host fish and by the absence of ectoparasites/presence of scales in the guts of cleaner fish, was higher among juvenile zebraperch than among juvenile opaleye. Apparently those individuals that do engage in these behaviors tend to do so frequently. These data further generalize Hobson's (1971) observation that cleaning is widespread among small-mouthed, "picker-type" fishes and support Hobson's theory that in at least some species cleaning is performed by just a relatively few specialized individuals.
cleaning behavior/scale-eating/ectoparasites/Hermosilla azurea/zebraperch/Girella nigricans/opaleye/Santa Catalina Isalnd/Big Fisherman Cove/marine biology/ecology.

2197. Gorsline DS. Deposition in active margin basins: With examples from the California continental borderland. Deposition in Active Margin Basins, Pacific Section, Soc. Econ. Paleontol. Mineral. Short Course 1987;54:33-52. text/chemical oceanography/Eganhouse/Venkatesan/MINERALS MANAGEMENT SERVICE.

2198. Gorsline DS, Douglas RG. Analysis of sedimentary systems in active-margin basins: California continental borderland. Cenozoic Basin Development of Coastal California. Rubey Memorial Vol. VI 1987;:64-80. introduction/MINERALS MANAGEMENT SERVICE.

2199. Gorsline DS, Emery KO. Turbidity-current deposits in San Pedro and Santa Monica Basins off southern California. Geol. Soc. Am. Bull. 1959;70:279-290. introduction/MINERALS MANAGEMENT SERVICE.

2200. Gorsline DS, Pao GA. High resolution studies of basin sedimentation related to climatic oceanographic changes over the past 50,000 years in the California Continental Borderland. Paper Presented at Society of Economic Paleontologists and Mineralogists Research Symposium, New Orleans, LA (USA), 25 May 76. 1976;:32. sedimentology/climate/marine geology/anderson/anthropogenic/sediments/sedimentation/deep depth/core sampling/climate/cycles/carbon/carbonates/chemical composition/rates/variations/basins geographic/continental shelves/california/algae/spermatophytes/Bray/MINERALS MANAGEMENT SERVICE.

2201. Gorsline DS, Prensky SE. Paleoclimatic inferences for late Pleistocene and Holocene from California Continental Borderland basin sediments. 1976;:11. sedimentology/climate/marine

geology/anthropogenic/anderson/determination/ocean currents/upwelling/intensity/sedimentation/carbonates/chemical composition/cycles/variations/basins geographic/continental shelves/california/MINERALS MANAGEMENT SERVICE.

2202. Weller RA. Near-surface velocity variability at inertial and subinertial frequencies in the vicinity of the California Current. J. PHYS. OCEANOGR 1985;15(4):372-385.
In this paper a recent set of velocity observations taken in the upper 150 m of the ocean in the vicinity of the California Current is presented. The horizontal velocity data were collected from the Research Platform ELIP as it drifted off the coast of Baja California in April and May of 1980. Local winds and other meteorological parameters were measured on board FLIP during the experiment. The intent of the experiment was to collect data that would permit investigation of the response of the upper ocean to local atmospheric forcing. The purpose of this paper is to report and discuss the observed velocity variability, with emphasis on that at near-inertial frequencies.
atmospheric forcing/near-surface currents/variability/inertial oscillations/INE/California Current/ASFA.

2203. Gorsline DS, Teng LS-. The California continental borderland. The Geology of North American, The Eastern Pacific Ocean and Hawaii (in press) 1989;N. text/chemical oceanography/Eganhouse/Venkatesan/MINERALS MANAGEMENT SERVICE.

2204. Smith PE. Precision of sonar mapping for pelagic fish assessment in the California Current. INTERNATIONAL COUNCIL FOR THE EXPLORATION OF THE SEA. JOURNAL DU CONSEIL 1978 Apr;38(1):33-40
NMFS, Southwest Fisheries Center, La Jolla, CA 92038.
A large scale sonar map of fish schools in the Los Angeles Bight is described and used to determine the amount of sampling required to estimate the number of schools at various levels of precision. About 8 nm2 (2,744 ha) must be directly surveyed to get an estimate of fish schools with a 25% level of precision: 47 nm2 (16,121 ha) must be sampled for a 10% level of precision. Although spatial autocorrelation indicates independent observations can be taken at 5 nm (9 km) spacing or greater, there is a possibility of exclusion or reduction of the number of schools at 7-15 nm (13-28 km) range which should be further investigated. AM. Fish schools/Stock assessment/California Current/Spatial distribution/Sampling systems/Sonar/Statistical analysis/Sampling methods/California Coast/Los Angeles Bight/sonar mapping/OceanAbstracts.

2205. Department of the Interior. Bureau of Land Management. Proposed 1979 outer continental shelf oil and gas lease sale, OCS sale No. 48, offshore Southern California. Los Angeles, California: Department of the Interior. Bureau of Land Management.; 1979. 5 Volumes.
Note: USDA EMPLOYEES REQUEST DOCUMENTS FROM NATIONAL AGRICULTURAL LIBRARY OTHERS ORDER FROM INFORMATION RESOURCES PRESS, 1700 NORTH MOORE STREET, SUITE 70 ARLINGTON, VA 22209 Date: JANUARY 1979 (EPA: JANUARY 31, 1979). (PUR)LEASING OF 217 TRACTS (1.1 MILLION ACRES) ON THE OUTER CONTINENTAL SHELF (OCS) OFFSHORE OF SOUTHERN CALIFORNIA FOR EXPLORATION, DEVELOPMENT, AND PRODUCTION OF OIL AND GAS RESOURCES IS PROPOSED. THE TRACTS ARE LOCATED IN THE VICINITY OF THE SANTA BARBARA CHANNEL (544,693 ACRES), SANTA ROSA (34,560 ACRES), SANTA BARBARA ISLAND (23,980 ACRES), SAN PEDRO BAY (116,020 ACRES), TANNER-CORTES (275,825 ACRES), AND DANA POINT-SAN DIEGO (146,740 ACRES). WATER DEPTHS ARE 25:N-750 METERS. CONSTRUCTION O.
AQUATIC SYSTEMS (IMPACTS)/CONTINENTAL SHELVES/CRUDE OIL/EMPLOYMENT

(IMPACTS)/ENDANGERED SPECIES (ANIMALS)/FISHERIES (IMPACTS)/GAS EXPLORATION/LEASING/MATRIX ANALYSES OF IMPACTS/NATURAL GAS/OFFSHORE ENERGY SOURCES/OIL EXPLORATION/PACIFIC OCEAN/PIPELINES/WETLANDS (IMPACTS)/WHALES/WILDLIFE (IMPACTS)/OUTER CONTINENTAL SHELF LANDS ACT OF 1953 - PROJECT AUTHORIZATION/Santa Barbara Channel/Santa Rosa Island/Santa Barbara Island/San Pedro Bay/Tanner-Cortes/Dana Point, San Diego/geology/petroleum/offshore oil/energy resources.

2206. Gorsline DS, Kolpack RL, Karl HA, Drake DE, Fleischer P, Thornton SE, Schwalbach JR, Savrda CE. Studies of fine-grained sediment transport processes and products in the California continental borderland. Fine-grained sediments: Deep-water processes and facies 1984;:395-415.
introduction/text/physical oceanography/MINERALS MANAGEMENT SERVICE.

2207. Gorsline DS, Nardin TR, Edwards BD, Drake DE, Thornton SE, Day PC. Influence of current scour on basin sills; Anacapa Passage, California borderland. Geol. Soc. Am. Bull. 1982;14(7):499-500.
California/sedimentation/oceanography/environment/Hickey/physical oceanography/marine environment/United States/Anacapa Passage/Pacific Ocean/Santa Barbara Basin/Santa Monica Basin/suspended materials/scour/currents/ocean circulation/Pliocene/Neogene/Tertiar/Cenozoic/Pleistocene/Quaternary/submarine canyons/Santa Clara Rive/VenturaRiver/sand/clastic sediments/HuenemeFan/remote sensing/Landsat/imagery/transmissometry/sills/intrusions/basin sills/continental shelf/MINERALS MANAGEMENT SERVICE.

2208. Gorsline DS, Prensky SE, Pao GA. Late Pleistocene sedimentary history of continental borderland basins off Baja California and southern California: Changes in terrigenous and biogenic sedimentation rates. Interim Rept. for period ending Aug. 1976. 1976;:12.
sedimentology/marine geology/anthropogenic/deposition/sediments/sedimentation/rates/geologic age/determination/climate/cycles/carbon/carbonates/chemical composition/variations/basins geographic/continental shelves/california/anderson/Eganhouse/chemical oceanography/MINERALS MANAGEMENT SERVICE.

2209. Anon. ARCO to revamp offshore California field development. OIL GAS J 1985;83(17):46.
ARCO Oil & Gas Co.'s fault block extension to South Elwood oil field could change the configuration of the company's planned Coal Oil Point giant field development in California's Santa Barbara Channel state waters. ARCO has withdrawn temporarily its permit application for a pair of drilling/production platform complexes to develop Coal Oil Point. The move stems from its test of an apparent west extension to South Elwood field. ARCO plans more drilling near the well and has chosen locations for two more Monterey wildcats on state tracts in the area. oil and gas industry/drilling/coastal zone/INE/USA/California/ASFA.

2210. Smith SV. Budget of calcium carbonate, southern California continental borderland. J. Sediment. Petrol. 1971;41(3):p.798 Serial Carbonate sedimentation in the neritic environment. B; Bibliography and Index of Geology (1969-present).
Pacific Ocean/Marine geology/Sedimentation/calcium carbonate/California/Environment/Marine/GEOREF.

2211. Jan TK, Young DR. Chromium speciation in municipal

wastewaters and seawater. WATER POLLUTION CONTROL FEDERATION. JOURNAL 1978 Oct;50(10):2327-2336 Southern California Coastal Water Research Project, El Segundo, CA 90245. Important aspects are discussed of the specificity, recovery, and blank values of a Cr speciation technique that would apply to the complex matrix of seawater samples and be sensitive to variations of j20 ng/L in seawater. Results obtained on the physical/chemical state of Cr in major municipal wastewaters and coastal seawater from outfall discharge sites and control stations in the Southern California Bight are presented. The majority of dissolved Cr found in clean coastal seawater off Southern California is Cr+6. The median concentration of dissolved Cr+3 and Cr+6 measured .045 and .14 lg/L, respectively. Subsurface seawater samples taken from the JWPCP wastewater plume contained concentrations of particulate Cr N100 times greater than control levels. The concentrations of dissolved Cr+3 in the plume samples were only 1.5-3.0 times greater than background values. A relatively high natural background of dissolved Cr+6 in coastal seawater is apparent. The low percentage of municipal wastewater Cr occurring in the toxic form (Cr+6) and the apparent lack of conversion of other forms of Cr to it in Los Angeles effluents, suggests that significant increases in seawater concentrations of Cr+6 do not result from ocean discharges of the wastewaters in the Southern California Bight. FT. Chromium/Wastewaters/California Coast/Toxicity/Measuring methods/Trace minerals/Pollutant analysis/Contaminant measurements/Seawater analysis/Southern California Bight/Cr(III)/Cr(VI)/OceanAbstracts.

2212. Department of the Interior. Bureau of Land Management. Proposed 1982 outer continental shelf oil and gas lease sale offshore Southern California. Los Angeles, California: Department of Interior. Bureau of land management.; 1981. 2 Volumes.
Note: USDA EMPLOYEES REQUEST DOCUMENTS FROM NATIONAL AGRICULTURAL LIBRARY OTHERS ORDER FROM INFORMATION RESOURCES PRESS, 1700 NORTH MOORE STREET, SUITE 70 0, ARLINGTON, VA 22209.
(PUR)SALE OF OIL AND GAS LEASES ON 218 TRACTS CONTAINING 1.1 MILLION ACRES OF OUTER CONTINENTAL SHELF LANDS OFFSHORE OF SOUTHERN CALIFORNIA IS PROPOSED. THE TRACTS ARE BETWEEN 3 AND 84 GEOGRAPHIC MILES OFFSHORE AND IN WATER DEPTHS RANGING FROM 150 TO 4,900 FEET. THE TRACTS LIE IN THREE SUBAREAS, NAMELY, THE SANTA BARBARA CHANNEL, INNER BANKS, AND OUTER BANKS. DEVELOPMENT OF THE LEASE TRACTS WOULD INVOLVE 19-179 EXPLORATORY WELLS, 35-199 DELINEATION WELLS, 40-339 PLATFORM WELLS, 3-12 PLATFORMS, 0-7 SUBSEA COMPLETIONS, 96 MILES OF OFFSHORE PIPELINE, AND 2 MILES OF ONSHORE PIPELINE. ESTIMATED COST OF DEVELOPING OIL AND GAS RESOURCES WITHIN THE TRACTS IS $2.1 BILLION. (POS)DEVELOPMENT OF THE RESOURCES WITHIN THE TRACTS WOULD RESULT IN THE PRODUCTION OF 230 MILLION BARRELS OF OIL AND 662 BILLION CUBIC FEET OF NATURAL GAS. OIL AND GAS PRODUCED BY THE TRACTS WOULD DECREASE THE NATION'S DEPENDENCY ON FOREIGN SOURCES OF OIL. DIRECT EMPLOYMENT LEVELS OVER THE 25-YEAR PRODUCTIVE LIFE OF THE TRACTS WOULD PEAK IN 1986 AT 400 JOBS, WHILE TOTAL DIRECT AND INDIRECT EMPLOYMENT WOULD ACCOUNT FOR NEARLY 4,526 ADDITIONAL JOBS AT THE PEAK OVERALL EMPLOYMENT YEAR OF 1992. INCOME FROM THE SALES WOULD. INCREASE FEDERAL REVENUE. (NEG)DEVELOPMENT ACTIVITIES WOULD RESULT IN A STATISTICALLY ESTIMATED 1.1 SPILLS OF GREATER THAN 1,000 BARRELS AND 0.5 SPILLS GREATER THAN 10,000 BARRELS DURING THE LIFE OF THE LEASES. TRENCHING FOR PIPELINES AND OTHER ACTIVITIES ASSOCIATED WITH PIPELINE CONSTRUCTION AND OPERATION WOULD RESULT IN RELEASE OF 230 MILLION BARRELS OF FORMATION WATER, 220 MILLION BARRELS OF DRILL MUDS, AND 393.5 MILLION BARRELS OF CUTTINGS. ACTIVITIES AT OIL PLATFORMS AND DRILLING RIGS WOULD DEGRADE WATER QUALITY WITHIN 2,500 METERS OF

THESE STRUCTURES. LARGE OIL SPILLS WOULD RESULT IN SEVERE WATER QUALITY DEGRADATION IN RESTRICTED BAYS, SUCH AS UPPER NEWPORT BAY, AND IN SEVERE DEGRADATION OF SENSITIVE INTERTIDAL AREAS. RELEASE OF SULFUR DIOXIDE, CARBON MONOXIDE, HYDROGEN SULFIDE, AND PAR. CONTINENTAL SHELVES/CRUDE OIL/CULTURAL RESOURCES/ENERGY SOURCES/EXPLORATION/FISHERIES/LEASING/NATURAL GAS/OFFSHORE ENERGY SOURCES/OIL PRODUCTION/OIL SPILLS/PIPELINES/WELLS/OUTER CONTINENTAL SHELF LANDS ACT OF 1953 - PROGRAM AUTHORIZATION/petroleum/impacts/Santa Barbara Channel/ petroleum/environmental biology/resource management.

2213. Anon. Union confirms find in marine sanctuary off California. OIL GAS J 1985;83(7):50.
Union Oil Co. of California has confirmed a 15 year old oil and gas field discovery in a Santa Barbara Channel marine sanctuary off California. Unocal is evaluating test results and mulling possible development plans for the field underlying Block 203 in the eastern channel. The strike may be an extension to Hueneme field, currently producing from Platform Gina 3 miles to the northeast, outside the sanctuary. Unocal's efforts to further confirm its Block 203 discovery were embroiled in a battle with the California Coastal Commission (CCC), which had sought to block drilling in or near the Channel Islands Marine Sanctuary. Congress established the sanctuary after the 1969 channel oil spill and after Unocal drilled the first four wells and a redrill to delineate the field. oil and gas fields/sanctuaries/oil and gas industry/INE/Santa Barbara Channel/environmental protection/ASFA.

2214. Fischer PJ, Kolpach RL. Marine geology of the northern shelf of the Santa Barbara basin; Holocene faulting, natural oil seeps, and sediments. Geol. Soc. Am., Abstr. 1971;3(7):p.565 Serial; Abstract B; Bibliography and Index of Geology (1969-present). California/Marine geology/Sediments/structure/Santa Barbara basin/United States/oil seepage/natural/GEOREF.

2215. Cooke TS. Outer continental shelf oil spill impact on southern California resources. p. p. 257.
Bureau of Land Management, 300 N. Los Angeles St., Los Angeles, CA 90012. Outer continental shelves/Oil spills/Environmental impact/California Coast/Oil pollution/US West Coast/Southern California Bight/OceanAbstracts.

2216. Gower JFR, Denman KL, Holyer RJ. Phytoplankton patchiness indicates the fluctuation spectrum of mesoscale oceanic structure. Nature (Lond) 1980;288(5787):157-159.
GULF STREAM/ATLANTIC OCEAN/CALIFORNIA/USA/CURRENT/PACIFIC OCEAN/SATELLITE/THERMAL/IR/IMAGERY/MAPPING/MAMMAL/BONNELL/Pieper/ MINERALS MANAGEMENT SERVICE.

2217. Rienecker MM, Mooers NKC, Hagan DE, Robinson AR. A cool anomaly off northern California: An investigation using IR imagery and in situ data. J. GEOPHY. RES. (C OCEANS) 1985;90(C3):4807-4818.
Satellite IR imagery and in situ hydrographic data are used to understand better the mesoscale variability of the California Current system and to explore the relation of its surface and subsurface thermal structures. In August 1982, one of the cool filaments commonly seen in satellite IR images during summer of northern California was sampled hydrographically during an OPTOMA (Ocean Prediction Throught Observation, Modeling, and Analysis) cruise. Based on the cool anomaly seen in a series of IR images and the in situ hydrographic data, and based on geostrophic calculations, a jet entrained upwelled coastal water and advected

it rapidly through the warmer waters offshore, providing an important cross-shore transfer process.
thermal structure/temperature anomalies/INE/California Current/cool filaments/ASFA.

2218. Drake DE, Kolpack RL. Sediment transport on the Ventura shelf, Santa Barbara channel, California. Geol. Soc. Am., Abstr. 1971;3(7):p.549-550 Serial; Abstract B; Bibliography and Index of Geology (1969-present). California/Sedimentary petrology/Santa Barbara/Ventura shelf/Sedimentation/Transport/Flood/United States/GEOREF.

2219. Department of the Interior. Minerals Management Service. Proposed Southern California lease offering, February 1984. Los Angeles, California: Department of the Interior, Minerals Management Service; 1983. 641. (PUR)SALE OF OIL AND GAS DEVELOPMENT LEASES ON 11.6 MILLION ACRES OF OUTER CONTINENTAL SHELF LANDS IN THE PACIFIC OCEAN OFF SOUTHERN CALIFORNIA IS PROPOSED. LEASE AREAS ARE LOCATED IN THE SANTA BARBARA CHANNEL, INNER BASIN, AND OUTER BASIN AND BANKS AREAS. DEVELOPMENT OF THE LEASED AREAS UNDER THE PREFERRED SCHEME WOULD INVOLVE 44 TO 154 EXPLORATORY WELLS BETWEEN 1984 AND 1988, 55 TO 186 DELINEATION WELLS BETWEEN 1985 AND 1989, 215 TO 950 DEVELOPMENT WELLS BETWEEN 1989 AND 1994 OR 1998, 7 TO 27 PLATFORMS BETWEEN 1989 AND 1991 OR 1995, 75 TO 423 MILES OF PIPELINE BETWEEN 1989 AND 1991 OR 1995, AND 6 TO 30 SUBSEA COMPLETIONS BETWEEN 1992 AND 1995 OR 1997. OIL AND GAS PRODUCTION WOULD BEGIN IN 1989 AND CONTINUE THROUGH 2008. ALL HIGH AND LOW DEVELOPMENT ESTIMATES WERE PRODUCED ACCORDING TO EXTREMES IN THE ESTIMATES OF AVAILABLE RESOURCES IN THE AREA. ESTIMATES FOR TOTAL HYDROCARBON RESOURCES RANGE FROM 320 MILLION TO 1.55 TRILLION BARRELS OF OIL AND 640 TRILLION TO 3,680 TRILLION CUBIC FEET OF GAS. (POS)DEVELOPMENT OF OIL AND GAS RESOURCES WITHIN THE LEASE AREAS WOULD ENHANCE THE NATION'S ABILITY TO PROVIDE FOR ITS OWN HYDROCARBON NEEDS, REDUCING DEPENDENCE ON FOREIGN SOURCES OF OIL.
AIR QUALITY STANDARDS VIOLATIONS/CONTINENTAL SHELVES/EMPLOYMENT/FISHERIES/HISTORIC SITES SURVEYS/IMPACT ASSESSMENT METHODOLOGY/LEASING/MILITARY OPERATIONS (JOINT)/NATURAL GAS/OIL PRODUCTION/OIL SPILLS/PIPELINES/REEFS/OUTER CONTINENTAL SHELF LANDS ACT OF 1953 - PROJECT AUTHORIZATION/Santa Barbara Channel.

2220. Harrod RL. Observations of the California Countercurrent. 1984; This thesis describes results from moored current meters, 150-350 m, for a region over the continental slope off Cape San Martin, California, from January 1979 to April 1980. The California Countercurrent was found to be present in the study area during the entire period and was substantially stronger during the spring. Frequent current reversals and oscillations occurred between equatorward and poleward flow, less often at the nearshore station. Preferred low frequency energy peaks were found at periods of about 10 days. The intensity of the countercurrent increased with increasing coastal upwelling index, and the cross-slope flow also appeared to be related to the local coastal upwelling index.
ocean circulation/current data/water currents/countercurrents/upwelling/INE/USA/California Countercurrent/ASFA.

2221. Merifield PM, Lamar DL, Stout ML. Geology of central San Clemente island, California. Geol. Soc. Am., Bull. 1971;82(7):p.1989-1994 Serial B; Bibliography and Index of Geology (1969-present). California/Areal geology/San Clemente

island/Igneous
rocks/Andesite/Petrology/absolute
age/dates/K/Ar/Faults/Patterns/United States/Tectonics/GEOREF.

2222. Department of the Interior. Minerals Management Service. Proposed 1983 outer continental shelf oil and gas lease sale No. 73, offshore Central California. Los Angeles, California: Department of the Interior, Minerals Management Service; 1983. 514.

Note: USDA EMPLOYEES REQUEST DOCUMENTS FROM NATIONAL AGRICULTURAL LIBRARY OTHERS ORDER FROM INFORMATION RESOURCES PRESS, 1700 NORTH MOORE STREET, SUITE 70 0, ARLINGTON, VA 22209 Date: MARCH 1983 (EPA: MARCH 4, 1983). (PUR)LEASING OF 360 OIL AND GAS DEVELOPMENT TRACTS CONTAINING APPROXIMATELY TWO MILLION ACRES OF OUTER CONTINENTAL SHELF (OCS) LANDS IN THE SOUTHERN SANTA MARIA BASIN OFF THE COAST OF CENTRAL CALIFORNIA IS PROPOSED. THE TRACTS, LOCATED OFF SANTA BARBARA AND SAN LUIS OBISPO COUNTIES, LIE BETWEEN IMAGINARY LINES EXTENDING WEST FROM A POINT JUST NORTH OF MORRO BAY AND JUST SOUTH OF POINT ARGUELLO IN WATER DEPTHS RANGING FROM 50 METERS TO MORE THAN 1,000 METERS. DEVELOPMENT OF RESOURCES WITHIN THE BASIN WOULD INVOLVE 12 TO 80 EXPLORATION WELLS, 9 TO 40 DELINEATION WELLS, 155 TO 800 DEVELOPMENT WELLS, 5 TO 30 PLATFORMS, 114 TO 253 MILES OF PIPELINE, AND UP TO 2 SUBSEA STRUCTURES; THE FIGURES IN EACH PAIR REPRESENT REQUIREMENTS FOR THE MOST LIKELY RESOURCE ESTIMATES AND CONDITIONAL MEAN, RESPECTIVELY. THESE ESTIMATES ARE FOR 291 AND 970 MILLION BARRELS OF OIL AND 285 AND 950 TRILLION CUBIC FEET OF NATURAL GAS, RESPECTIVELY. EXPLORATION WOULD BEGIN IN 1983 AND END IN 1982; DELINEATION WOULD BEGIN IN 1984 AND END IN 1992; DEVELOPMENT WOULD BEGIN IN 1987 AND END IN 1999. (POS)EXPLOITATION OF OIL AND GAS RESOURCES WITHIN THE BASIN WOULD HELP THE NATION MEET DOMESTIC DEMAND FOR HYDROCARBON PRODUCTS, THEREBY REDUCING THE NATION'S DEPENDENCE ON FOREIGN SOURCES OF. OIL AND IMPROVING THE BALANCE OF TRADE. EMPLOYMENT ROLLS WITHIN THE COASTAL AREA WOULD INCREASE BY ONE TO THREE PERCENT. (NEG)POTENTIAL OIL SPILLS RESULTING FROM DEVELOPMENT OF RESOURCES COULD DAMAGE COASTAL RESOURCES, IF OIL REACHED SHORE, AND OIL SPILLS WOULD MOST LIKELY HAVE A DELETERIOUS EFFECT ON FUR SEALS AROUND THE NORTHERN CHANNEL ISLANDS. COASTAL REGIONS ADJACENT TO DEVELOPMENT ACTIVITIES WOULD BE AFFECTED BY EMISSION OF AIR POLLUTANTS. COMPETITION FOR VESSEL BERTHING SPACE WOULD RESULT IN STRESS ON PORT SAN LUIS, AND THE INFLUX OF WORKERS AND THEIR FAMILIES INTO THE COASTAL AREA WOULD PLACE SOME SHORT-TERM STRESS ON LOCAL AREAS. BENTHOS WOULD BE DESTROYED BY CONSTRUCTION ACTIVITIES. THE COMMERCIAL TRAWL FISHER.
CONTINENTAL SHELVES/EMPLOYMENT/HARBORS/LEASING/MARINE MAMMALS/NAVIGATION/NATURAL GAS/OIL PRODUCTION/OIL SPILLS/PIPELINES/OUTER CONTINENTAL SHELF LANDS ACT OF 1953 - PROJECT AUTHORIZATION/Santa Barbara Channel/petroleum.

2223. Green KA. Ecosystem description of the California Current. Rep. to U.S. Marine Mammals Commission, MMC-77/11. Contract MM7 AC026 1978;:73. ecosystem interrelationships/text/birds/MINERALS MANAGEMENT SERVICE.

2224. Greenblatt PR. Distribucion de la biomasa de zooplancton en pequena escala en la Corriente. (Small scale distributions of zooplankton biomass in the California current). Resumenes. 5 Reunion de Los Centros de Investigacion de Baja California y Scripps Institution de Oceanography. (Summaries. 5th Meeting of the Investigation Centers of Baja California and the Scripps Institute of Oceanography). La Paz, Baja California Sur (Mexico), Nov. 2, 1979 1979;:2. zooplankton/biomass/INE/California

Current/ISE/California Current/horizontal distribution/diurnal variations/zooplankton/Pieper/MINERALS MANAGEMENT SERVICE.

2225. Greenblatt PR. Small scale horizontal distributions of zooplankton taxa. Mar. Biol. (Berl.) 1982;67(1):97-112. COPEPOD/EUPHAUSIID/CHAETOGNATH/PTEROPOD/DIURNAL/VERTICAL MIGRATION/ABUNDANCE/BIOMASS/CALIFORNIA CURRENT/Marine MAMMAL/BONNELL/zooplankton/pieper/horizontal distribution/vertical migration/circadian/rhythm/MINERALS MANAGEMENT SERVICE.

2226. Greenblatt PR. Distribuciones de categorias taxonomicas de zooplancton en la corriente de California. (Distribution of taxonomic categories of zooplankton in the California current). Meeting of the Centros de Investigacion de Baja California and Scripps Institution of Oceanography, La Jolla, CA (USA), Dec. 1980. Trans. Cibcasio. 1982;6:48-50. zooplankton/taxonomy/horizontal distribution/vertical migrations/currents/INE/California Current/Marine/zooplankton/Pieper/MINERALS MANAGEMENT SERVICE.

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2229. Smith CR. Food for the deep sea: Utilization, dispersal, and flux of nekton falls at the Santa Catalina Basin floor. DEEP-SEA RES 1985;32(4A):417-442. The submersible Alvin and free vehicles were used to assess experimentally the fate and flux of nekton falls at a depth of 1310 m in the Santa Catalina Basin. The most strongly attracted megafaunal scavenger was the ophiuroid Ophiophthalmus normani , the dominant megabenthic species in the background epifaunal assemblage. Scavengers consumed bait parcels so rapidly and then dispersed so broadly that energy from nekton falls apparently reaches infaunal benthos only in very attenuated form, yielding at most minor community enhancement. Benthic standing-crop and turnover-rate estimates for nekton falls suggest that perhaps 11% of benthic community respiratory requirements are met by nekton carcasses reaching the basin floor; the flux of energy to the deep sea through such fall events thus merits further study.
benthos/food availability/deep water/abyssobenthic zone/INE/Santa Catalina Basin/ASFA.

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2231. Gregg MC. Microstructure and intrusions in the California current. Tech. Rept. 1975;:27.
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The distributions of bioluminescence, temperature, salinity, oxygen, pH, and chlorophyll a were measured at 10 m intervals, to a depth of 100 m at a station (33 degree 46'N; 119 degree 36'W) in the California Current from 17 to 20 July 1982. The distribution of bioluminescence showed a marked day-night change which was consistent over the sampling period. The nightime maximum was at the surface, and the daytime maximum was between 30 and 40 m. Day to night differences in the color spectrum at the depth of maximum bioluminescence suggest that the luminescent organisms differed from day to night.
euphotic zone/bioluminescence/vertical distribution/diurnal variations/plankton/INE/California Current/ASFA.

2233. Kolpack RL, Mattson JS, Mark HBJ, Yu TC. Hydrocarbon content of Santa Barbara Channel sediments. in Biological and oceanographical survey of the Santa Barbara Channel oil spill 1969-1970; Physical, chemical and geological studies, illus. (incl. sketch maps). Univ. South. Calif., Allan Hancock Found. [Los Angeles], 1971. 1971;2:p.276-295
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2234. Deutsch M, Estes JE. Landsat detection of oil from natural seeps. Photogramm. Eng. Remote Sensing 1980;46(10):1313-1322
Address: US Geol. Surv., Reston, VA 22090, USA; University of CA, Santa Barbara, CA 93101.
Oil on the ocean surface from the natural seeps in the Santa Barbara Channel, California, could not be detected on frames of any of the four bands of standard Landsat positive or negative film transparencies, nor could the slicks be detected using digital scaling, density slicing, or ratioing techniques. Digital contrast-stretch enhancement, however, showed the distribution of oil on the surface. Aerial observations made within a few hours of the Landsat overpass confirmed the distribution of floating oil. The detection (on Landsat images) of floating oil from submarine seeps indicates a potentially valuable application for offshore oil exploration and environmental monitoring.
LANDSAT/oil seepages/remote sensing/oil slicks/aerial photographs/digital contrast/stretch enhancement/natural seeps/Santa Barbara Channel/ petroleum/geology.

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From 1928 to 1965 the higher survival rates to age 1 for Pacific mackerel (S. japonicus) in the California Current occurred during years of decreased southward transport (as indicated by sea level), which in turn is related to El Nino events. During such years, plankton biomass was relatively low. Conversely, Pacific mackerel

survival rates to age 1 were low during periods of increased southward transport, when plankton biomass was high. The authors conclude that survival rates during the early life history may be more influenced by hydrographic processes in a direct manner than by biological interactions. This interpretation is consistent with Hjort's second hypothesis to explain interannual variability in recruitment to fish populations.
survival/recruitment/Scomber japonicus/environmental effects/El Nino phenomenon/population dynamics/INE/California Current/food availability/ASFA.

2236. Drake DE, Fleischer P, Kolpack RL. Transport and deposition of flood sediment, Santa Barbara channel, California. Biological and oceanographical survey of the Santa Barbara Channel oil spill 1969-1970; Physical, chemical and geological studies, illus. (incl. sketch maps). Univ. South. Calif., Allan Hancock Found. [Los Angeles], 1971. 1971;2:p.181-217
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California/Sedimentary petrology/Santa Barbara channel/sedimentation/Transport/GEOREF.

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rift zones/tectonics/basement/stratigraphy/petrology/faults/California Channel Islands/Southern California/western Transverse Ranges/Transverse Ranges/San Miguel Island/Santa Rosa Island/Santa Cruz Island/areal geology.

2238. Grossman EL. Stable isotopes in live benthic Foraminifera from the southern California borderland. Dissertation, Univ. South. Calif., Los Angeles 1982;
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foraminifera/isotope fractionation/oxygen 18/foraminifera/carbon 13/foraminifera/Thompson/invertebrates/Bolivina argentea/Cassidulina braziliensis/Cassidulina limbata/Cassidulina tortuosa/foraminifera/Globobulimina pacifica/Globobulimina/Hoeglundina elegans/Lenticulina cushmani/pyrgo/Quinqueloculina vulgaris/Quinqueloculina/taxonomy/Triloculina trigonula/Uvigerina curticosta/Uvigerina peregrina/Eganhouse/geochemistry/chemical oceanography/isotopes/foraminifers/carbon/oxygen C-13/C12/O-18/O-16/continntal benthonic taxa fractionation/dissolved inorganic/carbon sediments/aragonite/MINERALS MANAGEMENT SERVICE.

2240. Kubodera T, Jefferts K. Distribution and abundance of the early life stages of squid, primarily Gonatidae (Cephalopoda, Oegopsida), in the northern North Pacific. Part 1. BULL. NATL. SCI. MUS., TOKYO, SER. A 1984;10(3):91-106. Cephalopods collected with micronekton nets in the Subarctic North Pacific are shown to be primarily young stages of the family Gonatidae. Regional and seasonal changes of abundance of cephalopods in the northern North Pacific are discussed. A pattern of low winter abundance with a

rapid early summer increase and gradual autumn decrease is evident. Distribution patterns of species in the family Gonatidae show good correlation with large scale oceanographic features. The distribution types include pan-Subarctic forms of two kinds, including and excluding the Sea of Okhotsk; northeastern Pacific endemics; California Current endemics; western Subarctic endemics; and species localized within the Sea of Okhotsk. The Sea of Okhotsk and California Current showed distinctive faunal and gonatid species composition. Species of the family Gonatidae are classified into four groups according to the geographical pattern of relative abundance of the early life stages.
developmental stages/population levels/zooplankton/Pacific Ocean North/Gonatidae/geographical distribution/quantitative distribution/seasonal variations/IN/North Pacific/ASFA.

2241. Kolpack RL. Oceanography of the Santa Barbara channel. Biological and oceanographical survey of the Santa Barbara Channel oil spill 1969-1970; Physical, chemical and geological studies, illus. (incl. sketch maps). Univ. South. Calif., Allan Hancock Found. [Los Angeles], 1971. 1971;2:p.90-180
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California/Marine geology/General/Santa Barbara channel/GEOREF.

2242. Dierhauf LA, Vandenbroek DJ, Roletto J, Koski M, Amaya L, Gage LJ. An epizootic of Leptospirosis in California sea lions Zalophus Californianus. J. Am. Vet. Med. Assoc. 1985;187(11):1145-1148
Address: 33 MARTIN DR., NOVATO, CALIF. 94947.
Between May and December 1984, an epizootic of leptospirosis in California sea lions (Z. californianus) occurred along the West Coast of the USA from Monterey County, Calif, northward to Seattle, Wash. Clinical signs observed were severe depression, excessive thirst, and tucked-up posturing, with associated leukocytosis and increased globulin, BUN, and creatinine values. Effective antibiotic therapy consisted of tetracycline (22 mg/kg of body weight every 8 hours, orally) or potassium penicillin G (44,000 U/kg every 12 hours, orally or IM) for 10 to 14 days. Sixty-six sea lions were treated successfully and released. Necropsies of animals that died indicated marked kidney swelling, darkened reniculi, and poorly differentiated cortices and medullae, thick, black bile in gallbladders, thick, pale yellow pericardial fluid, and friable hemorrhagic mesentery. Primary histologic lesions were tubular nephritis and glomerulonephritis. Darkfield microscopy of kidney macerates and/or urine, and results of the microscopic agglutination test, using Leptospira serovar pomona-killed antigen led to a presumptive diagnosis of leptospirosis. Bacteriologic isolation and identification is ongoing. The epizootic primarily affected juvenile or subadult male California sea lions migrating northward from breeding rookeries of southern California's Channel Islands. tetracycline/potassium/penicillin g/antibacterial drug/depression/thirst/posture/leukocytosis/mortality/California sea lions/Zalophus Californianus/California Channel Islands/marine biology/mammalogy/parasitology.

2243. Thornton SE. Basin model for hemipelagic sedimentation in a tectonically active continental margin: Santa Barbara Basin, California continental borderland. FINE-GRAINED SEDIMENTS: DEEP-WATER PROCESSES AND FACIES.; GEOL. SOC. SPEC. PUBL. 1984;(15).
A variety of Holocene sedimentary processes and depositional environments in Santa Barbara Basin may serve as a model for terrigenously-dominated hemipelagic basins devoid of submarine canyons: (1) suspensate transport; (2) tubidity current transport; (3) mass movement on the lower slop; (4) the imprint of current

patterns on both fine-grained suspended load and bedload transport; and (5) preservation of resulting stratigraphy on the deep basin floor by anoxic water conditions which result in annual varves plus turbidites and flood suspensate layers. Silt patterns define a river-derived suspensate pathway driven by surface currents, which coincides with the distribution of 1969 flood layer sediments. A "hemipelagic core" is present on the western portion of the bsin floor, where terrigenous and biogenous input are most balanced. continental borderland/active margins/sedimentation/INE/Santa Barbara Basin/ASFA.

2244. Kolpack RL. Physical characteristics of sandy beaches in the Santa Barbara Channel area. Biological and oceanographical survey of the Santa Barbara Channel oil spill 1969-1970; Physical, chemical and geological studies, illus. (incl. sketch map). Univ. South. Calif., Allan Hancock Found. [Los Angeles], 1971. 1971;2:p.7-63
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2245. Dixon R. Tidal and Lunar Data for Point Mugu, San Nicolas Island, and the Barking Sands Area during 1985. : Pacific Missile Test Center, Point Mugu, CA. PMTC-TP-000029; 1984. 40.
The data presented are (1) tidal data, (2) times of moonrise and moonset, (3) times of lunar phases, and (4) times of sunrise and sunset. Oceanographic data/Ocean tides/Moon/Time/tidal records/lunar tides/Sunset/Sunrise/Moonrise/Moonset/Lunar phases California/Hawaii/oceanography/astronomy/meteorology/atmospheric sciences.

2246. Mueller JL. Effects of water reflectance at 670 nm on coastal zone color scanner (CZCS) aerosol radiance estimates off the coast of central California. OCEAN OPTICS VII.; PROC. SOC. PHOTO-OPT. INSTRUM. ENG 1984;489:179-186.
An algorithm is presented and evaluated for estimating water radiance at 670 nm in CZCS images of highly reflective eddies and other oceanic features in the upwelling region of the California Current System. Such an estimate is necessary for proper atmospheric correction of CZCS images over such water masses. In the present algorithm, the measured signal at 670 nm (less the Rayleigh component) is partitioned between L sub(W)(670) and L sub(a)(670) by iterative adjustment until phytoplankton pigment concentrations calculated with the ratios of water radiance at 443 and 550 nm agree reasonably well with those calculated using the ratio of water radiances at 520 and 550 nm. reflectance/irradiance/satellite sensing/aerosols/sea surface/algorithms/INE/California Current/ASFA.

2247. Kolpack RL(. Biological and oceanographical survey of the Santa Barbara Channel oil spill 1969 1970. Physical, chemical and geological studies., Univ. South. Calif., Allan Hancock Found., illus. (incl. sketch maps), [Los Angeles], 1971. (Sea Grant Publication No. 2). 1971;II
Papers within the scope of this Bibliography are cited under the individual authors. B; Bibliography and Index of Geology (1969-present). Environmental geology/Pollution/California/Santa Barbara channel/oil spill/General/GEOREF.

2248. Dixon R. Tidal and lunar data for Point Mugu, San Nicolas Island, and the Barking Sands area during 1987. Annual rept. : Tech. Publ. Pac. Missile Test Cent. PMTC-TP-000038; 1986. 40.

Address: Pacific Missile Test Cent., Point Mugu, CA (USA) Note: Report ID = PMTC-TP-000038.
Basic lunar and tidal data for Point Mugu, San Nicolas Island, and the Barking Sands Area during 1987 are provided. The data presented are: (1) tidal data (2) times of moonrise and moonset (3) times of lunar phases and (4) times of sunrise and sunset.
almanacs/tide tables/astronomy Point Mugu/San Nicolas Island/Barking Sands Area oceanography/astronomy.

2249. Mitchell BG, Iturriaga R, Kiefer DA. Variability of particulate spectral absorption coefficients in the eastern Pacific Ocean. OCEAN OPTICS VII.; PROC. SOC. PHOTO-OPT. INSTRUM. ENG 1984;489:113-118.
As part of the Optical Dynamics Experiment (ODEX), the spectral absorption coefficient (400-700 nm.) was measured for marine particles sampled at stations in the California current and the eastern edge of the North Central Pacific Gyre. By normalizing the spectral absorption coefficients to the concentration of chlorophyll plus phaeopigments, variability in both the spectral shapes and magnitudes of the specific coefficient can be assessed. Comparisons between samples indicated large variability vertically (mixed layer versus deep euphotic zone), horizontally (near shore versus central gyre) and seasonally (fall versus spring).
absorption spectra/absorption coefficient/suspended particulate matter/chlorophylls/variability/IN/North Pacific Gyre/INE/California Current/ASFA.

2250. Drake DE, Gorsline DS. Turbid layer distribution and fine grained sediment transport, Santa Barbara channel, California continental borderland. Geol. Soc. Am., Abstr. 1971;3(2):p.112-113 Serial; Abstract B; Bibliography and Index of Geology (1969-present). California/Sedimentary petrology/Santa Barbara channel/sedimentation/Turbidity currents/GEOREF.

2251. Dixon R. Tidal and lunar data for Point Mugu, San Nicolas Island, and the Barking Sands Area during 1988. Annual Report. : Pacific Missile Test Center, Point Mugu, CA. PMTC-TP 000045; 1987. 43.
Address: Pacific Missile Test Center, Point Mugu, CA.
Basic lunar and tidal data for Point Mugu, San Nicolas Island, and the Barking Sands Area during 1988 are provided. The data presented are (1) Tidal data, (2) times of moonrise and moonset, (3) time of lunar phases, and (4) times of sunrise and sunset.
Moon/Phase/Sunrise/Sunset/Tides/Time/Ocean tides/Tables(Data) Moonrise/Moonset/California Channel Islands//Point Mugu/San Nicolas Island/Barking Sands Area/Hawaii oceanography/astronomy/celestial mechanics.

2252. Levin LA, Smith CR. Response of background fauna to disturbance and enrichment in the deep sea: A sediment tray experiment. DEEP-SEA RES 1984;31(11A):1277-1285.
Free-vehicle sediment trays were deployed on the floor of the SantaCatalina Basin (1300 m) to study the response of deep-sea infauna to defaunation and algal enrichment. We recovered three trays that had been filled with frozen basin sediment: one otherwise untreated, one enriched with 20 g of powdered Macrocystis pyrifera (kelp) and containing oxidized sediment, and one kelp-enriched and anoxic. After 4.7 months on the basin floor, macrofaunal density in the unenriched tray was 10% (x@u- = 3.8 individuals per 100 cm super(2)) of that in the surrounding sea floor. Most colonists belonged to species dominant in the background basin community. Juveniles and mature individuals were present, suggesting short maturation times or post larval dispersal

ability in some species. The kelp-enriched (oxidized) tray contained a single macrofaunal mite (Arachnida: Acarina), suggesting avoidance of kelp-enriched sediment by available colonists. The anoxic, kelp-enriched tray contained two dorvilleid polychaetes apparently adapted to high sulphide environments. burrowing organisms/ecosystem disturbance/abyssobenthic zone/colonization/zoobenthos/deep water/environmental surveys/INE/USA/ California/Santa Catalina Basin/ASFA.

2253. Doyle LJ. 29 degrees 30'N to 32 degrees N; hole in the southern California borderland. Geol. Soc. Am., Abstr. 1971;3(2):p.112 Serial; Abstract B; Bibliography and Index of Geology (1969-present). California/Seismic surveys/South/Crustal studies/GEOREF.

2254. Dixon RW. Tidal and Lunar Data for Point Mugu, San Nicolas Island, and the Barking Sands Area during 1984. : Pacific Missile Test Center, Point Mugu, CA. PMTC-TP-000014; 1983. 66. Basic lunar and tidal data for Point Mugu, San Nicolas Island, and the Barking Sands area during 1984 are provided. The data presented are (1) tidal data, (2) times of moonrise and moonset, and (3) times of lunar phases. Ocean tides/Moon/Range (Extremes)/Height/Diurnal variations/Seasonal variations/Time/Graphs/Tables/Moonrise/Moonset California Channel Islands/San Nicolas Island/Point Mugu/Barking Sands (California)/meteorology/astronomy/oceanography/atmospheric sciences.

2255. Gorsline DS, Drake DE, Barnes PW. Holocene sedimentation in Tanner Basin, California continental borderland. Geol. Soc. Am. Bull. 1968;79:659-674. chemical oceanography/eganhouse/venkatesan/MINERALS MANAGEMENT SERVICE.

2256. Coale KH, Bruland KW. super(234)Th: super(238)U disequilibria within the California Current. LIMNOL. OCEANOGR 1985;30(1):23-33.
Profiles of dissolved and particulate super(234)Th were determined at several stations within the California Current. Modeling of the disequilibria between the super(234)Th and super(238)U within the surface waters provides for estimates of the residence time of dissolved thorium with respect to particle scavenging (tau sub(d) varies from 6 to 50 days), the particle residence time (tau sub(p) varies from 2 to 20 days), and the particulate super(234)Th flux exiting the surface layer. The model-derived, first-order scavenging rate constant for dissolved thorium is observed to be proportional to the rate of primary production. Particle residence times seem to be governed by the rate of zooplankton grazing and the types of zooplankton present. Model-derived particulate super(234)Th fluxes are in good agreement with direct measurements by sediment traps. residence time/thorium/dissolved chemicals/particulate matter/INE/ California Current/ASFA.

2257. Smith SV. Budget of calcium carbonate sedimentation, southern California continental borderland. Am. Assoc. Pet. Geol., Bull. 1971;55(2):p.364 Serial; Abstract B; Bibliography and Index of Geology (1969-present).
Sedimentation/Rates/California/carbonate/south/Marine geology/Sediments/Pacific Ocean/GEOREF.

2258. Dixon R. Tidal and lunar data for Point Mugu, San Nicolas Island, and the Barking Sands Area during 1986. : Pacific Missile Test Center, Point Mugu, CA. PMTC-TP-00035; 1985. 40. Basic lunar and tidal data for Point Mugu, San Nicolas Island, and

the Barking Sands Area during 1986 are provided. The data presented are (1) tidal data, (2) times of moonrise and moonset, (3) times of lunar phases, and (4) times of sunrise and sunset.
Ocean tides/Moon/Phase/Sunrise/Sunset/Moonrise/Moonset/Tables(Data)/Tides/Lunar data/Tide tables Hawaii/California/Point Mugu/San Nicolas Island/Barking Sands/oceanography/meteorology/astronomy/atmospheric sciences.

2259. Hacker ES. Stomach content analysis of short-finned pilot whales (Globicephala macrorhynchus) and northern elephant seals (Mirounga angustirostris from the Southern California Bight. NOAA-NMFS-SWFC Admin. Rep. No. LJ-86-08C 1986;:34.
TEXT/BONNELL/DAILEY/MARINE MAMMALS/MINERALS MANAGEMENT SERVICE.

2260. Wakeham SG, Lee C, Farrington JW, Gagosian RB. Biogeochemistry of particulate organic matter in the oceans: Results from sediment trap experiments. DEEP-SEA RES 1984;31(5A):509-528.
Particulate organic matter collected in sediment traps from various oceanic regimes-Sargasso Sea, equatorial North Atlantic, central North Pacific, California Current, and Peru coastal upwelling-have been analyzed for their lipid and amino acid composition and flux. Despite rapid settling of the large particles through the water column and a relatively small depth gradient for total organic carbon flux, there are major changes in the composition and flux of lipids and amino acids associated with the particles. The rapid disappearance of the more labile compounds, such as amino acids and polyunsaturated fatty acids, with increasing depth indicates that the major sources of such compounds are in the upper part of the water column and that they are readily degraded as the particles sink. On the other hand, the intermittent appearance of large amounts of wax ester, along with the changing fatty acid composition of the particles, points to deep-water sources for some of these compounds.
particulate matter/organic matter/biogeochemical cycle/sediment traps/World Oceans/ASFA.

2261. Davis JR. Sedimentation of Pliocene sandstones in Santa Barbara channel, California. Am. Assoc. Pet. Geol., Bull. 1971;55(2):p.335 Serial; Abstract B; Bibliography and Index of Geology (1969-present). California/Sedimentary petrology/Southwest/Santa Barbara channel/Ventura basin/turbidite/Sedimentary rocks/Petrology/provenance/Pliocene/Repetto formation/Pico formation/GEOREF.

2262. Dixon RW. Tidal and Lunar Data for Point Mugu, San Nicolas Island, and the Barking Sands Area during 1981. Technical publication. : Pacific Missile Test Center, Point Mugu, CA. PMTC-TP-81-09; 1980. 65.
Ocean tides/Diurnal variations/Seasonal variations/Moon/Time/Moonrise/Moonset California Channel Islands/Point Mugu/San Nicolas Island/Barking Sands (Hawaii) meteorology/Oceanography/Astronomy.

2263. Smith KLJ, Baldwin RJ. Vertical distribution of the necrophagous amphipod, Eurythenes gryllus , in the North Pacific: Spatial and temporal variation. DEEP-SEA RES 1984;31(10A):1179-1196.
Necrophagous amphipods of the species Eurythenes gryllus were cuaght at distances up to 1400 m above the sea floor during 23 deployments of baited trap lines. The fishing efforts at four

abyssal stations along a transect of the central and eastern North Pacific yielded a total of 718 amphipods in June and an additional 749 amphipods at the westernmost station (CNP) in November 1982. E. gryllus was caught at higher altitudes in the deeper more oligotrophic stations of the central gyre area. Maximum catch rates occurred near the bottom at altitudes less than or approximate to 50 m, but decreased above 50 m at the three western stations. Catch rates in June, summed for all altitudes, were highest at Sta. F on the western boundary of the California Current (37.27 plus or minus 15.38 amphipods (fishing day) super(-1) substation super(-1)) and lowest at Sta. C, the station closest to the California coast (1.15 plus or minus 1.09 amphipods (fishing day) super(-1) substation super(-1)). Larger animals were caught at the higher altitudes across the transect.
vertical distribution/abyssopelagic zone/Eurythenes gryllus/Malacostraca/IN/North Pacific/spatial variations/temporal variations/ASFA.

2264. Curran JF, Hall KB, Herron RF. Geology, oil fields, and future petroleum potential of Santa Barbara channel region, California. Am. Assoc. Pet. Geol., Bull. 1971;55(2):p.334
Serial; Abstract B; Bibliography and Index of Geology (1969-present). California/Economic geology/Petroleum/gas/southwest/Santa Barbara channel/reserves/structure/natural/GEOREF.

2265. Dixon RW. Tidal and lunar data for Point Mugu, San Nicolas Island, and the Barking Sands area during 1982. Technical publication. : Pacific Missile Test Center, Point Mugu, CA. PMTC-TP-82-02; 1981. 67.
Basic lunar and tidal data for Point Mugu, San Nicolas Island and the Barking Sands area during 1982 are provided. The data presented are (1) tidal data, (2) times of moonrise and moonset, and (3) times of lunar phases. Ocean tides/California/Diurnal variations/Seasonal variations/Moon/Time/Tables(Data)/Graphs Moonrise/Moonset/Tide tables/TX California Channel Islands/Point Mugu/San Nicolas Island/Barking Sands(Hawaii)/meteorology/Oceanography/atmospheric sciences.

2266. Barnes PW. Marine geology and oceanography of Santa Cruz basin off southern California [dissertation]. ; 1971.
Thesis; Abstract B; Bibliography and Index of Geology (1969-present). Diss. Abstr. Int, Vol. 31, No. 7, p. 4134B.
Pacific Ocean/Marine geology/Bottom features/Santa Cruz basin/Sedimentation/circulation/Oceanography/Environment/Marine/GEOREF.

2267. Dixon RW. Tidal and lunar data for Point Mugu, San Nicolas Island, and the Barking Sands Area during 1983. Technical publication. : Pacific Missile Test Center, Point Mugu, CA. PMTC-TP-000006; 1982. 67.
note: See also AD-A110 411.
Basic lunar and tidal data for Point Mugu, San Nicolas Island, and the Barking Sands area during 1983 are provided. The data presented are (1) tidal data, (2) times of moonrise and moonset, and (3) times of lunar phases. Ocean tides/California/Hawaii/Diurnal variations/Seasonal variations/Moon/Phase/Time/Moonrise/Moonset/Lunar data/Point Mugu/San Nicolas Island/Banking Sands (Hawaii).

2268. Halliwell G, Williams RG, Vierra K, Mooers CNK. Ocean currents. A Climatology and Oceanographic Analysis of the California Pacific Outer Continental Shelf Region 1981;:4.1-4.72.

wind-driven currents/ocean circulation/wind fields/wind stress/upwelling/oceanic eddies/Hickey/physical oceanography INE/USA/California/INE/California Current/INE/Southern California Bight/INE/Davidson Current/MINERALS MANAGEMENT SERVICE.

2269. Anderson VC. Anomalous absorption. REP. SCRIPPS INST. OCEANOGR. MAR. PHYS. LAB 1979;
The primary objective of this program is to observe and correlate in a quantitative manner the anomalous frequency dependent acoustic absorption caused by fish and fish larvae with the type and abundance of the fish and larvae population as determined by net hauls. Such a characterization of the absorption will allow tactical sonar performance prediction to draw on fisheries surveys of regional productivity as a data bank for prediction of anomalous absorption in the mobile passive sonar band. Cooperative support has been offered by the National Bureau of Fisheries for the program by way of ship time on the David Starr Jordan for deploying and recovering the buoy systems and in collecting and supplying net haul data at the buoy station during the data collection period. The scope of the program includes the design, fabrication and testing of the automatic data collection buoy system in the first year, followed by a two year program of data collection in the southern California Current.
acoustics/fish detection/echo surveys/sonar/INE/California Current/ASFA.

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The primary objective of this program is to observe and correlate in a quantitative manner the anomalous, frequency dependent acoustic absorption caused by fish and fish larvae with the type and abundance of the fish and larvae population as determined by

net hauls. Such a characterization of the absorption will allow tactical sonar performance prediction to draw on fisheries surveys of regional productivity as a data bank for prediction of anomalous absorption in the mobile passive sonar band. Cooperative support for the program has been offered by the National Bureau of Fisheries by way of ship time on the David Star Jordan for deploying and recovering the buoy stations during the data collection period. The scope of the program icludes the design, fabrication and testing of the automatic data collection buoy system in the first year, followed by a two year program of data collection in the southern California Current.
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Steric height, steric height anomaly, sea level and sea level anomaly show that the 1940-41 and the 1982-83 Californian "El Nino" events were resonant responses of the California Current to the expansion and intensification of the Aleutian low and decrease in strength of the North Pacific high. In both cases, the subsurface anomalies were dynamically produced by onshore transport of Subarctic water and a downward tilt of the inshore thermocline. Sea surface temperature anomalies, however, resulted from thermodynamic as well as dynamic process. Most previous Californian "El Nino" or "anti-El Nino" events probably were resonant or anti-resonant responses of the seasonal cycle of the California Current to anomalous large-scale atmospheric forcing.
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Assemblages of kelp-bed fishes that live in and about the kelp canopy or over the reef bottom were censused by movie strips (cinetransects) every Sept. from 1971-1974 at rock reefs off Santa Barbara, southern California. Cinetransects provided an adequate and efficient way to estimate species composition (order of relative or ranked species abundances), diversity and numbers of fish for yearly comparison between canopy and bottom habitats at mainland and Santa Cruz Island study sites. Canopy assemblages were simpler and more variable than bottom assemblages. They differed less in composition between sites. Between-site differences in fish assemblages reflected differences in structural habitat between mainland and island. Variation in species composition was less among years than between habitats or sites in the sense that site- and habitat-specific composition of assemblages persisted in the course of significant yearly changes in counts of fish and species per transect. Despite these changes, annual variation, as measured by variance of year-to-year log10 ratios of numbers of 16 common species, was relatively small. Its size was characteristic of stable communities in predictable environments. As a group, planktivores, which form dense aggregations in midwater, fluctuated most in numbers. Perhaps fish responded directly to local. changes in water clarity, temperature, currents and density of giant kelp [Macrocystis pyrifera]. Coincident changes in fish counts at mainland and island sites indicated that these local environmental factors, which did not vary accordingly, were not the only causes of annual variability in fish abundance.
species diversity/temperature/current/density/feeding/cinetransect/kelp-bed fishes/reefs/annual variations/community composition/community structure giant kelp/Macrocystis pyrifera/rock reefs off/Santa Barbara/Santa Cruz Island/marine biology/ichthyology.

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tongues from an initial variety of scales (60-200 km), to the fastest growing waves (110-130 km) and then finally to tongues with longer wavelengths (400 km). This is observed to occur over periods of about three months in summer and fall when the coastal circulation is composed of a southward surface current over a northward undercurrent.
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In some West Coast kelp forests, energy flows from kelp and other

macroalgae that produce large amounts of detached algal drift, through sea urchins and other herbivores that eat this drift when it is available but living plants when it is not, to sea otters and other top consumers that eat the herbivores. Wherever sea otters are absent at the top trophic level, ineffective regulation of sea urchin numbers at the middle level may cause local extinctions of kelp at the bottom level. Off southern California, for example, large numbers of urchins may outstrip their supply of drift and graze back the living forest. Here a severe storm disturbance can either destroy kelp biomass and the source of drift, or decimate the urchin population and reduce the grazing pressure. Thus, severe storms can promote either overgrazing or forest recovery, depending on the previous history of the site. Deleting kelp transforms the forest into a barrens dominated by grazing sea urchins; deleting sea urchins from a barrens does the reverse, given proper conditions for kelp recruitment. This happens because the rate of grazing by large numbers of urchins exceeds the rate of recolonization by kelp. The high rate of grazing continues because (1) urchins are long-lived and can exploit marginal food supplies and (2) their numbers are not regulated by effective predation.
disturbance/storms/Strongylocentrotus/sea urchins/Macrocystis pyrifera/giant kelp/Santa Barbara Channel/marine biology/ecology.

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The behavior of male-female (M-F) and female-female (F-F) paired western gulls (Larus occidentalis) before egg laying was examined on Santa Barbara Island, California to test the hypothesis that one female in a F-F pair may assume a male role. In M-F pairs, no behaviors were performed exclusively by either sex, although males mounted more often, females head-tossed more often and males acted more aggessively toward intruders. Within F-F pairs, neither partner consistently showed masculine behavior. In a comparison of behavior toward intruders, both members of F-F pairs resembled the female in M-F pairs, and were generally significantly different from males. The authors therefore reject the hypothesis that female-female pairing is the result of either the adoption of a "male" behavioral role by one or both partners, or an extreme "female" role by one member.
egg laying/mating behavior/aggressive behavior/courtship/breeding/Larus occidentalis/ASFA.

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storm disturbances/disturbance/community structure/kelp forest/Macrocystis pyrifera/giant kelp/Santa Barbara Channel/marine biology/ecology.

2325. McGowan JA. The California El Nino, 1983. OCEANUS 1984;27(2):48-51. Since 1949, the California Cooperative Fisheries Investigations (CalCOFI) has monitored temperature, salinity, oxygen, and zooplankton abundance of a regular schedule in the California Current. It is evident that the periods of strong

transport from the north led to low temperatures, low salinity, and high zooplankton, while lessened southward transport led to high temperatures, high salinity, and low zooplankton. One of the low-transport warm-water episodes that stands out very clearly in these data is that of 1957-59. This is the largest signal in the entire 30-year series and it occurred almost synchronously with a major equatorial El Nino.
El Nino phenomena/water temperature/salinity/INE/USA/California/anomalies/ASFA.

2326. Hawkins JWJ, Allison EC. Volcanic petrology and paleontology of Northeast Bank, southern California borderland. Geol. Soc. Amer., Abstr. 1970;2(2):p.99-100
Serial; Abstract B; Bibliography and Index of Geology (1969-present). Pacific Ocean/Marine geology/Paleontology/igneous rocks/California/Northeast Bank/volcanics/Petrology/Oceanography/GEOREF.

2327. Ebeling AW, Werner W, DeWitt FA, Cailliet GM. Santa Barbara Oil Spill: Short-term analysis of macroplankton and fish. U.S. Environmental Protection Agency Water Pollution Research Series 1971;14-12-534:1-68 pollution/oil spill/environmental effects/Santa Barbara Channel/marine biology/petroleum/pollution.

2328. Hein FJ, Longstaffe FJ. Controls on geotechnical properties of fine-grained mass flow deposits, California borderland. Eleventh International Congress on Sedimentology, Hamilton, Ont. (CAN), Aug. 22-27, 1982 1982;:166. California/soil mechanics/organicmaterials/oceanography/materials/properties/geoc hemistry/conti nental slope/marinesediments/UnitedStates/materials/properties/X-raydata/sedimentation /transport/massmovements/debris flows/silt/clastic sediments/clay/Santa Barbara Basin/Santa Cruz Basin/San Nicolas Basi/plasticity/Atterberglimits/smectite/sheetsilicates/silicates /vermiculite/i llite/chlorite/kaolinite/North American Pacific/Hickey/physical oceanography/MINERALS MANAGEMENT SERVICE.

2329. Heinbokel JF, Beers JR. Studies on the functional role of tintinnids in the Southern California Bight part 3: Grazing impact of natural assemblages. Mar. Biol. (Berl.) 1979;52(1):23-32. USA/ciliate/phyto/plankton/plankton carbon flow/energy/zooplankton/Pieper/Dawson/MINERALS MANAGEMENT SERVICE.

2330. Sherman K, Lasker R, Richards W, Kendall AWJ. Ichthyoplankton and fish recruitment studies in large marine ecosystems. MAR. FISH. REV 1983;45(10-12):1-26.
Within the Fishery Management Zone of the United States, seven large marine ecosystems (LME's) -- Insular Pacific, Eastern Bering Sea, Gulf of Alaska, California Current, Gulf of Mexico, Southeast Atlantic Sh elf, and Northeast Atlantic Shelf -- support multibillion-dollar fisheries, operating at different trophic levels. To improve abundance for ecasts of recruitment success of incoming year classes, two assessmen t strategies are used by NMFS in the LME's: 1) Fisheries independent surveys of fish eggs and larvae on mesoscale grids of 20-100 km at fr equencies of two to twelve times a year to obtain estimates of the si ze of the spawning adult stocks, and 2) other studies within the meso scale survey matrix aimed at discovering the processes controlling th e annual recruitment success of new year classes.
ichthyoplankton/recruitment/fishery management/fishery surveys/Pisces/zooplankton/USA/Fishery Management Zone/ASFA.

2331. Berger WH, Soutar A. Preservation of plankton shells in an anaerobic basin off California. Geol. Soc. Amer., Bull. 1970;81(1):p.275-282 Serial B; Bibliography and Index of Geology (1969-present). Marine geology/Paleontology/Pacific Ocean/Santa Barbara basin/Pteropoda/Foraminifera/diatoms/Radiolaria/Quaternary/Holocene/Oceanograph y/GEOREF.

2332. Helvey M, James R. The influence of water current on the fish communities associated with two water intake structures. Report for phase I habitat modification study, 316(b) demonstration. Southern California Edison Research and Development Series 81-RD-13 1979;:44. fish/MINERALS MANAGEMENT SERVICE.

2333. Edwards BD, Gorsline DS. New evidence of current winnowing activity on Hueneme Sill, California continental borderland. Am. Assoc. Pet. Geol., Bull. 1978;62(3):511 Address: Univ. South. Calif., Los Angeles, Calif. Conference: AAPG-SEPM annual meeting. Oklahoma City, Okla., April 9-12, 1978. sedimentation/transport/continental shelf/marine transport/continental borderland/basins/winnowing/channels/upper Pleistocene/Pleistocene/Quaternary/Holocene/sand/clastic sediments/Hueneme Sill/California Channel Islands/marine geology/oceanography.

2334. Hemingway GT. A description of the California current ecosystem by factor analysis. Calif. Coop. Oceanic Fish. Invest. Rep. 1979;20:164-183. ecosystems/physicochemical properties/nutrients (mineral/water mixing/hydrography/current measurements/environmental data/data procesing/trophic relationship/plankton/chlorophylls/zooplankton/Pieper Hickey/physical oceanography/MINERALS MANAGEMENT SERVICE.

2335. Bernal PA, Chelton DB. (Low-frequency, large-scale biological variability in the California Current, 1949-1978). PROCEEDINGS OF THE EXPERT CONSULTATION TO EXAMINE CHANGES IN ABUNDANCE AND SPECIES COMPOSITION OF NERITIC FISH RES, SAN JOSE, COSTA RICA, 18-29 APRIL 1983. A PREPARATORY MEETING FOR THE FAO WORLD CONFERENCE ON FISHERIES MANAGEMENT AND DEVELOPMENT.; FAO FISH. REP./FAO, INF. PESCA. 1983;3(291):713-729.
The pelagic ecosystems of the California Current show biological responses dominated by large scale, low frequency changes. This study shows that they are strongly associated with inter-annual fluctuations of the transport of the California Current. Zooplankton biomass time series were strongly correlated with the temperature field. This indicated that horizontal and vertical advection play primary roles in these changes. The biomass fluctuations are most highly correlated with current transport five months prior to the changes. At the same time, these changes are associated with fluctuations of thermal anomalies in the eastern tropical Pacific indicative of "El Nino" events, with a 4 month lag. Density independent factors controlling populations in eastern boundary currents are discussed, emphasizing the importance of incorporating parameter estimations for the oceanographic fluctuations in fishery management models. zooplankton/fishery oceanography/current observations/INE/California Current/ISE/California Current/ASFA.

2336. U S. Geological Survey. Geology, petroleum development, and seismicity of the Santa Barbara channel region, California. U.S. Geol. Surv., Prof., illus. (incl. colored geol. map 1:250,000), 1969. 1969;paper no.697 Serial Compilation of four

reports (cited separately under the respective authors). B; Bibliography and Index of Geology (1969-present). Marine geology/Pacific Ocean/Santa Barbara channel/General/Oceanography/GEOREF.

2337. Eganhouse RP, Young DR. Total and organic mercury in benthic organisms near a major submarine wastewater outfall system. Bulletin of Environmental Contamination and Toxicology 1978;19(6):758-766 Address: Southern California Coastal Water Research Project, 1500 E. Imperial Highway, El Segundo, CA 90245. Benthic organisms from off Palos Verdes Peninsula and Santa Catalina Island were analyzed for total and organic Hg by cold vapor atomic absorption. Mean values for all tissues in no case exceeded the FDA guideline of 0.5 ppm of Hg. While muscle tissue for most of the species showed high percentages of organic Hg, the mean levels were J0.05 mg/wet kg. The mean level of total Hg in Dover sole muscle was statistically indistinguishable from that of sole caught off the Oregon Coast and the Nova Scotia Banks. Apparently, in spite of the marked contamination of sediments in the area, tissue concentrations in these benthic outfall organisms are low and similar to those found for related animals from other parts of the world. This may be explained by recent findings that Hg in Palos Verdes sediments is largely refractory, and that the transfer of Hg from them is prevented by its fixation in the nondegradable fraction of the sediments.
Mercury/Fish/Benthic organisms/Tissues/Contaminant measurements/Water pollutants/Sediments/California Coast/Mercury compounds/Organic compounds/Mollusca/Arthropoda/Osteichthyes/Palos Verdes Peninsula/Santa Catalina Island/water quality/pollution/marine biology/resource management.

2338. Weaver DW, Doerner DP, Nolf B. (and others). geology of the northern channel islands, southern california borderland. (los angeles, calif.) am. assoc. petroleum geologists and soc. econ. paleontologists and mineralogists, pacific secs., 200 p., geol. maps, 1969. 1969
N; Bibliography of North American Geology (1785-1970). areal geology/california/cretaceous tertiary/cretaceous/foraminifera/maps/geologic/structure/northern channel islands/paleontology/san miguel island/santa cruz island/santa rosa island/southern/tertiary/GEOREF.

2339. Pilmanis AA, Given RR, Borgh BC. Unique design of the new NOAA/USC saturation diving system. OCEANS '84 CONFERENCE RECORD: INDUSTRY, GOVERNMENT, EDUCATION. DESIGNS FOR THE FUTURE. 1984;2:539-543.
Under a cooperative agreement, NOAA and the University of Southern California (USC) have designed, and are currently constructing an underwater habitat/saturation diving system as a national facility to provide extended time and depth capability to marine scientists. It is expected to be in operation in early 1986, and to be initially located at the USC Catalina Marine Science Center on Santa Catalina Island, 26 miles offshore from Los Angeles, CA. The state-of-the-art design of this system will enable scientists to perform in situ research in depths of 50 to 200 FSW in relative comfort, with up-to-date equipment, and with on-campus academic support.
diving bells/diving chambers/design/saturation diving/ASFA.

2340. Weaver DW. The pre tertiary rocks, in geology of the northern channel islands, southern california borderland (by d. w. weaver and others). (los angeles, calif.) am. assoc. petroleum geologists and soc. econ. paleontologists and mineralogists,

pacific sec. 1969:p.11
N; Bibliography of North American Geology (1785-1970).
absolute age/dates/california/diorite/general description/igneous rocks/k ar/metamorphic rocks/petrology/pre tertiary rocks/santa cruz island/santa cruz island schist/schist/willows diorite/GEOREF.

2341. Eichenberg T. California oil case tests state-federal coastal role. Oceanus 1986;29(3):81
Petroleum industry/Court decision/Government regulation/state regulation/federal regulation/Offshore development/Santa Barbara Channel/petroleum/policy.

2342. Eggers DE, Thompson DT. An evaluation of the marine magnetic gradiometer. GEOPHYSICS 1984;49(6):771-779.
This study examines the ability of a marine gradiometer to produce diurnal-free total magnetic intensity data. Using Gulf's research vessel Hollis hedberg , an experimental program was carried out in the Santa Barbara channel offshore California. A shore-based station was operated continuously during the survey period to monitor the temporal magnetic activity. The gradiometer data are adversely affected by the magnetic field of the towing vessel. An analysis of gradiometer bias as a function of ship's heading and deployment distance show remarkable agreement with a model of the ship's magnetic field proposed by Bullard and Mason in 1961. Based upon this model, analytic azimuth correction factors are developed and applied to the gradiometer data. Comparisons are made among single-sensor, shipminus-shore, and integrated total magnetic intensities. Residual mistie statistics, contour maps, and profile plots form the basis of the comparison.
magnetic intensity/magnetic fields/INE/Santa Barbara Channel/measuring devices/performance assessement/ASFA.

2343. Weaver DW. Paleogeographic implications and geologic history, in geology of the northern channel islands, southern california borderland (by d. w. weaver and others). (los angeles, calif.) am. assoc. petroleum geologists and soc. econ. paleontologists and mineralogists, pacific sec. 1969:p.115 N; Bibliography of North American Geology (1785-1970).
california/cenozoic/cretaceous tertiary/cretaceous/geologic history/history/northern channel islands/paleogeography/stratigraphy/GEOREF.

2344. Emerson KC, Price RD. New records of chewing lice Mallophaga trichodectidae found on North American wild foxes of Mexico. J. Kans. Entomol. Soc. 1987;60(2):332-333
A summary of trichodectid records is given for the five species of North American foxes, including finding Neotrichodectes mephitidis (Packard), a common louse on the Striped Skunk, on the Island Gray Fox from three of the off-shore Channel Islands and on the Gray Fox in Santa Barbara County, California [USA]. mammalian parasites chewing lice/Mallophaga trichodectidae/foxes/Neotrichodectes mephitidis/Striped Skunk/Island Gray Fox/Gray Fox/Suricatoecus vulpis/vulpes vulpes/Suricatoecus quadraticeps/Vulpes velox/Urocyon cinereoargenteus/Aloplex lagopus/Urcyon littoralis/California Channel Islands/terrestrial biology/parasitology/entomology.

2345. Hewitt RP. Distributional atlas of fish larvae in the California current region: Northern anchovy, Engraulis mordax Girard, 1966 through 1979. Calif. Coop. Oceanic Fish. Atlas No. 28 1980;:101.
Fish larvae/ichthyoplankton surveys/geographical distribution/quantitative distribution/atlases/Engraulis mordax/zooplankton/Pieper/MINERALS MANAGEMENT SERVICE.

2346. Hewitt RP, Smith P. Seasonal distributions of epipelagic fish schools and fish biomass over portions of the California current region. Calif. Coop. Oceanic Fish. Invest. Rep. 1979;20:102-110.
seasonal variations/ichthyoplankton surveys/biomass/geographical distribution/distribution pattern/epipelagic zone/schooling behaviour/zooplankton/Pisces/Pieper/MINERALS MANAGEMENT SERVICE.

2347. Hiller-Adams P, Childress JJ. Effects of prolonged starvation on O sub(2) consumption, NH sub(4)@)u+ excretion, and chemical composition of the bathypelagic mysid Gnathophausia ingens). MAR. BIOL 1983;77(2):119-127. The large bathypelagic mysid G. ingens was collected in January 1980 at 400 to 700 m depth from the San Clemente Basin off southern California. Instars 7-8 and Instars 10-12 were starved in the laboratory for up to 19 wk. Oxygen consumption and ammonia excretion rates, and water, protein, lipid, and ash contents were determined periodically during starvation. Protein and lipid were metabolized in approximately equal amounts by starved individuals after the initial weeks of food deprivation. Unidentified components (probably non-protein nitrogenous compounds) apparently were oxidized within the first 7 wk of starvation. Oxygen consumption and ammonia excretion by Instars 7-8 decreased steadily during 19 wk of starvation. In contrast, stable or increasing respiration and excretion rates were observed for fed mysids. The mean respiration rate of Instars 10-12 did not change significantly during 13 wk of starvation, although ammonia excretion rates decreased.
starvation/oxygen consumption/chemical composition/ammonia/excretion/Gnathophausia ingens/ASFA.

2348. Bereskin SR, Edwards LN. Mid Tertiary stratigraphy, southwestern Santa Cruz Island. Geology of the Northern Channel Islands, southern California borderland (by D. W. Weaver and others). [Los Angeles, Calif.] Am. Assoc. Petroleum Geologists and Soc. Econ. Paleontologists and Mineralogists, Pacific Sec. illus., table, 1969. 1969:p.68-79
N; Bibliography of North American Geology (1785-1970).
Mid-Tertiary formations on southwestern Santa Cruz Island are: (1) Vaqueros Formation -- paleoecologic and stratigraphic evidence indicate an inner shelf to nonmarine environment (Zemorrian to lower Saucesian); Rincon Formation -- a middle to outer shelf bathymetry, shoaling to the east or northwest (Saucesian); San Onofre Breccia -- inner to middle shelf with portions possibly nonmarine, thickens and coarsens to the northeast toward a high (Saucesian to Relizian); Monterey and Blanca Formations -- Beechers Bay Member of the Monterey was deposited at depths increasing with time from middle shelf to bathyal, paleoslope dipped southwest (Relizian to Luisian and possibly Mohnian). Faunal lists are included. GEOREF.

2349. Endlich RM. New archive of coastal meteorological and air pollutant measurements. Environ. Sci. Technol. 1988;22(3):255-256
A new data archive, recently made available to interested researchers, provides users with data suitable for evaluating air pollution models. Included in the archive are low-level wind, temperature, humidity, and air pollutant measurements from the South Central Coast Cooperative Aerometric Monitoring Program (SCCCAMP). SCCCAMP was a major study of coastal meteorology and air pollutants in an area of Southern California encompassing the Santa Barbara and Ventura regions and the Santa Barbara Channel. The objectives were to investigate the physical mechanisms that

occasionally create excessive concentrations of photochemical oxidant at ground level and to provide a comprehensive set of measurements for the development and evaluation of mesoscale photochemical simulation models. coastal zones/air pollutants/meteorology/monitoring measurements/photochemicals/simulation/SCCCAMP Santa Barbara and Ventura/Santa Barbara Channel/meteorology/pollution/air quality/atmospheric sciences.

2350. Hewitt RP, Smith PE, Brown JC. Development and use of sonar mapping for pelagic stock assessment in the California Current area. U.S. Natl. Mar. Fish. Serv. Fish. Bull. 1976;74:281-300.
fish/9/15/text/ecosystem interrelationships/MINERALS MANAGEMENT SERVICE.

2351. Chelton DB. CalCOFI - a 33-year oceanographic survey of the southern California Current System. TIME SERIES OF OCEAN MEASUREMENT. VOLUME 1. 1983.; SERIES TEMPORELLES DE MESURE S OCEANIQUES. VOLUME 1. 1983.; TECH. SER. IOC/SER. TECH. COI. 1983;(24):9-13.
A description is given of the California Cooperative Oceanic Fisheries Investigation (CalCOFI) sampling strategy and scientific results relevant to ocean climatic variability are summarized. The goal of CalCOFI is to study the underlying principles governing behaviour, availability and total abundance of the major pelagic fish stocks in the southern California Current System. Weaknesses of the sampling strategy are also discussed.
oceanographic surveys/time series/fishery oceanography/pelagic fishies/INE/California Current/ISE/California Current/ASFA.

2352. Rietman JD, Aldrich JK. Gravity survey of the northern channel islands, in geology of the northern channel islands, southern california borderland (by d. w. weaver and others). (los angeles, calif.) am. assoc. petroleum geologists and soc. econ. paleontologists and mineralogists, pacific sec. 1969:p.109
N; Bibliography of North American Geology (1785-1970).
california/geophysical surveys/gravity/gravity surveys/northern channel islands/GEOREF.

2353. Hickey BM. The California Current system--hypotheses and facts. Prog. Oceanogr. 1979;8(4):191-279.
California Current/Geostrophic velocity/Seasonal variations/Countercurrents/Undercurrents/Washington Coast/US West Coast /Wind stress/Hydrodynamics/Oregon Coast/California Coast/Pacific Ocean Northeast/California Undercurrent/Davidson Current/Southern California Countercurrent/California Current System/Hickey/physical oceanography/Bonnell/Dailey/Bray/Murray/Gorsline/marine mammals/algae/marine/spermatophytes/introduction/geology/geologic features/MINERALS MANAGEMENT SERVICE.

2354. Engle JM. Growth of juvenile spiny lobster (Panularis interruptus) from a iscrete surf grass habitat. B.F. Phillips, J.S. Cobb. CSIRO Div. Fish Oceanogr. Circ No.7. ; 1977. 34-35.
This is the abstract of a paper presented at the Workshop on Lobster and Rock Lobster Ecology and Physiology.
marine biology.

2355. Holbrook SJ, Schmitt RJ. Experimental analyses of patch selection by foraging black surfperch (Embiotoca jacksoni Agazzi). J. EXP. MAR. BIOL. ECOL 1984;79(1):39-64.
The dynamics of microhabitat use by foraging adult and juvenile

black surfperch (E. jacksoni) were explored. Detailed observations of black surfperch feeding at Santa Catalina Island, California, revealed that adults and young-of-year juveniles co-occurred in the same habitat but used different algal substrata as foraging sites. Juveniles selected invertebrate prey almost exclusively from the surface of foliose algae. The occurrence of young E. jacksoni was highly correlated with that of foliose algae. Adults tended to bite most frequently from turf, a low-growing matrix of plants, colonial animals, and debris covering the rocky substratum.
feeding behavior/food organisms/microhabitats/USA/California/Santa Catalina Island/habitat selection/Embiotoca jacksoni/INE/USA/California/ Santa Catalina Island/ASFA.

2356. Johnson DL. Beachrock (water tablerock) on San Miguel Island. in Geology of the Northern Channel Islands, southern California borderland (by D. W. Weaver and others). [Los Angeles, Calif.] Am. Assoc. Petroleum Geologists and Soc. Econ. Paleontologists and Mineralogists, Pacific Sec., table, 1969. 1969:p.105-108 N; Bibliography of North American Geology (1785-1970).
Quaternary carbonate deposits occur intermittently along the northwest coast of San Miguel Island. The calcareous-cemented sandstone formed on a marine-cut bench of Quaternary age, varies from a few cm to over 60 cm thick, formed as a marine beach which was veneered with pebbles, sand, and boulders, and was exposed to subaerial eolian sedimentation of calcareous shelf sand following a drop in sea level. The carbonate was leached and disseminated by rain and ground water which moved downward along the beach-eolianite interface, and issued as springs. Evaporation resulted in precipitation of the carbonate. There seems to be no connection with the tide range.
GEOREF.

2357. Engle JM. A provisional checklist of the marine species of Santa Catalina Island. : Unpublished report; 1978. 256.
species list/Santa Catalina Island/marine biology.

2358. Hill M. Results of BLM-funded studies (1975-78): Marine mammals of the Southern California Bight. POCS Tech. Pap. 81-6. Prep. for U.S. Dep. Interior, Minerals Management Service, Pacific OCS Region, Los Angeles, CA. 1981;:96.
MINERALS MANAGEMENT SERVICE.

2359. Chelton DB. Large-scale climatic variability of the physical and biological oceanography of the California Current. WORLD CLIMATE RESEARCH PROGRAMME, PAPERS PRESENTED AT THE MEETING ON TIME SERIES OF OCEAN MEASUREMENTS (TOKYO, 11-15 MAY 1981). 1982;:155-169.
A study was undertaken to determine the extent to which long-term surveys, for example that of the California Cooperative Oceanic Fisheries Investigation, can provide information about both biological and physical aspects of ocean climate. Variability in the California Current is dominated by the very large-scale changes in the transport with interannual time scales. These variations strongly influence the biology of the California Current ecosystem; increased southward transport leads to an increase in zooplankton biomass and correspondingly decreased southward transport leads to a decrease in the biomass. These variations affect pelagic fish abundance because of their important position in the food chain.
physical oceanography/marine ecology/fishery oceanography/climatic changes/INE/California Current/ISE/California Current/ASFA.

2360. Weaver DW, Meyer GL. Stratigraphy of northeastern

santa cruz island, in geology of the northern channel islands, southern california borderland (by d. w. weaver and others). (los angeles, calif.) am. assoc. petroleum geologists and soc. econ. paleontologists and mineralogists, pacific sec. 1969:p.95 N; Bibliography of North American Geology (1785-1970). california/foraminifera/miocene fauna/northeastern/quaternary/santa cruz island/stratigraphy/tertiary/GEOREF.

2361. Hillard B. A bi-seasonal analysis of surface temperature patterns along the California Bight. Bachelor's Thesis, San Diego State Univ., San Diego 1976; PacificOcean/Hickey/physical oceanography/North Pacific/CaliforniaBight/California Current/Davidson Current/mixing/California/United States/ocean circulation/MINERALS MANAGEMENT SERVICE.

2362. Engle JM. Ecology and growth of juvenile California spiny lobster, Panulirus interruptus (Randall) [dissertation]. Los Angeles, CA: University of Southern California; 1979. 298.
The natural history of juvenile California spiny lobster (Panulirus interruptus) was investigated, with primary emphasis on ascertaining juvenile habitats, growth rates, and evaluating ecological and behavioral phenomena associated with juvenile growth and survival. Small, greenish juveniles typically inhabit crevices or temporary burrows in 0-4 m deep, wave-swept rocky habitats covered by dense beds of surf grass, Phyllospadix spp.
growth/ecology/natural history/behavior/life history/Panularis interruptus/California spiny lobster/Phyllospadix/surf grass/Santa Catalina Island/California Channel Islands/marine biology.

2363. Hirota J. Quantitative natural history of Pleurobrachia bachei in La Jolla Bight. 1974;:42.
food chains/primary biological productivity/ecology/zooplankton/metabolism/abundance/crustacea/parasites/demog raphy/populations/La Jolla Bight/California/Eganhouse/chemical oceanography/Pieper/Dawson/MINERALS MANAGEMENT SERVICE.

2364. Smith KL, Brown NO. Oxygen consumption of pelagic juveniles and demersal adults of the deep-sea fish Sebastolobus altivelis , measured at depth. MAR. BIOL 1983;76(3):325-332.
Oxygen consumption rates of the deep-sea fish S. altivelis were measured in situ on pelagic juveniles at mesopelagic depths (608 m) and on demersal adults at bathyal depths (1,300 m) in the Santa Catalina Basin in March 1982. Two pelagic juveniles were individually collected, and respiration was measured continuously for approxomately 2 d with a slurp gun respirometer manipulated from the submersible "Alvin". Oxygen consumption rates of these juveniles were highly variable and were 1.5 to 1.8 times higher during the night than during the day. Weight-specific O sub(2) consumption rates for adults decreased with increasing body weight and were consistent in magnitude throughout the incubation period. Given the population O sub(2) consumption rate as an estimate of food energy demand, the demersal population of S. altivelis) would assimilate only 0.007% of the standing crop of Ophiophthalmus normani per day.
oxygen consumption/mesopelagic zone/juveniles/diurnal variations/stomach content/bathyal-benthic zone/energy budget/Sebastolobus altivelis/Euphausia pacifica/Nematoscelis difficilis/Ophiophthalmus normani/INE/ USA/Santa Catalina Basin/ASFA.

2365. Nolf B, Nolf P. Santa cruz island volcanics, in

geology of the northern channel islands, southern california borderland (by d. w. weaver and others). (los angeles, calif.) am. assoc. petroleum geologists and soc. econ. paleontologists and mineralogists, pacific sec. 1969:p.91-94 N; Bibliography of North American Geology (1785-1970).
california/igneous rocks/nomenclature/northern/petrology/santa cruz island/stratigraphy/tertiary/volcanic rocks/volcanics/GEOREF.

2366. Engle JM. Distributional patterns of nearshore fishes around the California Channel Islands. F. Hochberg. Rec. Adv. Calif. Is. Res.: Proceed. Third Calif. Is. Symp. Santa Barbara, CA: Santa Barbara Museum of Natural History; In press.
distribution/fishes/California Channel Islands/marine biology/ichthyology.

2367. Pickwell GV, Bezy RL, Fitch JE. Northern occurrences of the sea snake, Pelamis platurus , in the eastern Pacific, with a record of predation on the species. CALIF. FISH GAME 1983;69(3):172-177.
Four specimens of the yellow-bellied sea snake, P. platurus , from southern California and the outer coast of Baja California represent the northernmost records of this species in the eastern Pacific. Three of the snakes were probably carried northward by a warm countercurrent (Davidson Current) along the coast of Baja California and southern California during the warm periods of 1972-73 and 1976-77. One of the individuals had been ingested by a puffer Sphoeroides cf. Annulatus ; this represents the second reported instance of predation on the species in nature.
new records/geographical distribution/Pelamis platurus/ISE/ASFA.

2368. Weaver DW, Griggs G, Mcclure DV, Mckey JR. Volcaniclastic sequence, south central santa cruz island, in geology of the northern channel islands, southern california borderland (by d. w. weaver and others). (los angeles, calif.) am. assoc. petroleum geologists and soc. econ. paleontologists and mineralogists, pacific sec. 1969:p.85
N; Bibliography of North American Geology (1785-1970).
california/general description/igneous rocks/santa cruz island/sedimentary petrology/stratigraphy/tertiary/tertiary volcaniclastic rocks/volcaniclastic rocks/volcaniclastic sequence/volcanics/GEOREF.

2369. Engle JM, Coyer JA. California marine waters, areas of special biological significance, reconnaissance survey report. Santa Catalina Island subarea III, Los Angeles County. : State Water Resources Control Board, Water Qual. Mon. Rpt.; 1981. 81.
Report summarizes existing data describing the physical, chemical, and biological aspects of the intertidal, subtidal, and adjacent land areas. Current patterns of land/water use, actual or potential pollution threats, and special water quality requirements also are addressed.
surveys/pollution/Santa Catalina Island/Farnsworth Bank/marine biology/pollution.

2370. Hodder D, Mel M. Kelp survey of the Southern California Bight. Science Applications, Inc. Tech. Rep. Vol. III. Rep. 1.4 to Bureau of Land Management (Year II SCOSC Program), Contract No. AA550-CT6-40 1978;:105. text/algae/MINERALS MANAGEMENT SERVICE.

2371. Hodder D, Mel M. Southern California baseline study and analysis (1975/1976). Volume III. Principal investigator work element reports. Report section 2.6; book 7 of 10. 1978;:516.

crude oil/ecology/marine biology/water pollution/Southern California Bight/Eganhouse/chemical oceanography/surveys/continental shelves/aquatic plants/infrared mapping/sites/area/abundance/distribution property/hydrocarbons/metals/environmental impacts/invertebrates/tables data/algae spermatophytes/Bray/MINERALS MANAGEMENT SERVICE.

2372. Hodder D, Kanter R, Mel M, Straughan D. Year II. Intertidal study of the Southern California Bight (1976/77). Mussel community, sandy beaches and kelp survey. Vol. III. Sections 1.2-1.4. Prep. for U.S. Dep. Interior, Minerals Management Service, Pacific OCS Region, Los Angeles, CA. Prep. by Science Applications, Inc., La Jolla, CA. 1978;:458.
MINERALS MANAGEMENT SERVICE.

2373. Fisher JP, Pearch WG. Reproduction, growth and feeding of the mesopelagic fish Tactostoma macropus (Melanostomiatidae). MAR. BIOL 1983;74(3):257-267.
Over 5,000 specimens of the common mesopelagic fish T. macropus Bolin, 1939, collected in the upper 1,000 m over the outer continental slope off Oregon, USA from 1961 through 1978 with 2.4, 5.4 or or 50 m super(2) (mouth area) pelagic trawls, formed the basis for this study of its biology. T. macropus) spawns off Oregon mainly during the summer months. Females are mature at around 300 mm SL (standard length). The number of ripening occytes ranged from approximately 24,000 to over 66,000 per female. One batch of oocytes apparently matures each year. Larvae were most abundant greater than 150 km offshore in the California Current. Larvae undergo metamorphosis during the fall and winter, and small juveniles (50 to 70 mm SL) were consistently found in midwater trawl catches in the winter. Growth curves derived from length-frequency analysis, otolith aging and back-calculation from otoliths were similar. Average length at 1, 2 and 3 yr of age was about 110, 165 and 200 mm, respectively.
diets/sexual reproduction/growth curves/Tactostoma macropus/Euphausia pacifica/Sergestes similis/size distribution/vertical distribution/spawning grounds/abundance/horizontal distribution/INE/USA/Oregon/ASFA.

2374. Weaver DW, Doerner DP. Mid tertiary stratigraphy, san miguel island, in geology of the northern channel islands, southern california borderland (by d. w. weaver and others). (los angeles, calif.) am. assoc. petroleum geologists and soc. econ. paleontologists and mineralogists, pacific sec. 1969:p.80 N; Bibliography of North American Geology (1785-1970).
california/foraminifera/middle/oligocene miocene/san miguel island/stratigraphy/tertiary/GEOREF.

2375. Eppley RW,e. Plankton dynamics of the Southern California Bight. : Springer-Verlag; Lecture Notes on Coastal & Estuarine Studies, 15; 1986. 373. Address: Food Chain Res Group, Scripps Inst of Oceanog, Univ of California, La Jolla, CA 92093.
Chapter 1 (A.F.Carlucci, R. W.Eppley & J.R.Beers) provides an introductory synopsis of the bottom topography, climate and significance as a habitat for plankton of the Southern California Bight, which extends from N of Los Angeles to S of San Diego and includes Santa Barbara, Santa Catalina and San Clemente islands in its coastal waters. Chapter 2 (G.A.Jackson) reviews the physical oceanography (coastal currents, deeper water movement, upwelling water sources) and Chapter 3 (P.M.Williams) the chemistry (dissolved plus colloidal phases, suspended and sinking particulates). Chapter 4 (J.R.Beers) discusses organisms and the

food web, focusing on plankton and nekton, but including birds, mammals and man. Primary production is examined in Chapter 5 (R.W.Eppley & O.Holm-Hansen), with consideration of environmental factors and the regulation of phytoplankton growth, and of physical processes and phytoplankton biomass. Chapter 5 (M.M.Mullin) describes spatial and temporal scales and patterns in the Bight. Chapter 7 (F.Azam) comments on nutrient cycling and microbial food web dynamics. The final chapter (R.W.Eppley) notes the impact of man via chronic and acute pollution inputs.-P.J.Jarvis. estuaries/coastal areas/climate/bottom topography/currents/upwelling/water chemistry/food webs/primary production/phytoplankton growth/biomass/food webs/pollution/Southern California Bight/physical oceanography/marine biology/biological oceanography.

2376. Mooers CNK, Robinson AR. Turbulent jets and eddies in the California Current and inferred cross-shore transports. SCIENCE (WASH.) 1984;223(4631):51-53. The instantaneous California Current is seen to consist of intense meandering current filaments (jets) intermingled with synoptic-mesoscale eddies. These quasi-geostrophic jets entrain cold, upwelled coastal waters and rapidly advect them far offshore; this behavior accounts for the elongated, cool surface features that are seen extending across the California Current region in satellite infrared imagery. The associated advective mechanism should provide significant cross-shore transports of heat, nutrients, biota, and pollutants. The dynamics of the current system should be crucially influenced by its highly variable structure. jets/mesoscale eddies/eastern boundary currents/nearshore dynamics/INE/ California Current/ASFA.

2377. Avila FA, Weaver DW. Mid Tertiary stratigraphy, Santa Rosa Island. Geology of the Northern Channel Islands, southern California borderland (by D. W. Weaver and others). [Los Angeles, Calif.] Am. Assoc. Petroleum Geologists and Soc. Econ. Paleontologists and Mineralogists, Pacific Sec. 1969:p.48-67 N; Bibliography of North American Geology (1785-1970).
The formations are, from bottom to top: Vaqueros (Oligocene marine sands, 435 feet); Rincon (Oligocene and/or Miocene, marine mudstone, 1860 feet); San Miguel Volcanics and the San Onofre Breccia (basalt and dacite with marine lenses, Oligocene-Miocene, 2100 feet); and Monterey Formation (Miocene clastic rocks and tuffs, 1700 feet). Directional soft sediment structures in the clastic member of the San Miguel Volcanics indicate a dominant southwest paleoslope direction. Numerous faunal zones, based on Foraminifera, are also present and described. GEOREF.

2378. Erickson RC. Subsurface geotechnical hazards in petroleum and geothermal development. M.T. Halbouty. Energy resources of the Pacific region. AAPG Studies in Geology 12. ; 1981. 517-535.
Address: Chevron USA, San Francisco, CA, USA Conference: Symposium on energy resources of the Pacific region Honolulu, HI, July 30-Aug. 4, 1978. rock mechanics/case studies/energy sources/geologic hazards/reservoir rocks/petroleum/geothermal energy/development/stress/land subsidence/oil and gas fields/faults/pore pressure/earthquakes/continental margin/fluid injection/induced earthquakes San Joaquin Valley/Santa Barbara Channel/engineering geology/environmental geology/economic geology/petroleum.

2379. Weaver DW, Doerner DP. Lower tertiary stratigraphy, san miguel and santa rosa islands, in geology of the northern channel islands, southern california borderland (by d. w. weaver

and others). (los angeles, calif.) am. assoc. petroleum geologists and soc. econ. paleontologists and mineralogists, pacific sec. 1969:p.30
N; Bibliography of North American Geology (1785-1970). california/foraminifera/lower/san miguel islands/san miguel/santa rosa islands/santa rosa/stratigraphy/tertiary/GEOREF.

2380. ERT. Overwater plume dispersion study. Final report. : ERT, Newbury Park, CA. ERT-P-D569-140; ARB-R-87/306; 1987. 73. ((Prepared in cooperation with Sigma Research Corp., Lexington, MA. Sponsored by California State Air Resources Board, Sacramento.)).
The purpose of the study was to develop an air quality modeling methodology to simulate the impact of emissions from oil exploration and production activities in California coastal waters. The study included the collection of data in a field program, and the analysis of the data to determine a relationship between Gaussian dispersion coefficients and overwater transport distance and meteorological variable observed near the source and the shoreline. A plume of sulfur hexafluoride (SF6) and visible 'smoke' was released from an offshore location in the Santa Barbara Channel during onshore flow conditions, and the dispersion of the plume was documented by measuring SF6 concentrations at various distances downwind and by taking a variety of photographs. Experiments were conducted in the Santa Barbara Channel during two one-week period in 1986R.
Offshore drilling/Plumes/Flow visualization/Emission/Air pollution/Continental shelf/Mathematical models/Sulfur fluorides/Air quality/Atmospheric dispersion/Santa Barbara Channel/air quality/air pollution/petroleum/environmental studies/resource management.

2381. Hollibaugh JT, Azam F. Relationship between protein degradation rates and other biological parameters in Southern California Bight USA plankton communities. Am. Zool. 1980;20(4):951.
abstract/bacteria/biomass/leucine/turnover/met/hemo globin/chlorophyll/Algae/Spermatophytes/Bray/Geesey/Hickey/physical oceanography/MINERALS MANAGEMENT SERVICE.

2382. Holliday DV. Resonance structure in echoes from schooled pelagic fish. Acoust. Soc. Amer. J. 1972;51(4):1322-1332.
fish schools/echoes/acoustic structure/california current/resonantscattering/swimbladders/zooplankton/Pieper/MINERALS MANAGEMENT SERVICE.

2383. Mooers CNK, Rienecker MM, Robinson AR, Smith JA, Carter EF, Hagan DA. Synoptic/mesoscale variability off northern California in early summer 1983. EOS TRANS. AM. GEOPHYS. UNION 1983;64(45):p. 727.
Based on four quasi-synoptic shipboard hydrographic surveys conducted between mid-June and mid-July 1983, the eddy and jet fields off northern California, and their evolution, are described. The predominant features described are the meandering and split California Current jet plus intense and rapidly (ca. 10 days) changing cyclonic and anticyclonic synoptic/mesoscale eddies within a few hundred kilometers off Point Arena. Satellite IR images corroborate the results of the in situ studies and delineate associated frontal features. It is concluded that the 1983 studies are consistent with the 1982 studies which suggested that the instantaneous California Current System is dominated by meandering jets and synoptic/mesoscale eddies, which provide a major mechanism for cross-shore as well as alongshore transports.

hydrographic surveying/jets/oceanic eddies/current rings/ocean circulation/satellite observations/mesoscale phenomena/INE/California Current/summer/ASFA.

2384. Doerner DP. Lower Tertiary biostratigraphy of southwestern Santa Cruz Island. Geology of the Northern Channel Islands, southern California borderland (by D. W. Weaver and others). [Los Angeles, Calif.] Am. Assoc. Petroleum Geologists and Soc. Econ. Paleontologists and Mineralogists, Pacific Sec. 1969:p.17-29
N; Bibliography of North American Geology (1785-1970).
The Pozo Formation is at the base of the Tertiary section, and is overlain successively by the Canada, Jolla Vieja, and Cozy Dell formations. Numerous faunules and zonules are recognized; they are, from bottom to top: Turritella-Ostrea faunule, Cibicides-Trochammina zonule (the Pozo Formation), Eponides zonule, Bulimina-Plectofrondicularia zonule (the middle Canada Formation), and the Cibicides-Cassidulina zonule (the upper part of the Canada Formation). Environmental conditions are discussed and faunal lists are included. GEOREF.

2385. Estes JE, Crippen RE, Star JL. Natural oil seep detection in the Santa Barbara Channel, California, with shuttle imaging radar. Geology 1985;13(4):282-284
Address: Remote Sens. Res. Unit, Univ. California, Santa Barbara, CA 93106, USA. Natural submarine oil seeps in the Santa Barbara Channel, California, were detected by the first shuttle imaging radar (SIR-A). Oil slicks on the ocean are seen in radar imagery as areas of decreased radar signal return from a damping of surface roughness. Orbital radar imagery shows promise as an effective and efficient means of mapping submarine oil seeps as sources of naturally occurring oil slicks.
oil seepages/remote sensing/radar/Shuttle Imaging Radar/submarine oil seeps/oil slicks/geophysical surveys/economic geology/remote sensing/petroleum/sattelite methods/geophysical methods/detection/pollution/imagery/oil seeps/geosensing/Santa Barbara Channel/geology/petroleum/energy sources.

2386. Smith JA. Empirical and dynamic modes in the CCS (California Current System). EOS TRANS. AM. GEOPHYS. UNION 1983;64(45):727.
CTD data from the California Current System is analyzed in terms of both empirical orthogonal functions (EOFs) and quasi-geostrophic vertical modes (QGMs). A single EOF accounts for 99% of the variance in hydrostatic pressure perturbations. Below 100 meters the EOF is sensibly fit by a decreasing series of QGMs; the EOF shows stronger surface-trapping than, e.g., the first baroclinic QGM. Apparently, there is either non-linear coupling between the QGMs, or the data is sufficiently close to the source of activity (presumably also near the surface) that the various QGMs have not dispersed. In the upper 100 meters, surface mixing induces density correlations which cannot be fit by the QGMs alone. A simple model of "mixing events" to various depths and at random times can reproduce qualitatively this near-surface feature of the EOF.
ocean circulation/current data/CTD observations/mixing/INE/California Current/ASFA.

2387. Weaver DW. The cretaceous rocks, in geology of the northern channel islands, southern california borderland (by d. w. weaver and others). (los angeles, calif.) am. assoc. petroleum geologists and soc. econ. paleontologists and mineralogists, pacific sec. 1969:p.14
N; Bibliography of North American Geology (1785-1970).

california/cretaceous/foraminifera/jalama fm./list/san miguel island/stratigraphy/GEOREF.

2388. Estes JE, Wilson M, Hajic E. Analysis of Seasat-A SAR (Synthetic Aperture Radar) Data for the Detection of Oil on the Ocean Surface. : California Univ., Santa Barbara. Geography Remote Sensing Unit. NOAA-80123102; 1980. 106. ((Sponsored by National Oceanic and Atmospheric Administration, Rockville, MD.)). In evaluating the capability of the Seasat-A Synthetic Aperture Radar (SAR) to detect the smoothing effects of oil slicks on ocean surfaces, two problems were encountered. These were: lack of concurrent surface verification data, and the appearance of so called confusion targets in the imagery. To 'synthesize' necessary surface truth information, a linear deterministic oil trajectory model has been developed which sums the effects of winds, currents, and tides to predict hourly oil slick configurations within the Santa Barbara Channel study area. Using output oil slick trajectory predictions as a guide, a collection of 128 x 128 byte subimages was gathered from oil affected areas. Zones of reduced backscatter which could not be attributed to oil/surface tension effects (confusion targets) provided a similar set of subimages. Taking the two-dimensional Fourier transforms of these subimages and filtering via eight concentric ring masks allowed comparison of normalized mean power distribution as a function of spatial frequency. These comparisons show a more rapid drop off in normalized power at higher frequency for oil slick images than for non-oil slick images. The optimum discriminant, of those tested, utilized the sum of normalized power from the sixring filters representing highest. spatial frequency. Separation in this case was achieved at a 99% confidence level.
Oil pollution/Remote sensing/Radar/Water pollution/Oceans/Oil pollution detection/Seasat-A Synthetic Aperture Radar/oil slicks/ocean surfaces Santa Barbara Channel/Mechanical engineering/Industrial engineering/Civil engineering/Marine Engineering/petroleum/pollution/geology/geography.

2389. Jahnke RA, Weiss RF, Santschi P, Buchholtz M, Broecker WS, Heggie D, Hudson A, Bender ML. The Bottom Lander. EOS TRANS. AM. GEOPHYS. UNION 1983;64(45):p. 721.
The direct measurement of the rates of reactions at the sediment surfaces in the deep ocean is fundamental to our understanding of ocean chemistry. Using the Bottom Lander free vehicle, which was constructed under the auspices of the MANOP Program, automated chamber experiments were performed in situ in San Clemente Basin. Successful benthic chamber experiments require implantation of chambers with minimal sediment disturbance, maintenance of a known rate of mixing of the water trapped in the chambers, elimination of leakage between chamber water and bottom water, injections of tracers and recovery of samples without the build-up of pressure gradients to the sediment-water interface, and retrieval of the box cores without sediment disturbance. The results of tracer experiments, pore water analyses, and benthic flux measurements indicate that these criteria are met with the present instrument.
in situ measurements/sediment-water interface/water analysis/pore water/geochemistry/underwater vehicles/Bottom Lander/ASFA.

2390. Weaver DW. General geology of the region, in geology of the northern channel islands, southern california borderland (by d. w. weaver and others). (los angeles, calif.) am. assoc. petroleum geologists and soc. econ. paleontologists and mineralogists, pacific sec. 1969:p.9
N; Bibliography of North American Geology (1785-1970).
areal geology/california/northern channel islands/southern/GEOREF.

2391. Evenhuis NL. First record of Bombyllidae from Santa Barbara Island, California, USA (Diptera). Pan Pac. Entomol. 1979;55(4):250 Address: DEP. ENTOMOL., BERNICE P. BISHOP MUS., P.O. BOX 19000-A, HONOLULU, HAWAII 96819.
The bombyliid fly, Lepidanthrax borius, is recorded from Santa Barbara Island, California as the 1st Bombyliidae from that island. Behavioral observations and association with the ice plant, Mesembryanthemum nodiflorum, are noted. new record/distribution/biogeography/zoogeography/first record/Diptera/Bombyllidae/Diptera/Lepidanthrax borius/ice plant/Mesembryanthemum nodiflorum/Santa Barbara Island/terrestrial biology/botany/entomology.

2392. Hammond DE, Jalajas EW, Berelson W, Buchholtz M. Radon-222 fluxes at a site in San Clemente Basin, measured with the MANOP Lander. EOS TRANS. AM. GEOPHYS. UNION 1983;64(45):p. 721.
Fluxes of radon-222 were measured in July, 1983 at a site (32 degree 35'N, 118 degree 10'W) in San Clemente Basin in the southern California borderland. Samples drawn from sample tubes in the active chamber (Experiment 1) at approximately equals 7 hour intervals indicated the flux did not vary with time. Water in this chamber was stirred. Water samples drawn from each chamber after the deployment were also used to calculate fluxes, and those from chambers 1 and 2 yielded results consistent with data mentioned above. Calculated fluxes in chamber 3 were significantly greater. Chambers 2 and 3 were not stirred and thus it is concluded that radon fluxes are not significantly decreased by a lack of stirring. Radon emanation rates from sediment underlying chamber 1 were measured. The profile is unusual because rates in the upper 10 cm of the core were 2-3 times those between 10 and 20 cm. radon/transport processes/sediment-water interface/measurement/ISE/San Clemente Basin/ASFA.

2393. Dudley PP. Electron microprobe analyses of garnet in glaucophane schists and associated eclogites. Am. Mineralogist. 1969;54(7-8):p.1139-1150 N; Bibliography of North American Geology (1785-1970).
Analyses of zoned garnet in 15 different rock types from the Franciscan assemblage of California are reported. Specimen localities include the Tiburon Peninsula, Occidental, Ward Creek near Cazadero, and Santa Catalina Island. Garnet in glaucophane schists from Shubin, U.S.S.R., and Loh oelo, Java is compositionally similar to Franciscan samples. Oscillatory zoning of garnet porphyroblasts is observed in rocks containing fine-grained monomineralic garnet bands. Comparison of microprobe analyses of the present study with conventional analyses of garnets from the same outcrops indicates that the latter are most representative of inclusion-free outer zones of individual crystals. Preliminary data for coexisting garnet, pyroxene and amphiboles shows similar fractionation of Mg and Fe in Franciscan eclogites and regionally metamorphosed glaucophane eclogites in the southern Urals.
GEOREF.

2394. Ewald PE, Hunt GL,J, Warner M. Territory size in western gulls: importance of intrusion pressure, defense investments, and vegetation structure. Ecology 1980;61(1):80
Bird behavior/Colonization/Territory size/Gull/western gull/Food density/ Larus occidentalis/Western Gull/Santa Barbara Island/terrestrial biology/ornithology.

2395. McGowan JA. Biological effects of the 1983 Californian

El Nino. EOS TRANS. AM. GEOPHYS. UNION 1983;64(45):p. 725.
Analysis of the spatially extensive, 30 year time series of hydrographic and plankton measurements in the California Current has shown that large, low frequency variations in secondary production occur. Production is high when the transport of cool, low salinity water from the north is strong and low when it is weak. The periods of warming and low production tend to coincide with El Nino events in the eastern equatorial Pacific. Measurements made during the spring and summer of 1983 show that once again there is anomalously weak southerly transport and warm water. The abundance of zooplankton is significantly depressed. There was a failure of the early summer secondary production bloom. The weakened transport from the north depressed the thermocline thus resulting in a deeper, sub-surface stability maximum. This inhibited the input of plant nutrients to the euphotic zone and resulted in lower primary and secondary production. secondary production/hydrography/plankton/El Nino phenomena/INE/USA/ California/biological data/environmental effects/ASFA.

2396. Hamilton RM, Yerkes RF, Brown RDJ, Burford RO, DeNoyer JM. Seismicity and associated effects, Santa Barbara region, Chap. D. Geology, petroleum development, and seismicity of the Santa Barbara Channel region, California. U.S. Geol. Survey Prof. 1969;Paper 679:p.47-68
N; Bibliography of North American Geology (1785-1970).
The seismically active Santa Barbara Channel region has experienced two earthquakes of magnitude 6 since 1900, and in 1812 was the site of a shock of probable magnitude 7. Earthquakes of magnitude 6 and larger can be expected to occur in the future, possibly several in the next century. It is not known which of the several channel faults are seismically active because of lack of network data. A large earthquake would cause intense shaking with associated ground deformation and failure, particularly in artificially-filled areas, alluviated valleys, and unstable hillside slopes. Resulting damage to manmade structures would be great, especially during the wet season. Oil installations would probably also suffer damage, but effects can be reduced by certain standard practice precautions; hazards are tabulated.
GEOREF.

2397. Fairall CW, Schacher GE, Davidson KL, Houlihan TM. Atmospheric marine boundary layer measurements in the vicinity of San Nicolas Island during CEWCOM-78. Technical rept. Apr-Sep 78. : Naval Postgraduate School Monterey CA. NPS61-78-007; 1978. 76.
This is a report on the boundary layer aspects of the NPS participation in CEWCOM-78. The primary purpose of the experiment was to determine how representative San Nicolas Island is of an open ocean marine boundary layer and to examine the validity of boundary layer measurements at the NRL tower on the NW tip of the island. Under favorable wind conditions (NW) the turbulence and profile structure of the boundary layer near SNI was characteristic of typical marine conditions. A comparison of simultaneous measurements at the NRL tower and the R/V ACANIA indicated considerable shoreline influence on the velocity fluctuations (U* or epsilon) and the mean wind speed (U) but essentially no influence on temperature fluctuations (CT2). Using the bulk method to calculate T* and xi from the ACANIA data, the actual measurements of CT2 could be predicted to within about a factor of two.
Marine meteorology/Air water interactions/Oceanographic ships/Humidity/Oceanographic data/Measurement/Optical detection/Micrometeorology/Data acquisition/Atmospheric boundary layer/Turbulent boundary layer/Wind velocity/Acania

vessel/California/Pacific Ocean/San Nicolas Island/Atmospheric Sciences/Meteorology.

2398. Simpson JS. Large-scale thermal anomalies in the California Current during the 1982-1983 El Nino. EOS TRANS. AM. GEOPHYS. UNION 1983;64(45):725. The large-scale thermal structure of the California Current during 1982-83 shows several anomalous conditions: warm sea surface temperature anomalies (similar to 1-2 degree C), depression of the thermocline by 50 m or more, and pronounced subsurface warming (similar to 3-4 degree C) relative to the 30-year mean. The subsurface anomaly is much greater than the surface anomaly. These persistent (> 6 months) structures, coupled with unusually high sea levels along the North American coast, show that a major Californian "El Nino" occurred during 1982-83. The data support the conclusion that the expansion and intensification of the Aleutian low and the decrease in strength of the Pacific high produced an anomalous basin-wide atmospheric circulation which coupled directly to the large-scale oceanic wind-driven circulation to produce the Californian "El Nino." The enhanced transport from the west (offshore California) and south (Baja California), which such a circulation would produce, is consistent with the observed water properties.
El Nino phenomena/temperature anomalies/surface temperature/ocean circulation/INE/California Current/ASFA.

2399. Hironaka MC, Smith RJ. Foundation study for materials test structure. Am. Soc. Civil Engineers Proc., Jour. Soil Mechanics and Found. Div., no. SM6, illus., tables, 1969. 1969(95):paper 6921
N; Bibliography of North American Geology (1785-1970).
A foundation study was conducted to determine suitability of the proposed site for placement of the Submersible Test Unit II, an area approximately two miles square in vicinity of 34 degrees 05.5' N., 120 degrees 43' W., some 14 miles west of San Miguel Island, Calif. Eight cores were taken to determine engineering properties of sediments. A bathymetric chart was constructed using data obtained from the Precision Depth Recorder and positioning instruments aboard the USS MOLALA. With resulting data from laboratory tests on samples, computations indicate: calculated average bearing capacity was 300 psf; based on applied structural loading pressure of 110 psf, total settlement was calculated to be 1.7 in. Statistical evaluation of test results formulated relationships for vane shear strength and bulk wet density that could be used in site reconnaissance studies.
GEOREF.

2400. Farrell J. Hondo---suburb of steel. EXXON USA 1982;XXI(2):22 Platform Hondo/Petroleum industry/Offshore drilling/Santa Barbara Channel/petroleum.

2401. Howard GV. Views concerning use of the living resources of the California current. California Current System-Their Fluctuating Magnitude, Distribution and Susceptibility to Use for the Benefit of the State of California. Symposium held at Lake Arrowhead, Calif., Dec. 11-12, 1967. Calif. Coop. Oceanic Fish. Invest. Rep. 1969;13:91-94.
California current/resource development/fisheries/solutions/legal/economic/technological/and sociological problems/zooplankton/Pieper/MINERALS MANAGEMENT SERVICE.

2402. Lynn RJ. Anomalies in the California Current during the 1982-1983 El Nino. EOS TRANS. AM. GEOPHYS. UNION 1983;64(45):p.

725.
The development of extensive sea surface temperature (SST) anomalies off the North American coast during the winter of 1982-83 followed the development of anomalous warming in the tropics by several months. Conductivity/Temperature/Depth surveys in early 1983 off California show that the positive SST anolmalies and depression of the thermocline have produced record values of geopotential anomaly; in excess of seasonal norms by a sizeable 14 dynamic cm (10 super(3) cm super(2) sec super(-2)). This excess is greater than that observed during the 1957-58 El Nino by 4 to 8 dynamic cm. These high values are balanced by stronger than normal geostrophic current. An anomalous component of onshore transport would be the simplest explanation for the buildup of warm surface water and increase in geopotential anomaly. Coastal upwelling indices show that there was highly energetic onshore transport for the first three months of 1983. Changes in the salinity distribution imply an onshore displacement of isohalines on the order of 300 to 400 km.
ocean circulation/temperature anomalies/El Nino phenomena/surface temperature/INE/California Current/CTD observations/ASFA.

2403. Barnes PW. Bathymetry and sedimentary structures of Santa Cruz basin, California. Am. Assoc. Petroleum Geologists Bull. 1969;53(2):p.461-462 Abstract N; Bibliography of North American Geology (1785-1970). GEOREF.

2404. Fay RC, Vallee JA. A survey of the littoral and sublittoral ascidians of Southern California, USA, including the Channel Islands. Bull. South. Calif. Acad. Sci. 1979;78(2):122-135 Address: Pacific Bio-Marine Labs Inc.
The ascidian populations of the 8 Channel Islands, 3 islets, the Cortez Bank and the Coronado Islands were surveyed. Species (38) were found offshore compared to the 48 identified species which have been found above a depth of 60 m in southern California. Viviparous ascidians are specifically more abundant than oviparous ascidians on the Channel Islands and the possible significance of this mode of reproduction is discussed as an explanation for their local distribution. The habitat preference of southern California ascidians is presented. Ascidians of unresolved identification 9 spp. are compared to the most closely related, described North American species.
reproduction/geographical distribution/oviparous ascidians/viviparous ascidians/check lists/abundance/distribution/habitats/tunicates/Urochordata/ascidians/Ascidiace ae/Tunicata/sea squirts/California Channel Islands/Cortez Bank/Coronado Islands/marine biology.

2405. Howell DG,e. Aspects of the geologic history of the California continental borderland. Am. Assoc. Pet. Geol., Pacific Section, Misc. Publ. 24 1976;:561.
geology/MINERALS MANAGEMENT SERVICE.

2406. Howell DG, Vedder J. Structural implications of stratigraphic discontinuities across the southern California borderland. The Geotectonic Development of California. Vol. 5 1981;:535-558.
Dailey/Gorsline/Introduction/Geology/Geologic Features/Text/MINERALS MANAGEMENT SERVICE.

2407. Ikeda M, Emery WJ, Mysak LA. Seasonal variability in meanders of the California Current System off Vancouver Island. EOS TRANS. AM. GEOPHYS. UNION 1988;64(45):p. 726.
Satellite infrared images taken over the last few years reveal

seasonal variations in the meanders of the California Current System (CCS) off Vancouver Island. The CCS exhibits meanders with wavelengths between 120 and 150 km in both winter and spring, when the upper ocean current all flows northwestward or southeastward, respectively. In summer, the CCS includes the California Undercurrent which flows northwestward beneath the southeastward surface current, and has shorter wavelength(75-80 km) meanders. Around the end of August, these shorter scale meanders are engulfed by the longer (150 km) meanders. In the fall eddies are detached from the offshore extensions of the longer meanders. A linear stability theory using a four-layer model of the CCS successfully predicts the wavelengths in the winter and spring, but not in the summer and fall. The meander evolution observed in summer and fall is instead simulated using a nonlinear numerical model in a domain with topographic obstacles selected to match the alongshore variations in the continental slope.
current rings/ocean circulation/satellite observations/seasonal variations/INE/California Current/INE/Canada/British Columbia/Vancouver Island/ASFA.

2408. Merschat WR. Lower tertiary paleocurrent trends, santa cruz island, california. Am. assoc. petroleum geologists bull. 1969;53(2):p.461 Abstract N; Bibliography of North American Geology (1785-1970). california/general/lower/lower tertiary/paleocurrents/provenance/santa cruz is./santa cruz island/sedimentary petrology/sedimentary rocks/sedimentary structures/tertiary/tertiary sediments/GEOREF.

2409. Huang JCK. Recent decadal variation in the California Current system. J. Phys. Oceanogr. 1972;2(4):382-390.
California current/California coast/climatic changes/atmospheric circulation/mass transport/zooplankton/Pieper Hickey/physical oceanography/MINERALS MANAGEMENT SERVICE.

2410. Ikeda M, Mysak LA, Emery WJ. Observation and modeling of satellite-sensed meanders and eddies off Vancouver Island. J. PHYS. OCEANOGR 1984;14(1):3-21.
A long time series of satellite infrared images spanning the period 21 July-8 October 1980 reveals the evolution of long (160 km) and short (80 km) wavelength meanders of the California Current System off Vancouver Island. Midway in the series, strong interactions occurred between the two meander scales. Although the shorter meanders were initially more energetic, they were eventually dominated by the longer meanders. Near the end of the time series, detached mesoscale eddies were formed from the longer meanders. Current meter data from the period before meander growth clearly indicates the presence of a strong vertical shear near 150 m, which consists of a southeastward surface current and a northwestward undercurrent. It is argued in this paper that the observed shear flow is the energy source for the meanders and eddies seen in the satellite images. satellite mosaics/current rings/oceanic eddies/INE/Canada/British Columbia/Vancouver Island/ASFA.

2411. Bereskin SR. Miocene biostratigraphy of southwestern Santa Cruz Island, California. Am. Assoc. Petroleum Geologists Bull. 1969;53(2):p.469 Abstract N; Bibliography of North American Geology (1785-1970). GEOREF.

2412. Field ME, Clarke SH,J. Small-scale slumps and slides and their significance for basin slope processes, southern California borderland. L.J. Doyle, O.H. Pilkey. Geology of continental slopes. Special Publication - Society of Economic Paleontologists and Mineralogists 27. ; 1979. 223-230. Address:

U. S. Geol. Surv., Menlo Park, CA, USA Conference: Geology of continental slopes; a part of the AAPG-SEPM annual meeting. Oklahoma City, OK, April 9-12, 1978.
sedimentation/oceanography/processes/slumping/continental slope/continental borderland/basins/mass movements/seismic surveys/geophysical surveys/San Nicolas Island/marine geology/oceanography.

2413. Robinson AR, Carton JA, Walstad LJ, Leslie WG, Mooers CNK, Smith J, Rienecker M. Quasigeostrophic forecasting in the California Current. EOS TRANS. AM. GEOPHYS. UNION 1983;64(45):p. 276.
Ocean hydrographic data collected in June and July, 1983 in a 150 x 150 km super(2) domain off the coast of California by the OPTOMA Program were objectively analyzed to form thermocline depth maps which were then used to initialize a quasigeostrophic ocean forecast model. Two week predictions were made of the thermocline depth field for each of the three cruise legs with the initial predictions being made in real time. The prediction based on the first leg was reasonably accurate. The clockwide eddy in the northwest remained stationary while the counterclockwise eddy in the south strengthened, causing the flow to become more zonal. The prediction based on the second leg had proper tendencies but did not change as dramatically as the observed field.
hydrographic data/thermocline/maps/INE/California Current/prediction/quasi-geostrophic motion/ASFA.

2414. Soutar A. Sedimentation in santa barbara basin, california. Am. assoc. petroleum geologists bull. 1969;53(2):p.468
Abstract N; Bibliography of North American Geology (1785-1970).
california/continental margin/deposition processes/environment/marine geology/ocean/provenance/santa barbara basin/sedimentation/sediments/GEOREF.

2415. Field ME, Richmond WC. Sedimentary and structural patterns on the northern Santa Rosa-Cortes Ridge, southern California. Marine Geology 1980;34(1-2):79-98
Address: USGS, 345 Middlefield Rd., Menlo Park, CA 94025.
The Santa Rosa-Cortes Ridge is an 1,800-m-high, 180-km-long feature lying =90 km off the coast of southern California and directly S of the northern group of Channel Islands. Geophysical profiling and sampling cruises to the northern part of the ridge, an area of recent and future lease sales for petroleum development, provide a strong data base for interpretation of structural and sedimentary patterns and their relation to potential geologic hazards. The northern part of the ridge is a complexly folded and faulted NW-trending anticlinorium composed mostly of lower and middle Miocene shale and mudstone. The major structure of the ridge developed almost continuously from Oligocene or early Miocene time to the end of the Tertiary. Numerous small faults cut the rocks on the ridge top. Published data on historical epicenters and evidence of offsets on the seafloor from seismic reflection and side-scan profiles, including limited evidence of possible strike-slip movement along fault traces, indicate that the northern Santa Rosa-Cortes Ridge is tectonically active. A thin veneer of unconsolidated medium to fine sand, <3 m thick, mantles most of the ridge. Modern sediments become thicker and finer-grained from the ridge top to the ridge flanks, suggesting active accretion in those. areas. Slumps are present at various depths on the flanks, and it seems probable that the thicker deposits (>20 m) of modern sediments on the upper flanks will be sites of future slumping.
Sedimentation/Ocean ridge system/Geologic structures/Environmental hazards/Paleogeology/Tectonics/Geomorphology/Fault zones/Offshore

structures/Petroleum industry/sedimentary structures sediment distribution/slumping/tectonics/northern California Channel Islands/Santa Rosa-Cortes Ridge/geology/geomorphology/petroleum.

2416. Huber HR, Ainley DG, Morrell SH, Levalley RR, Strong CS. Studies of marine mammals at the Farallon Islands, California, 1977-1978. 1979;:54. MAMMAL/AQUATIC ANIMALS/WHALES/FARALLON ISLANDS/CETACEA/BREEDING/CENSUS/SEALS MAMMALS/COASTS/CALIFORNIA CURRENT/MORTALITY/BONNELL/MINERALS MANAGEMENT SERVICE.

2417. Childress JJ, Price MH. Growth rate of the bathypelagic crustacean Gnathophausia ingens (Mysidacea: Lophogastridae). 2. Accumulation of material and energy. MAR. BIOL 1983;76(2):165-177.
The content of water, ash, carbohydrate, lipid, protein, chitin, carbon, hydrogen, nitrogen and energy was measured for all life stages of the bathpelagic mysid Gnathophausia ingens collected in San Clemente Basin off Southern California, USA between January 1969 and February 1982. These data are used to examine the life history, growth rates, growth pattern and partitioning of material and energy over the life of this species. Females reproduce only once and brood their young for about 1.5 yr, during which time the females do not feed. This species has a very high reproductive effort: of the energy accumulated over its life, 61.3% is used in egg production, 13.4% in parental care of young, 5.6% is cast exoskeletons and only 19.6% remains in the females after brooding. The relative rate of growth (percentage of energy d super(-1)) is about 1% immediately after leaving the mother and declines to about 0.2% as maturity is approached. Such growth rates appear to be typical for an animal of this size living at low temperatures. The evolutionary context of this mysid's life history is discussed. growth/energy budget/bathypelagic zone/developmental stages/biochemical composition/fecundity/body size/Gnathophausia ingens/ASFA.

2418. Fritzsche RA. Revision of the Eastern Pacific Syngnathidae (Pisces: Syngnathiformes) including both recent and fossil forms. Proc. Calif. Acad. Sci. 1980;42(6):181-227
Address: DEP. BIOL., UNIV. MISS., UNIVERSITY, MISS. 38677. The marine and estuarine eastern Pacific Synganthidae comprises 17 extant and 3 extinct species. Diagnostic characters for species and genera, including meristic and morphometric characters, and osteological features, are given. All species both living and fossil are diagnosed and described. The recognized species and their ranges are: Hippocampus ingens Girard [= H. hildebrandi] (San Francisco Bay, California, south to Pucusana, Peru, including the Gulf of California); Doryrhamphus melanopleura (Bleeker) (Indo-Pacific; in the eastern Pacific from Bahia Magdalena, Baja California, south to Isla la Plata, Ecuador, including the Gulf of California, Galapagos Islands and Clipperton Island); Doryrhamphus paulus sp. nov. (Islas Revillagigedo, Mexico); Leptonotus blainvilleanus (Eydoux and Gervais) [= Syngnathus acicularis] (Hornitos, Chile, to Golfo Nuevo, Argentina); Bryx arctus (Jenkins and Evermann) (Tomales Bay,. California [USA], south to Mazatlan, Mexico, including the Gulf of California); B. heraldi sp. nov. (Islas Juan Fernandez and Isla San Felix, Chile); B. coccineus (Herald) (Bahia Banderas, Mexico, south to Punta Aguja, Peru and the Galapagos Islands); B. veleronis Herald (Galapagos Islands; Islas Revillagigedo; Isla Murcielago and Isla del Cano, Costa Rica; and Islas San Jose and Canal de Afuera, Panama); B. clarionensis sp. nov. (Isla Clarion, Mexico); Syngnathus auliscus (Swain) (Santa Barbara Channel, California, south to Paita, Peru, including the Gulf of California); S. carinatus (Gilbert) (confined to upper Gulf

of California); S. exilis (Osburn and Nichols) (Half Moon Bay, California, To Bahia Magdalena, Baja California and Isla Guadalupe, Mexico); S. californiensis Storer (Bodega Bay, California, south to Bahia Santa Maria, Baja California); S. macrobrachium sp. nov. (Tumbes, Peru, south to Puerto Montt, Chile); S. euchrous sp. nov. (Redondo Beach, California, to Punta Eugenia, Baja California); S. leptorhynchus Girard [= S. griseolineatus, S. barbarae](southeastern Alaska south to Bahia Santa Maria, Baja California); s. insulae sp. nov. (Isla Gualdalupe, Mexico). Studies of growth and variation show that S. leptorhynchus is highly variable with each population distinct. Marked seasonal variation, when combined with growth data, indicates that individuals probably live for 1 yr or less. The fossil pipefish of Southern California are all only known from the Miocene. Hipposyngnathus imporcitor sp. nov. from the upper Modela Formation is most closely related to 2 spp. from the Oligocene of Europe. S. emeritus sp. nov. is known only from the Puente Formation. S. avus Jordan and Gilbert is known from the lower Modelo. Formation. A comparison between inferred relationships of the various species and their geographical distribution suggests that the evolution of the eastern Pacific Syngnathus is a result of at least 2 separate invasions. Doryrhamphus melanopleura invaded the eastern Pacific by crossing the East Pacific Barrier and gave rise to Doryrhamphus paulus. Leptonotus blainvilleanus is related to other species of Leptonotus in New Zealand and southern Australia and was probably derived from an ancestor in these areas via waif dispersal. The reduction and loss of elements of the branchial skeleton is useful in characterizing urophorine genera and may be of general use when relationships within the family Syngnathidae are studied in more detail. new species/estuaries/osteology/population/seasonal variation/growth/skeleton/distribution/evolution/Puente Formation/Oligocene/Modelo Formation/Miocene/fossil species/Pisces/Syngnathiformes/Syngnathidae/Hippocampus ingens Girard [= H. hildebrandi]/Doryrhamphus melanopleura (Bleeker)/Doryrhamphus paulus sp. nov./Leptonotus blainvilleanus/Bryx arctus/Bryx heraldi sp. nov./Bryx veleronis Herald/Bryx clarionensis/Syngnathus auliscus/Syngnathus carinatus/Syngnathus exilis/Syngnathus californiensis/Syngnathus macrobrachium/Syngnathus euchrous/Syngnathus leptorhynchus/Syngnathus insulae many locations in the eastern Pacific/Santa Barbara Channel/marine biology/ichthyology.

2419. Robinson GR. Otter trawl sampling bias of the gill parasite, Lironeca vulgaris (Isopoda, Cymothoidae), from sanddab hosts, Citharichthys spp. FISH. BULL 1982;80(4):907-909. Lironeca vulgaris (Crustacea, Isopoda, Cymothoidae) is a common parasite infesting the gill chambers of many marine fish species from the California coast. Both male and female isopods reside in the gill chambers of sanddab hosts. During a study of the interactions between L. vulgaris and two sanddab hosts, Citharichthys stigmaeus and C. sordidus , the author analysed the efficiency of traditional otter trawl collecting methods. Prevalence, relative parasite density, and mean parasite intensity were compared for samples of a host population gathered by otter trawls and divers utilizing scuba. parasitism/gills/collecting devices/Lironeca vulgaris/Citharichthys/efficiency/ASFA.

2420. Yeats RS. Rifting and rafting in the southern California borderland [with discussion]. Conference on geologic problems of San Andreas fault system, Stanford, Calif., 1967, Proc.. Stanford Univ. Publ., Geol. Sci. 1968;11:p.307 B; Bibliography and Index of Geology (1969-present).

California/Structural geology/South/tectonics/Evolution/rifting rafting/Faults/Overthrust/tectonic evolution/GEOREF.

2421. Hunt GL,J, Pitman RL, Naughton M, Winnet K, Newman A, Kelly PR, Briggs KT. Distribution, status, reproductive ecology, and foraging habits of breeding seabirds. Summary of Marine Mammals and Seabird Surveys of the Southern California Bight Area 1975-1978. Rep. to U.S. Dep. of Interior, Bureau of Land Management. 1981;
text/birds/MINERALS MANAGEMENT SERVICE.

2422. Fry DM, Lowenstine LJ. Pathology of Common Murres Uria aalge and Cassin's Auklets Ptychoramphus aleuticus exposed to oil. Arch. Environ. Contam. Toxicol. 1985;14(6):725-738
Address: DEP. AVIAN SCI., UNIV. CALIF., DAVIS, CALIF. 95616. The histopathology of diving seabirds exposed to oil is described. Cassins Auklets (Ptychoramphus aleuticus) were experimentally exposed to weathered Santa Barbara Channel (CA) crude oil by external application to the breast plumage or wings. Beached Common Murres (Uria aalge) were recovered from an accidental oil spill of bunker C fuel oil. Exposed birds exhibited hepatocellular dissociation and hemosiderosis, renal tubular necrosis, and hemolytic anemia. Both unexposed and exposed birds exhibited numerous gastrointestinal lesions and parasites making interpretation of oil damage effects to the gastrointestinal system difficult. Burrow nesting auklets had a high incidence of pneumoconiosis while cliff nesting murres had no particulate inclusions on lungs. The results describe the extent of pathology to be expected in wild, free living seabirds.
crude oil/lung/gastrointestinal lesion/hemolytic anemia/renal tubular necrosis/hepatocellular dissociation/hemosiderosis/parasite/pneumoconiosis/oil spills/histopathology/oil pollution/pollution effects/pathology Cassins Auklets/Ptychoramphus aleuticus/Common Murres/Uria aalge/Santa Barbara Channel/terrestrial biology/ornithology/pathology/petroleum/water quality/resource management/pollution.

2423. Smith CR, Hamilton SC. Epibenthic megafauna of a bathyal basin off southern California: Patterns of abundance, biomass, and dispersion. DEEP-SEA RES 1983;30(9A):907-928.
A total of 50 species was recorded in a survey of near-bottom megafauna at a depth of 1300 m in the Santa Catalina Basin using the submersibles Alvin and Sea Cliff , and bottom trawls. The nine most common epibenthic types were counted in Alvin photographic surveys, yielding a total density of 16.7 individuals per m super(2). Biomass of the four most abundant species (an ophiuroid, gastropod, holothurian, and rockfish) totaled 67.9 g m super(-1). The ophiuroid Phiophthalmus normani comprised 99% of the community in terms of abundance and standing crop. All four dominant epibenthic species showed nonrandom dispersion patterns on the studied scales of one-half to hundreds of meters. Ophiophthalmus normani showed weak tendencies toward evenness on the smallest scale (0.5 m) and also formed randomly located patches 1 to 4 m in diameter. Potential causes of patterns included attraction to detrital kelp parcels, avoidance of disturbed areas breeding aggregation, and other social interactions. It is concluded that the megafauna comprises a major fraction of the bathyal benthic biomass and that it, particularly the ophiuroids, significantly impacts the energetics and ecology of bathyal communities.
zoobenthos/abundance/biomass/dispersion/community composition/species diversity/Ophiophthalmus normani/bathyal-benthic zone/INE/USA/California/ASFA.

2424. Frye DM, Toone CK. DDT induced feminization of gull embryos. Science (Wash. D.C.) 1981;213(4510):922-924
Address: DEP. AVIAN SCI., UNIV. CALIFORNIA, DAVIS 95616.
Injection of the insecticide DDT into gull [Larus californicus and western gull] eggs, at concentrations comparable to those found in contaminated seabird eggs in 1970, induces abnormal development of ovarian tissue and oviducts in male embryos. Developmental feminization of males is associated with inability to breed as adults and may explain the highly skewed sex ratio and reduced number of male gulls breeding on Santa Barbara Island in southern California [USA]. DDT/insecticide/environmental pollutants/sex ratio/Charadriiformes/Larus californicus/Western Gulls/Santa Barbara Island/terrestrial biology/ornithology/pollution.

2425. Bailey KM. The early life history of the Pacific hake, Merluccius productus. FISH. BULL 1982;80(3):589-598.
The early life history of Pacific hake, M. productus , is described from laboratory and field studies. At ambient temperatures (11 degree -13 degree C) egg hatching takes about 100-120 hours; complete absorption of the yolk takes about 150-200 hours. Respiration rates for first feeding larvae at 12 degree C are 4.8-6.8 mu l/mg per hour. Growth rates for at least the first 20 days are slow compared with other larvae in the California Current. First-feeding hake larvae require a daily ingestion of about 0.13 calories.
life history/Merluccius productus/hatching/growth/respiration/calories/INE/ASFA.

2426. Vernon JW, Gorsline DS. Continuous seismic profile, offshore Ventura Basin Santa Barbara through Anacapa Passage. Geol. Soc. America Spec. 1968;Paper 115:p.358
Abstract N; Bibliography of North American Geology (1785-1970). California/Geophysical surveys/Ventura Basin Santa Barbara/offshore/seismic/Seismic surveys/GEOREF.

2427. Spies RB, Des MDJ. Natural isotope study of tropic enrichment of marine benthic communities by petroleum seepage. MAR. BIOL 1983;73(1):67-71. The isotopic ratios of sulfur and carbon in the tissues of infaunal organisms collected from a natural petroleum seep in the Santa Barbara Channel, California, USA were examined to see if petroleum is utilized by the benthic community. Sulfur isotope data were consistent with a pathway of petroleum energy from sulfate reducers arrow right H sub(2)S arrow right Beggiatoa) sp. arrow right nematodes and other infauna. The carbon of infaunal organisms was isotopically lighter at the seep than at a comparison station; the mean delta super(13)C for 12 species was--1.32 ppt. towards the petroleum delta super(13)C value. The shifts were largest in two species of deep-feeding maldanid polychaetes. The tissues of one of the species, Praxillella affinis pacifica , were also analyzed for super(14)C content and delta super(34)S, and the biomass produced by the populations over 26 mo was estimated. The results of these analyses allowed the authors to estimate that for the seep population: (1) there was 15.6% more fossil carbon, (2) chemoautotrophic bacteria contributed 13.6% more carbon, and (3) 19% more carbon was produced by the population over 26 mo.
oil seepages/zoobenthos/food webs/Beggiatoa/Praxillella affinis/marine environment/carbon 14/sulphur isotopes/INE/USA/California/Santa Barbara Channel/ASFA.

2428. Winterer EL, Curray JR, Peterson MNA. Geologic history of the intersection of the Pioneer Fracture Zone with the Delgada Deep Sea Fan, northeast Pacific. Deep Sea Research.

1968;15(5):p.509
N; Bibliography of North American Geology (1785-1970).
Continuous reflection profiles of the region where Pioneer Fracture Zone intersects Delgada Deep-Sea Fan (39 degrees N., 127 degrees W.) show that the top of the seismic second layer is displaced along the fracture zone, but that overlying sediments are undisturbed. These sediments have completely buried Pioneer Ridge where it intersects the continental slope, the shape of which is modified locally by an extra cone of sediment, the Delgada Fan. Where the total column is less than 500 m thick, the physiography of the sediments is strongly influenced by relief of the underlying seismic second layer. The mineralogical uniformity of fine sediments suggests that the California Current delivered Columbia River Basin sediments over the past 10 m.y. to form the continental rise; the Delgada Fan was superimposed during Quaternary.
Continental margin/United States/Northwestern/Pioneer Fracture Zone Delgada Fan intersection/Marine geology/Geophysical surveys/Pacific Ocean/northeastern/Pioneer Fracture Delgada Fan intersection/Seismic surveys/GEOREF.

2429. Fusaro C, Anderson S. First California record: The scalloped hammerhead shark, Sphyrna lewini, in coastal Santa Barbara waters. Calif. Fish and Game 1980;66(2):121-123
Two scalloped hammerhead sharks were caught by fishermen on 28 August, 1977.The previous northernmost published record wqas Isla San Marcos in the Gulf of California, Mexico. Since hammerhead shark species are known to school, it may be that these two shorks and possibly more, traveled northward for some distance as a group.
new record/range extention Sphyrna lewini/scalloped hammerhead shark/ Santa Barbara Channel/2 km off the Ellwood Pier/1.5 km from the Santa Barbara Harbor/marine biology.

2430. Lander RH, Kajimura H. Status of northern fur seals. FAO FISH. SER.; MAMMALS IN THE SEAS. SMALL CETACEANS, SEALS, SIRENIANS AND OTTERS. SELECTED PAPERS OF THE SCIENTIFIC CONSULTATION ON THE CONSERVATION AND MANAGEMENT OF MARINE MAMMALS AND THEIR ENVIRONMENT. 1982;4(5):pp. 319-345.
This paper reviews the demographic and environmental biology of the northern fur seal, Callorhinus ursinus (Linnaeus, 1758), especially in relation to exploitation by man. Estimated current abundance (in parentheses), historical trends in abundance, and migration and subsequent intermixture of the 5 breeding populations recognized by the North Pacific Fur Seal Commission are reviewed (1) Pribilof Islands (1,300,000). (2) Commander Islands (265,000). (3) Robben Island (165,000). (4) Kuril Islands (33,000). and (5) San Miguel Island (2,000). Pelagic sealing was banned by treaty in 1911; on the first 3 populations above are presently exploited commerically on land. Harvesting rate and data, birth and natural mortality rates and census methods and figures for these populations are presented. The northern fur seal is an opportunistic feeder, capable of long periods of fasting; its feeding habits and behaviour and principal food species are summarized, and additional ecological factors are reviewed.
population number/exploitation/population dynamics/Callorhinus ursinus/IN/North Pacific/ASFA.

2431. MacLeod WDJ. Combined gas chromatography mass spectrometry of complex hydrocarbon trace residues in sediments. Jour. Gas Chromatography. 1968;6(12):p.591-594
N; Bibliography of North American Geology (1785-1970).
Complex traces of sedimentary hydrocarbons up to C31H64 were examined by combined GC-MS for evidence of biological origin. The system described can analyze a complex extract of 10(-4)-10(-5) g

in a single sampling. Where GC separation permitted, individual hydrocarbons amounting to less than 10(-7) g were identified. The hydrocarbon distribution in the very old Onverwacht sedimentary rock was compared and contrasted with that found in a recent unconsolidated Santa Barbara Basin sediment.
Chemical analysis/Chromatography/Hydrocarbons in sediment/with mass spectroscopy/Organic materials/Analytical methods/Gas chromatography mass spectroscopy/hydrocarbons/Spectroscopy/Mass/Hydrocarbons in sediments/with gas chromatography/GEOREF.

2432. Gall LF. Santa Catalina Island's Endemic Lepidoptera I. The Orange-Tips, Anthocharis cethura catalina and Anthocharis sara gunderi (Pieridae). Atala 1979;7(1):2-8
Address: Dept. Biol. Sci., Stanford Univ., Stanford, CA 94305, USA. The Catalina orange-tip, Anthocharis cethura catalina , successfully eluded both collectors and researchers for nearly half a century. The butterfly had been suggested for threatened or endangered species status until very recently, although its biology and ecology remained virtually unknown. Investigation of habitat utilization and management on Catalina Island, hostplant relations, distributional records, and the behavioral ecology of A. c.catalina indicates that neither the butterfly nor its habitat are imminently threatened. Ecological relationships between the Catalina orange-tip and the related Gunder's orange-tip, Anthocharis sara gunderi , on Catalina Island are also discussed.
ecological distribution/abundance/habitat/endangered species/endemic species/Lepidoptera/Orange-Tips/Anthocharis cethura/catalina/Anthocharis sara gunderi/Santa Catalina Island/terrestrial biology/entomology.

2433. Mate BR. History and present status of the northern (stellar) sea lion, Eumetopias jubatus. MAMMALS IN THE SEAS. SMALL CETACEANS, SEALS, SIRENIANS AND OTTERS. SELECTED PAPERS OF THE SCIENTIFIC CONSULTATION ON THE CONSERVATION AND MANAGEMENT OF MARINE MAMMALS AND THEIR ENVIRONMENT.; FAO FISH. SER. 1982;4(5):311-317.
The northern sea lion (E. jubatus) breeds from the Kurile Islands north and west through the Aleutian and Pribilof Islands and south along the North American coast to San Miguel Island. Populations in California, Oregon, Washington and British Columbia are estimated to number about 5,000-7,000, 2,000, 600 and 5,000 animals, respectively. Combined estimates of the size of Soviet stocks exceed 20,000 animals. Nearly 200,000 northern sea lions are thought to inhabit Alaskan waters. Sea lions in the eastern Pacific migrate north following the breeding season (mid-May to mid-July). The species moves south to inhabit waters around northern Hokkaido from late January to late May, reaching a maximum of 10,000-13,000 animals in March. Approximately 12,500 and 2,500 animals are killed each year in connection with foreign and U.S. fishing operations, respectively. Competition with other pinnipeds may be the most important factor affecting the abundance and distribution of northern sea lions.
population number/geographical distribution/exploitation/Eumetopias jubatus/I/Pacific/ASFA.

2434. Weeks LG. The ocean's resources. Offshore. 1968;28(7):p.39-48, 87-88 N; Bibliography of North American Geology (1785-1970).
The current status of the offshore petroleum industry, potential world-wide offshore petroleum resources, and gas reserves are considered, and examples of offshore successes are given. About 75

countries are active in searching for petroleum offshore; among the areas described are Cook Inlet, Alaska, Santa Barbara Channel, Calif., the Gulf Coast, and the Arctic Islands of Canada. The only offshore production of sulfur at present is from Grande Isle salt dome off the Louisiana coast. Other mineral resources discussed include those in sea water. Low temperature source mineral deposits make up most of those offshore. Sections on marine biological resources and ship building conclude the report. Marine geology/Mineral resources/Offshore portions/Oceans/possibilities/Petroleum/Exploration/Offshore/GEOR EF.

2435. Gall LF. Santa Catalina Island's endemic Lepidoptera. II. The Avalon hairstreak, Strymon avalona , and its interaction with the recently introduced gray hairstreak, Strymon melinus (Lycaenidae). Menke AS, Miller DR. Entomology of the California Channel Islands: proceedings of the first symposium. Santa Barbara, California, USA: Santa Barbara Museum of Natural History; 1985. 95-104. Presented at: Symposium on Entomology of the California Channel Islands (at) Annual Meeting of the Entomological Society of America,. San Diego, CA (USA), Dec 1981 Address: Dep. Biol., Yale Univ., New Haven, CT, 06511. The Avalon Hairstreak, Strymon avalona (Wright), occurs only on Santa Catalina Island, California. Until recently, its congener, S. melinus Huebner, was absent from Santa Catalina, but occurred on all other California islands and across most of temperate North America. The First bona fide capture of S. melinus from Catalina was recorded in 1978, and in 1979 this species apparently was established in at least two localities on the island. Colonization of Santa Catalina by S. melinus poses several conservational challenges, and provides an opportunity to study biological interactions between these two Strymon in early sympatry. In this paper, the author uses numerical taxonomic techniques to address (1)whether these species presently hybridize on Catalina, and (2) whether the geographic source for the invading S. melinus can be pinpointed. He then discusses (3) the possible threat S. melinus poses to S. avalona and (4) if necessary, what management actions might be taken to insure continued survival of the endemic S. avalona .
interspecific relationships/exotic species/colonization/indigenous species/sympatric species/numeric taxonomy Avalon Hairstreak/Strymon avalona/Strymon melinus/Lycaenidae/Santa Catalina Island/terrestrial biology/entomology.

2436. Mate BR. History and present status of the California sea lion Zalophus californianus. MAMMALS IN THE SEAS. VOLUME 4. SMALL CETACEANS, SEALS, SIRENIANS AND OTTERS. SELECTED PAPERS OF THE SCIENTIFIC CONSULTATION ON THE CONSERVATION AND MANAGEMENT OF MARINE MAMMALS AND THEIR ENVIRONMENT.; FAO FISH. SER. 1982;4(5):303-309.
Three sub-species of Z. californianus have been identified Z. c. californianus is found along the eastern North Pacific coast of North America from British Columbia south to at least Manzanillo, Mexico; it breeds in late May and early June from the tip of Baja California north to San Miguel Island and throughout the Sea of Cortez. Z. c. wollebacki breeds in the Galapagos Islands from October to December, Z. c. japonicus was in the past found in the Sea of Japan from 34 to 37 degree N. Z. c. californianus was heavily exploited in the 1800s; although estimates of population size are uncertain, there appear to be at least 75000-100000 animals present. Populations of the sub-species and of Z. c. wollenbacki , estimated to include 20 000 animals, are protected and are either growing in size or are stable. iZ. c. japonicus is

rare or extinct.
population number/population dynamics/protected resources/Zalophus californianus/I/Pacific/ASFA.

2437. Patchick PF. Ground water research in Central America completed. Water Well Jour. 1968;22(10):p.32
N; Bibliography of North American Geology (1785-1970).
The United Nations Food and Agricultural Organization in cooperation with the El Salvador Ministry of Agriculture has completed a 3-year ground-water exploration and evaluation project in the lower basin of the Rio Grande de San Miguel as a pilot example of a good approach to a regional evaluation. Good quality ground water with a sufficient usable recharge of 25 percent was located to irrigate 40,000 hectares. The presence of a vast aquifer system is estimated to contain 12.27 million acre-feet of ground water of which 1.34 million acre-feet occurred in storage within the first 300 feet below the surface. Recommendations have been implemented by legislation for further drilling and development. El Salvador/Hydrogeology/Rio Grande de San Miguel basin/ground water development/Ground water/Development/GEOREF.

2438. Garth JS. New species of zanthid crabs from early Hancock expeditions. Allan Hancock Found. Occas. Pap (New Ser.) 1986;0(4):1-14 Address: ALLAN HANCOCK FOUNDATION, UNIV. SOUTHERN CALIF., LOS ANGELES, CA. Five new species of crabs of the family Xanthidae, Eurypanopeus hyperconvexus, Micropanope ashcrafti, M. manteri, M. taylori, and Pilumnus? palmeri, are described and illustrated, and a sixth species, Pilumnus koepckei Turkay (1967) is illustrated and described in English for the first time. All were collected during 1931-1941, the decade of activity of the Velero III under the command of Captain Allan Hancock, the Eurypanopeus from the California Channel Islands, the remaining species from the American west coast from Mexico to Ecuador. E. hyperconvexus forms with E. crenatus (Milne Edwards and Lucas) of Peru a bitemperate species pair. Each of the three Micropanope species appears to have its corresponding western Atlantic-Caribbean analogue. Pilumnus? palmeri, highly sculptured and richly ornamented, is unique among New World members of this circumtropical genus.
distribution/description/circumtropical distribution/crabs/Xanthidae/Eurypanopeus hyperconvexus/Micropanope ashcrafti/Micropanope manteri/Micropanope taylori/Pilumnus? palmeri/Pilumnus koepckei Turkay (1967) California Channel Islands/American west coast from Mexico to Ecuador/marine biology.

2439. Lynn RJ, Bliss KA, Eber LE. Vertical and horizontal distributions of seasonal mean temperature, salinity, sigma-T, stability, dynamic height, oxygen, and oxygen saturation in the California Current, 1950-1978. CCOFI; SACRAMENTO, CA (USA); ATLAS CCOFI. 1982;(30).
This atlas presents a graphical summary of physical oceanographic measurements and related derived quantities for the region of the California Current based upon the CalCOFI data files for 1950 through 1978. Data were averaged for four periods within an annual cycle, each representing one season, and are displayed in vertical sections oriented both along and across the California current, and on constant depth and constant sigma-t surfaces. Together these charts provide a quasi-three-dimensional representation of the distributions of temperature, salinity, dissolved oxygen, sigma-t, hydrostatic stability, dynamic height, acceleration potential, geostrophic velocity and oxygen saturation.
atlases/CCOFI/hydrology/water temperature/salinity/oxygen/INE/California Current/ISE/California Current/ASFA.

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N; Bibliography of North American Geology (1785-1970).
A working hypothesis for the tectonic evolution of southern California consists of three parts: (1) overthrusting in the late Mesozoic, (2) coastal plain sedimentation without accompanying sharp folding and faulting from Late Cretaceous to early Miocene, and (3) Miocene rafting of granitic blocks and their sedimentary veneer over an autochthon composed of Franciscan Formation, Catalina Schist, and Pelona Schist, which are assumed to be correlative. It is hoped that presentation of the hypothesis together with its supporting evidence will be of assistance in detailed geological and geophysical studies now underway in the Coast Ranges and the San Andreas fault zone.
California/Structural geology/Southern/tectonic evolution/Faults/General/borderland evolution/Tectonics/Areal studies/evolution/GEOREF.

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Address: Leighton & Assoc., Irvine, CA.
sedimentation/structural geology/controls/tectonics/tectonic controls/ Franciscan Formation/Great Valley Sequence/California Continental Borderland/guidebook/guidebook/Pacific Coast/subsidence/transform faults/volcanism/uplifts/rifting/subduction/continental margin/Mesozoic/Cenozoic/East Santa Cruz Fault/right-lateral faults/paleomagnetism/block structures/plate rotation/Santa Catalina Island/structural geology.

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Pieper/Dawson/Zooplankton/Text/distribution/acoustics/frequencies /sound scattering/current california/coast/US/west coast/surface waters/UHF/MINERALS MANAGEMENT SERVICE.

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marine sediment/anoxic radionucli/RO/california/uranium isotope/sediment/ borderland/california/thorium isotope/sediment/chemical oceanography/eganhouse/venkatesan/borderland/California/MINERALS MANAGEMENT SERVICE.

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BIRDS/AQUATIC ANIMALS/CRUDE OIL/ECOLOGY/WATER POLLUTION/SOUTHERN CALIFORNIA BIGHT/Baird/BREEDING/DISTRIBUTION PROPERTY/ABUNDANCE/REPRODUCTION BIOLOGY/OFFSHORE DRILLING/ANIMAL MIGRATIONS/ENVIRONMENTAL IMPACTS/FEEDING STUFFS/NATURAL GAS/FOOD HABITS/MINERALS MANAGEMENT SERVICE.

2445. Larsen JC. Electric and magnetic fields induced by deep sea tides. Royal Astron. Soc. Geophys. Jour. 1968;16(1):p.47-70
N; Bibliography of North American Geology (1785-1970).
A lunar semidiurnal variation (12.4206-h period) induced by tides in the deep ocean is demonstrated in observations made off the California coast, on the California coast, and on San Miguel Island in the Azores. Comparison with simultaneous continental magnetic measurements permits an estimation of that part of the variation due to a lunar ionospheric oscillation. The observed variation on the sea floor and on the coast agrees well with tidal induced fields computed for a model which assumes: (1) a flat semi-infinite ocean of uniform depth and conductivity, rotating at a uniform rate; (2) a nonconducting atmosphere, continent, and upper mantle; and (3) superconducting mantle at uniform depth beneath the ocean. The variation observed on San Miguel agrees qualitatively with tidal induced fields computed for an island model under certain assumptions. California/Geophysical observations/Coast and off coast/earth currents/tide induced/Observations/GEOREF.

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MINERALS MANAGEMENT SERVICE.

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N; Bibliography of North American Geology (1785-1970).
Pleistocene fossils were found on two marine terraces having shoreline angle elevations of 130 feet and 25 to 30 feet on Santa Barbara Island, California. They include 22 species of foraminifera, 92 of mollusks, 3 of ostracodes, a stony coral, and 2 vertebrates from the lower terrace, and 30 species of foraminifera, 19 of mollusks, and 14 of ostracodes from the higher terrace. Both assemblages were deposited along open coasts, on gravelly substrates and probably in depths of between 10 and 20 feet. The upper terrace association resembles those described from terrace localities that lie above 100 feet on other California Channel Islands. An age close to Yarmouthian or Aftonian is suggested for the higher island terraces, and one of Sangamonian for the lower terraces.
California/Paleontology/Fauna/Pleistocene/marine/Santa Barbara Island/terraces/Stratigraphy/marine terrace deposits/Paleoecology/Quaternary/Marine shallow water/biostratigraphy/GEOREF.

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Address: Leighton & Assoc., Irvine, CA, USA Note: Publ. in conjunction with South Coast Geol. Soc. 13th annual field trip, Nov. 7-8, 1985; individual papers are cited separately.
maps/guidebook/tectonics/basement/geomorphology/metal ores/mining geology/geologic maps/Santa Catalina Island/San Pedro Basin/areal geology.

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Shell California Production Inc. has unveiled plans to resume exploratory drilling in Molino Gas Field in state waters of the Santa Barbara Channel off California. Plans call for a program of three deep wells to probe Eocene Matilija gas prospects and Miocene Monterey oil as a secondary target just west of a site at which

Phillips Petroleum Co. plans to develop a significant new pay discovery. Shell plans to move in the JFP Three jack up, rated to 25,000 ft in 300 ft of water, to drill the wells, the company said in a draft supplemental environmental impact report (EIR) submitted to the California State Lands Commission. The program will resume a wild-cat drilling program Shell aborted early last year. offshore operations/oil fields/drilling/ANE/Santa Barbara Channel/ Molino Field/ASFA.

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california/geophysical surveys/gravity/gravity surveys/offshore/santa barbara channel/GEOREF.

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Artificial fogs grown on hygroscopic (Salty Dog) nuclei were produced in the marine environment over Laser Bay, San Nicolas Island, California. These fogs were studied using over water optical extinction measurements in the visual, near and far infrared bands as well as by aerosol size measurements from an instrumented aircraft and from a shore based instrument. These studies show that optical extinction in the visible and near infra red wavelengths produced by biologically safe hygroscopic nuclei can be generated in military significant scales in the marine boundary layer.
Bacterial aerosols/Marine atmospheres/Obscuration/Nuclei/Hygroscopicity/Aerosols/Fog/Califo rnia/Optical properties/Light transmission/Infrared spectra/Visible spectra/Visibility/Extinction/Far infrared radiation/Near infrared radiation/Salty Dog/San Nicolas Island/Laser Bay Atmospheric Sciences/Meteorology.

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Marine geology/marine biology/Tanner Bank/Cortes Bank/surveys/bathymetry/rocks/sedimentation/geologic structures/geomorphology/marine fishes/coral/abundance/invertebrates/distribution property/benthos/Southern California Bight/Thompson/Invertebrates/text/fish/MINERALS MANAGEMENT SERVICE.

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Dawson/Pieper/Zooplankton/MINERALS MANAGEMENT SERVICE.

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As part of the Coastal Ocean Dynamics Experiment, fifty-eight infrared images of the California Current were collected in a four-month period in 1981 at the Scripps Satellite Oceanography Facility. Concurrent measurements on the shelf were from current meters, hydrography, surface drifters, doppler log, wind records and tide gauges. Satellite data, with its large areal coverage at

short sampling interval, bridged the spatial and temporal gap between hydrographic surveys and moored instruments. The goals of the analysis of the images were to extract a quantitative description of sea-surface temperature off nothern California, to investigate the relationship between SST, wind and topography, and to estimate velocities from a series of images.
surface temperature/satellite mosaics/INE/California Current/ISE/ California Current/theses/ASFA.

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Continental margin/California/Slope off Santa Rosa Island/dolomite boulder/Marine geology/Sediments/Slope off California/Boulders/General description/continental slope off California/GEOREF.

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Dawson/Pieper/Zooplankton/MINERALS MANAGEMENT SERVICE.

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Address: CALIF. INSTITUTE TECHNOL., KERCKHOFF MARINE LAB., 101 DAHLIA ST., CORONA DEL MAR, CALIF. 92625.
An adult giant kelp plant (M. pyrifera), that moved from an inshore kelp forest to an offshore, low-N environment near Santa Catalina Island, California USA, maintained growth for 2 wk on internal N reserves. Frond elongation rates decreased significantly during the 3rd wk and plant growth rate (wet wt) dropped from an initial inshore rate of 3.6 to 0.9% day-1. During this 3 wk period, N contents and free amino acid concentrations decreased, while @mannito l and dry contents increased in frond tissues. After depletion of internal N reserves, the N content of lamina and stipe tissues averaged 1.1 and 0.7% dry wt, respectively. The experimental plant was exposed to higher ambient N concentrations during the last 2 wk. Rates of frond elongation and plant growth increased, but N content and amino acids in frond tissues remained low. Of the total N contained in frond tissue of the plant before transplantation, 58% was used to support growth in the absence of significant external N supply. Amino acids constituted a small proportion of these internal N reserves. Net movement of N occurred within large fronds, but not between different frond size classes. The N content of holdfast tissue remained relatively constant at 2.4% dry wt and accounted for 18-29% of the total N. Holdfast N was not used to support growth of N-depleted fronds. In comparison to. Laminaria longicruris, which is adapted to long seasonal periods of low N availability, M. pyrifera has small N-storage capacity. Internal reserves of M. pyrifera appear adequate to make N starvation uncommon in southern California kelp forests.
amino acid translocation/starvation/growth/growth curves/nitrogen/plant nutrition/nutrient availability/nutrient utilization/nutrients Phaeophyta/giant kelp/Macrocystis pyrifera/Santa Catalina Island/marine biology/phycology/botany.

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Global sea-level changes are expressed in the coastal landforms and deposits of northern San Clemente Island: Stratigraphic,

radiometric, amino acid, and pedologic dating techniques have allowed the development of a chronology of sea-level changes for about the last 500,000 yr. Weakly cemented calcareous dune sands (eolianites) are moderately extensive on northern San Clemente Island and appear to represent low stands of the sea, since calcareous shelf sands were the most likely source. A radiocarbon date of about 22,000 yr suggests that the youngest eolianite was deposited during the last glacial maximum. An older eolianite is estimated to be about 140,000-195,000 yr old based on stratigraphic relations and degree of soil development. The suggested ages for the eolianites also correlate well with oxygen-isotope estimates of low sea levels. Quaternary/sea-level changes/INE/USA/California/San Clemente Island/ASFA.

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California/Geophysical surveys/Santa Barbara channel/gravity/horizontal gradients/Gravity surveys/GEOREF.

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Animal behavior/Wildlife preservation/Endangered species/Mirounga angustirostris/elephant seal/San Miguel Island/marine biology/mammalogy.

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Bryozoa/Neofungella californica/n. sp./Recent/California/Santa Catalina Island/Paleontology/Neofungella/GEOREF.

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Rectal swabs were collected from 90 Northern fur seal (Callorhinus ursinus}) and 50 California sea lion (Zalophus californianus}) pups on San Miguel Island for Salmonella} screening. Three serotypes (newport, heidelberg, and oranienburg) were recovered from 33% of fur seals and 40% of sea lions.
bacterial diseases/salmonellosis/rectal swabs/serotypes/parasites/salmonella/bacterial infection Enterobacteriaceae/Salmonella newport/Salmonella heidelberg/Salmonella oranienburg/Pinnipedia/Otariidae/Callorhinus ursinus/Northern fur seal/California sea lion/Zalophus californianus/San Miguel Island/marine biology/mammalogy/parasitology.

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ecosystem/interrelationships/text/chemical/oceanography/Eganhouse /Venkatesan/MI NERALS MANAGEMENT SERVICE.

2464. Bakun A, Parrish RH. Turbulence, transport, and pelagic fish in the California and Peru Current systems. REP. CCOFI 1982;23:99-112. The California and Peru Current systems are compared in terms of three environmental processes thought to be likely regulators of reproductive success of pelagic fishes: (1) turbulent mixing, leading to destruction of fine-scale food strata required for successful first feeding of larvae, (2) offshore

transport, resulting in loss of reproductive products, and (3) upwelling intensity, as it relates to total productivity of the system. Newly generated climatological distributions of coastal-oceanic temperature contrast, wind-generated turbulent energy production, sea surface wind stress, and surface Ekman transport are presented. A consistent pattern of avoidance of centers of maximum upwelling, which are characterized by intense turbulent mixing and offshore transport, is noted in the reproductive strategies of anchovies. Large stocks tend to occur in regions of low turbulent mixing, downstream of upwelling maxima.
turbulence/upwelling/environmental effects/pelagic zone/Pisces/comparative studies/INE/California Current/ISE/California Current/PSW/ Humboldt Current/ASFA.

2465. Giuliano JA. Draft environmental impact statement: proposed translocation of California sea otter colony to San Nicolas Island, California [dissertation]. Doninguez Hills, California, USA: California State University; 1983. 127.
environmental impact statement/ translocation/marine mammals/California sea otter/Enhydra lutris/San Nicolas Island/marine biology.

2466. Husby DM, Nelson CS. Turbulence and vertical stability in the California Current. REP CCOFI 1982;23:113-129.
Summaries of historical surface marine wind observations and subsurface temperature data are used to examine the seasonal and spatial characteristics of wind-generated turbulent energy production and of stability of the upper water column over the California Current region. A recent hypothesis suggests that survival of first-feeding larval anchovies, Engraulis mordax , depends on the aggregation of properly sized food organisms in a stable water column in the absence of strong wind-induced turbulence. A comparison of wind mixing and stability indices for regions encompassing the principal spawning grounds of the three subpopulations of northern anchovy demonstrates that peak spawning occurs during seasons and in locations associated with stable stratification, relatively low rates of turbulent energy production, and weak offshore transport (upwelling). The average intensity of wind-generated turbulent energy production is similar during peak spawning periods in all three regions. This suggests optimum levels of turbulence and stability in the upper water column--levels that favor survival of first-feeding.
turbulence/vertical stability/spawning/Engraulis mordax/Engraulidae/seasonal variations/spatial variations/fishery oceanography/wind speed/environmental effects/INE/California Current/ISE/California Current/Pisces/ASFA.

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Serial E; Bibliography and Index of Geology Exclusive of North America (1933-1968).
The lower Devonian Hunsrueck shales (Germany) have previously been considered shallow marine or mud-flat deposits. Sedimentary structures such as roll marks and flute, chevron, and groove casts, and tracks and other traces of organisms, as well as fine bedding, point to a deeper marine origin. Oscillation ripple marks and flyschlike graded bedding are absent. While both pelagic and benthonic organisms are represented in the fauna, the latter are more abundant, indicating greater water depths. Occasional toxic conditions during sedimentation contributed to the excellent preservation of the fossils. A bathyal environment similar to that

presently existing in the Santa Barbara basin (off California) was most likely the environment in which the Hunsrueck shales were formed. Tracks and trails/Germany/Devonian/Hunsrueck shales/Hunsrueck/Paleontology/lower/GEOREF.

2468. Given DD, Koesterer CL. Station arrival data for a quarry blast on Santa Catalina Island, California. : Open-File Report (United States Geological Survey. 1978). 83-0462; 1983. 13.

Address: U. S. Geol. Surv., Open-File Serv. Sect., West. Distrib. Branch, Denver Fed. Cent., Lakewood, CO. seismology/engineering geology/elastic waves/explosions/crust/P-waves/USGS/arrival time/arrays/continental borderland/Los Angeles County/Santa Catalina Island/geophysics/seismology/engineering geology.

2469. Gruber D, Ahlstrom EH, Mullin MM. Distribution of ichthyoplankton in the Southern California Bight. REP. CCOFI 1982;23:172-179.
Larval fish were sampled by oblique 1-meter net and neuston net tows in the Southern California Bight quarterly from 1974 through 1976. The northern anchovy, Engraulis mordax , was much more abundant in both types of collections than were all other kinds of larvae combined, but some other fairly common species were found in only one type of tow. Subjective evaluation and analysis of recurrent groups established larval groupings that were distinguished primarily by nearshore versus offshore distribution and summer-fall versus winter-spring occurrence. ichthyoplankton surveys/commercial species/fish larvae/horizontal distribution/seasonal variations/INE/Southern California Bight/ASFA.

2470. Gaal RAP. Marine geology of the Santa Catalina basin, California. in Abstracts of papers related with oceanography--Pacific Sci. Cong., 11th, Tokyo, 1966, Proc., Tokyo, Sci. Council Japan [Sec. 9]. 1966;2:p.64 Abstract N; Bibliography of North American Geology (1785-1970). California/Structural geology/Santa Catalina basin/Sediments/General/General description/Basins/structural/Continental shelf/Pacific Ocean/structure/GEOREF.

2471. Given R. The nearshore marine biota; Santa Catalina Island. NAGT-FWS Santa Catalina Island field trip. : Natl. Assoc. Geol. Teachers; 1984. 11-16. Address: Univ. South. Calif., Catalina Mar. Sci. Cent., Los Angeles, CA. invertebrates/algal flora/environmental geology/ecology/nearshore environment/guidebook/Santa Catalina Island/marine geology/oceanography.

2472. Bailey KM, Francis RC, Stevens PR. The life history of fishery of Pacific whiting, Merluccius productus. REP. CCOFI 1982;23:81-98. The Pacific whiting (M. productus) is one of the most abundant and important fish of the California Current region. This report synthesizes available data, published and unpublished, on the life history and population dynamics of whiting. Aspects of life history described are distribution, spawning, early life history, feeding, and growth. Information on the population dynamics of the stock is summarized with attention to stock abundance, recruitment variability, and mortality. A synthesis of the fishery, its development and management, is presented. life history/population dynamics/fishery management/Merluccius productus/Merlucciidae/Pisces/geographical distribution/spawning/feeding behavior/growth/commercial

species/INE/California Current/ISE/California Current/ASFA.

2473. Valentine JW, Lipps JH. Pleistocene mullusks from Santa Barbara Island and their biostratigraphic implications. Geol. Soc. America Spec. 1966;Paper 87:p.235
Abstract N; Bibliography of North American Geology (1785-1970). Mollusca/Quaternary/California/Santa Barbara Island/biostratigraphy/Paleontology/Pleistocene/GEOREF.

2474. Jet Propulsion Lab. Towards a study of synoptic-scale variability of the California current system. 1985;:43.
Physical oceanography/marine biology/ocean currents/oceanographic parameters/synoptic meteorology/time series analysis/environmental monitoring/forecasting/marine environments/ocean surface/ocean temperature/Hickey/MINERALS MANAGEMENT SERVICE.

2475. Greenblatt PR. (Distribution of taxonomic categories of zooplankton in the California Current.). TRANS. CIBCASIO 1982;6:48-50.
An analysis of the horizontal small-scale (100-2100 m.) distribution of zooplankton biomass and of the horizontal distributions of the major taxonomic groups (class and order) of these samples taken from the California Current (1980), is presented and compared to the biomass analysis. The zooplankton samples were collected in a 3-day period, 350 km. West of San Diego, California at 90 m. depth. Some zooplankton categories showed evidence of diurnal vertical migration while others had either long peirod temporal trends or random temporal fluctuations. The variance to mean ratio for euphausiids and large copepods was higher at night than during the day, while chaetognaths and pteropods had higher daytime levels. The variance to mean ratio generally increased with a category's abundance.
zooplankton/taxonomy/horizontal distribution/vertical migratons/currents/INE/California current/ASFA.

2476. Buffington EC. Exploration of gullied submarine slopes off California by diving saucer. Geol. Soc. America Spec. 1966;paper 87:p.22 Abstract N; Bibliography of North American Geology (1785-1970). Continental shelf/Pacific Ocean/California/San Clemente Island/sea gullies/Geomorphology/continental margin/GEOREF.

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Knowledge of the large-scale vertical velocity is required to predict the evolution of the atmospheric planetary boundary layer (APBL). Since naval operations are often conducted in data sparse regions, single-station assessments of the vertical velocity are necessary. Data to evaluate such assessments were obtained from rawinsondes taken at San Nicolas Island, California. Vertical velocity estimates obtained by vertical integration of the moisture budget equation (Q-method) and by the adiabatic method were used to initialize an APBL 24-hour prediction model. RMS error statistics on predicted inversion height, potential temperature, and specific humidity were computed for the forecasts and compared to the RMS errors of a persistence forecast. Calculation of the vertical velocity by the Q-method showed the most promise. However, no single-station assessment method improved on the persistence forecasts.
Marine meteorology/Weather forecasting/Troposphere/Boundary layer Evolution/Mathematical prediction/Wind velocity/Vertical

orientation/Kinematics/Adiabatic conditions/Moisture/atmospheric boundary layer/analytical techniques/modelling/humidity/potential temperature/rawinsonde/California Channel Islands/San Nicolas Island/atmospheric sciences/meteorology.

2478. Johnson RK. Frequency dependence of the daily pattern of sea reverberation. Acoust. Soc. Amer. J. 1973;54(2):478-482.
California current/diurnal variations/frequency dependence/Pieper/reverberation data/sound scattering/scatterer populations/zooplankton/MINERALS MANAGEMENT SERVICE.

2479. Legg MR. (Present microplate tectonics on the continental border of Southern California.). TRANS. CIBCASIO 1982;6:51-97.
Earthquake activity in the inner continental borderland of southern California (USA) and northern Baja California (Mexico) indicates that the region is still undergoing active tectonism. The study of the seismicity of this offshore region provides important data useful in describing the tectonic processes presently occurring in the region. Earthquakes in the continental borderland off southern California are found to have focal mechanisms consistent with the northwest trending dextral regional shear couple associated with the San Andreas Fault plate boundary.Preferred fault planes for earthquakes in this region generally trend North to Northwest, with steep dips. In San Clemente Island and Fortymile Bank, most earthquakes had focal mechanisms that were opposite to the mechanisms of San Andreas Fault-type motion.
seismic zones/plate tectonics/earthquakes/seismic surveys/seismic activity/seismic exploration/faults/INE/San Andreas Fault/USA/ California/San Andreas Fault/ASFA.

2480. Slosson JE, Cilweck BA. Parson's Landing landslide A case history including the effects of eustatic sea level changes on stability. Eng. Geology. 1966;3(1-2):p.1-9
N; Bibliography of North American Geology (1785-1970).
Parson's Landing landslide, along the northwestern shore of Santa Catalina Island, is an elevated block-faulted horst some 20 miles offshore from Los Angeles in a region of submarine block-fault topography. Major slippage or failure occurred in the region during Late Pleistocene in post-Mankato and pree-Recent time. One of the sea cliffs and wave-cut benches which forrmed during lower sea level at the end of the Mankato-sub-glacial stage now lies 50 feet under water near the landslide, and apparently forms a zone of weakened lateral support in the area. The original slippage was apparently associated with the submerged cliff, the relatively weak, shattered Franciscan bedrock, a rise in sea level, and associated rise in the water table, allowing saturation of the bedrock, high precipitation rate, and possibly seismic activity.
California/Engineering geology/Landslides/Santa Catalina Island/Parson's Landing/GEOREF.

2481. Godden D, Hanna S, Scire J, Strimaitis D. Overwater plume dispersion study: Appendix. Final Report. : ERT, Newbury Park, CA. ERT-P-D569-140-A; ARB-R-87/307; 1987. 178. ((Prepared in cooperation with Sigma Research Corp., Lexington, MA. Sponsored by California State Air Resources Board, Sacramento.)). The purpose of the study was to develop an air quality modeling methodology to simulate the impact of emissions from oil exploration and production activities in California coastal waters. The study included the collection of data in a field program, and the analysis of the data to determine a relationship between Gaussian dispersion coefficients and overwater transport distance and meteorological variable observed near the source and the shoreline.

The report is appendix and contains data taken during the study. Offshore drilling/Plumes/Air pollution/Emission/Continental shelf/Mathematical models/Flow visualization/Sulfur fluorides/Air quality/Atmospheric dispersion/Santa Barbara Channel/air quality/air pollution/petroleum/environmental studies/resource management.

2482. Haury L, Shulenberger E. Phosphate balance in the California Current. TRANS. CIBCASIO 1979;5:151-152.
Inorganic transport across 3 CalCOFI lines (70, 80, 110) was calculated for January and July of 1950, 1961 (July only), 1964, 1965, 1969 and 1978. Phosphate values at CalCOFI standard depths were integrated to 200 meters (approximate depth of zooplankton sampling). Net transport of inorganic phosphate across each line was calculated and combined with estimates of the transport of organic phosphate in the form of phytoplankton and zooplankton to make a rough input-output budget for the California current. Phytoplankton and zooplankton-bound phosphate contribute for about 2% (0.5-13%) of the net transport across any line. Large variations in net inorganic phosphate transport across lines occurred within and between years. Large net northward transport occurred frequently. phosphates/geostrophic flow/phytoplankton/zooplankton/ISE/Mexico/Baja California/INE/USA/California/ASFA.

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Gravity measurements were made on four cruises in the Santa Barbara channel, the offshore extension of the Ventura basin, with a surface ship gravimeter. Navigational correction uncertainties often exceeded those of acceptable gravity measurements. The measured mean square discrepancy of the accepted measurements, evaluated at 147 crossings of the ship tracks, is 2.7 mgal. A westward extension and gradual shoaling of the Ventura basin is implied by an elongate gravity minimum flanked by a maximum which coincides with the Channel Islands. Diverging from this east-west structural grain is a pronounced northwest-trending gravity ridge. Gravity surveys/California/Santa Barbara channel/Geophysical surveys/gravity/GEOREF.

2484. Gorelick GA. Santa Catalina Island's endemic Lepidoptera. 3. The Avalon hairstreak, Strymon avalona (Lycaenidae): An ecological study. Atala 1986;14(1):12-14
Address: Dep. Biol. Sci., Citrus Community Coll., Glendora, CA 91740. A 10-year study of the Avalon Hairstreak Strymon avalona is presented, including adult behavior, larval hostplant ecology, phenology, an predators and parasites. Despite the restricted distribution of S. avalona and its occasional sympatry with Strymon melinus on Santa Catalina Island, this study revealed few threats to either its biological integrity or habitat. Ecological data from other California Channel Islands and several mainland California localities is also included, as are some thoughts on the Avalon Hairstreak's possible evolutionary origin.
endemic species/behavior/larval ecology/phenology/predation/parasites/evolutionary origins/habitat/parasitology/evolution/host-plant sympatry Strymon avalona/Lycaenidae/Avalon Hairstreak/Strymon melinus/Santa Catalina Island/terrestrial biology/entomology.

2485. Mooers CNK, Robinson AR, Hagan DA. Analysis of eddies,

fronts and jets in the California Current. PROCEEDINGS OCEANS '83. EFFECTIVE USE OF THE SEA: AN UPDATE. SAN FRANCISCO, AUGUST 29 - 1 SEPTEMBER, 1983. VOLUME 1: TECHNICAL PAPERS. OCEAN SCIENCE, OCEAN ENGINEERING.; OCEANS '83 1983;:281. The OPTOMA Program is a joint effort between Harvard University and the Naval Postgraduate School supported by ONR. It has been conducting a preliminary series of ocean prediction studies for the past year-and-a-half. The goals of the program are: (1) to develop and test an ocean prediction strategy appropriate for resolving synoptic/mesoscale oceanic eddies in a limited space-and-time domain, and (2) to apply this strategy to gain an understanding of the dynamical nature and role of these eddies, and their associated jets and fronts, in the California Current System.
mesoscale eddies/jets/fronts/current predictions/INE/California Current/ISE/California Current/ASFA.

2486. Berger R, Orr PC. The fire areas on Santa Rosa Island, California, [Pt.] 2. Natl. Acad. Sci. Proc. 1966;56(6):p.1678-1682 N; Bibliography of North American Geology (1785-1970).
Man/fossil/Quaternary/California/Santa Rosa Island/fire areas/land bridge migration/Changes of level/Land bridges/west coast of United States/Paleontology/migration/Bering Strait land bridge/fossil man migration/Channel Islands/area change/fossil man sites/GEOREF.

2487. Jones GF, Fauchald K. Variation in community structure of shelf, slope and basin macrofaunal communities in the Southern California Bight. Chapter 19. Year II Benthic Study. Prepared for the Bureau of Land Management, POCS Office, Los Angeles CA, under Contract #AA551-CT6-40 1978;
MINERALS MANAGEMENT SERVICE.

2488. Graham S. The Monterey; formation tapped for big pays. AAPG Explorer 1983;5(1):1, 4-5
Address: Stanford Univ., Appl. Earth Sci. and Geol., Stanford, CA.
fractures/distribution/petroleum/reservoir rocks/Monterey Formation/offshore/diatomite/clastic rocks/source rocks/Miocene/Neogene/Tertiary/sedimentary rocks/siliceous composition/South Belridge Field/Lost Hills Field/hydraulic fracturing/popular geology Point Conception/Point Arguello/Santa Barbara Channel/Santa Maria Basin/Elk Hills/San Joaquin Basin/Chico Martinez Creek/economic geology/petroleum/energy sources.

2489. Jones GF, Thompson BE. The ecology of Parvilucina tenuisculpta (Carpenter, 1865) on the southern California borderland. Veliger 1984;26:188-198. ecosystems/habitat population/density/sediment/current/calcium carbonate/organic rich sewage/waste water/thompson/invertebrates/MINERALS MANAGEMENT SERVICE.

2490. Jones GF, Thompson BE. The ecology of Adontorhina cyclia (Berry) on the southern California borderland. Int. Rev. Gasellschaft Hydrobiol. 1986;71(5):687-700.
ecosystems/MINERALS MANAGEMENT SERVICE.

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amphiodia/reproduction/community/structure/spatial/distribution/habitat/ecology /animal/reproductive system/general studies/methods/invertebrate morphology/physiology/pathology/mollusca/ecology/oceanography/pelecypoda/MINERALS MANAGEMENT SERVICE.

2492. Jones JH. General circulation and water characteristics in the Southern California Bight. Rep. TR 101. South. Calif. Coastal Water Res. Proj. 1971;:37.
text/ecosystem/interrelationships/physical/oceanography/bonnell/dailey/marine mammals/MINERALS MANAGEMENT SERVICE.

2493. Orr PC, Berger R. The fire areas on Santa Rosa Island, California.Translated title: Pt. 1. Natl. Acad. Sci. Proc. 1966;56(5):p.1409 N; Bibliography of North American Geology (1785-1970).
Absolute age/dates/Carbon 14/California/Santa Rosa Island/fire areas/Man/fossil/Quaternary/C 14 dates/Paleontology/C 14/GEOREF.

2494. Grant DF, Eastwood D. Infrared spectrometry field-method for identification of natural seep-oils. Talanta (Oxford) 1983;30(11):825-830 Address: Stockton State Coll., Pomona, NJ 08240.
chemical analysis/spectroscopy/infrared spectroscopy/oil seeps/field methods/petroleum/offshore/Santa Barbara Channel/geochemistry/economic geology/energy sources/petroleum/chemistry.

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From a series of 10 quarterly assessments between October 1975 and May 1978 (inclusive), fluctuations in abundance were determined for macroinvertebrates and macrophytes of a rocky intertidal community on Santa Cruz Island, California, USA. During afternoon low tides in late fall and winter of the first 2 yr of study, organisms of the upper and middle intertidal zones were subjected to prolonged aerial exposure. Many species there tolerated this exposure, but die-backs occurred for a barnacle (chthamalus fissus/C. dalli) and several algae (Endocladia muricata, Pelvetia fastigiata f. gracilis, Corallina officinalis var. chilensis, Corallina vancouveriensis, Cylindrocarpus rugosus and Codium fragile). These die-backs were succeeded by blooms of Ulva californica and Porphyra perforata . In the upper and middle intertidal zones, the major cover organisms that could tolerate prolonged aerial exposure were disproportionately prevalent and appeared to be maintained by the periodic repression of species intolerant to such exposure. In February 1978, heavy rainfall caused sediment inundation of the middle and lower intertidal zones. This event was followed by declines in abundance of a barnacle (Tetraclita rubescens) and several algae (Pelvetia fastigiata f. gracilis and Corallina spp.).
ecological succession/community composition/drought resistance/mortality/intertidal environment/algae/Cirripedia/INE/USA/California/Santa Cruz Island/Chthamalus fissus/Tetraclita rubescens/Endocladia muricata/Pelvetia fastigiata f.gracilis/Corallina officinalis var.chilensis/Corallina vancouveriensis/Cylindrocarpus rugosus/Codium fragile/Ulva californica/Porphyra perforata/algal blooms/ASFA.

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N; Bibliography of North American Geology (1785-1970).
Mollusca/Quaternary/California/Pleistocene marine terrace/San Clemente Island/Ostracoda/fauna/age and correlation/Paleontology/Invertebrata/Foraminifera/GEOREF.

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Deepwater Platform using a microcomputer offshore. Proc. Offshore Technol. Conf. 1985 Proceedings 1985;4:213-222
Conference: 17. Annual Offshore Technology Conference Houston, TX (USA) 6-9 May 1985 Report ID = OTC 5044.
Exxon has completed an underwater inspection of the Hondo Platform located in the Santa Barbara Channel, California. The survey was performed by an ROV in "flyby" mode and examined over 600 inspection points including external nodes and zembers from the splash zone to the mudline at -850 feet. A portable microcomputer was pre-programmed with the desired locations to be inspected. The software developed allowed for real-time entry and review of all data and findings from the inspection. This microcomputer system has subsequently been used for a hull inspection by divers on the Hondo Field floating production facility. underwater inspection/offshore structures/data processing/computers/Santa Barbara Channel/Hondo Platform/petroleum.

2498. Spies RB, Felton JS, Dillard L. Hepatic mixed-function oxidases in California flatfishes are increased in contaminated environments and by oil and PCB ingestion. MAR. BIOL 1982;70(2):117-127.
Hepatic mixed-function oxidases (MFOs) were measured in the bothid flatfish Citharicthys sordidus and C. stigmaeus from relatively uncontaminated and from polluted coastal populations of California, USA, at various times of the year during 1979-1980 and in individuals fed crude oil and polychlorinated biphenyl-augmented food in the laboratory. For C. sordidus , aryl hydrocarbon hydroxylase (AHH) specific activity was generally highest around the Los Angeles County sewage outfall on the Palos Verdes Shelf, intermediate near the 7-mile Hyperion sewage outfall in Santa Monica Bay around a petroleum seep in Santa Barbara Channel, and lowest in relatively unpolluted Monterey Bay. For C. stigmaeus , which had about ten times less specific activity than the foregoing species, specimens from the Santa Barbara petroleum seep had significantly greater AHH specific activity than those from Monterey Bay. Fishes from contaminated environments also showed increased of microsomal proteins with molecular weights of 56, 54, 57 and 46 x 10 super(3); moreover, the content of cytochrome P-450 was elevated in specimens of C. sordidus) from such environments. marine pollution/sewage/oil pollution/PCB/pollution effects/enzymatic activity/Citharicthys sordidus/Citharicthys stigmaeus/INE/USA/ California/ASFA.

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groundwater/coastal areas/hydrogeology/surveys/marine geology/eastern Santa Barbara Channel/Oxnard plain/continental shelf/geology.

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text/benthic invertebrates/8/MINERALS MANAGEMENT SERVICE.

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A 13-month field and laboratory study was conducted at Santa Catalina Island, California, USA to determine some of the effects of water motion on the shallow water distribution of the sea urchin

Centrostephanus coronatus Verrill. The depth distribution of another sea urchin species, Strongylocentrotus franciscanus (A. Agassiz), includes shallow areas of strong water motion (<2 m depth) from which C. coronatus is absent. Differences in attachment strength and morphology of the two species were investigated as possible mechanisms affecting the differences in depth distribution.
shallow water/water motion/ecological distribution/Centrostephanus coronatus/Strongylocentrotus franciscanus/INE/USA/California/Santa Catalina Island/ASFA.

2502. Griswold TL. A new Ashmeadiella from the California Channel Islands (Hymenoptera: Megachilidae). J. Kans. Entomol. Soc. 1985;58(3):555-557 Address: Bee Biol. and Syst. Lab., USDA-ARS, Utah State Univ., UMC 53, Logan, UT 84322.
A new species of megachilid bee, A. chumashae, is described from the California Channel Islands. Characters separating it from other members of the Cubiceps Group are given.
new species/species description/taxonomy megachilid/bee/Megachilidae/Ashmeadiella chumashae/Cubiceps Group/California Channel Islands/ terrestrial biology/entomology.

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MINERALS MANAGEMENT SERVICE.

2504. Boettger RC. Studies on the small invertebrate plankton of the Sargasso Sea. HELGOL. MEERESUNTERS 1982;35(3):369-383.
During the German Eel Expedition in Spring 1979, the horizontal and vertical distribution of the invertebrate plankton was studied in the epipelagic zone of the western central Sargasso Sea, based on 55 mu m and 100 mu m mesh net samples. In the isothermal waters north of the thermal front, plankton biomass was on average 2-3 times higher than in the warmer stratified waters south of the front. In both parts of the area, organisms smaller than 400 mu m, which form a fraction not quantitatively sampled by the conventional 200 mu m or 300 mu m mesh nets, accounted for 71-92% of the total number of organisms in the 55 mu m net samples and for more than 50% in the 100 mu m net samples. Average concentrations of the potential food supply for early larval fish stages in the upper 100 m appear to be comparable with values reported in the literature for areas well known for larval fish development, such as the California Current.
biomass/zooplankton/community composition/horizontal distribution/vertical distribution/hydrography/size distribution/ASW/Sargasso Sea/ASFA.

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N; Bibliography of North American Geology (1785-1970).
A new fossil rodent, Peromyscus anyapahensis, is described from one of the California offshore Channel Islands. The new form is compared to closely related forms.
Quaternary/California/Anacapa Island/Mammalia/Pleistocene/new rodent/Paleontology/late/Peromyscus anyapahensis/n. sp./GEOREF.

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1987;7(3):suppP17A Address: Claremont McKenna College, Science Dept., Claremont, CA Conference: Society of Vertebrate Palenotology, Forty-seventy annual meeting. Tuscon, AZ Oct. 22-24, 1987.
quaternary rodents/paleontology Rodentia/Peromyscus maniculatus/Lagomorpha/San Miguel Island/vertebrate paleontology.

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Santa Barbara Museum of Natural History/invertebrates/MINERALS MANAGEMENT SERVICE.

2508. Chaffee C, Spies RB. The effects of used ferrochrome lignosulphonate drilling muds from a Santa Barbara Channel oil well on the development of starfish embryos. MAR. ENVIRON. RES 1982;7(4):265-277.
The effects of water-soluble fractions (WSF) of thirteen used ferrochrome lignosulphonate muds on developing embryos of Patiria miniata were studied. The muds were collected during the drilling of a single slant well from Platform Hondo in the Santa Barbara Channel, California, at drilling depths of 4220 to 9858 ft. None of the embryos survived 48 hours' exposure in 25% WSF of the muds (25,000 ppm mud added (v/v)). Significant reduction in growth and high abnormalities (up to 100%) were observed in the 15% WSF. In lesser concentrations the effects varied from significant reduction of growth, down to 0 multiplied by 5% for three muds, to significant enhancement of growth for several muds in some dilutions. The EC sub(50)'s ranged from 5% to greater than 15% WSF. In the 5% WSF, decreased embryo growth was correlated with increasing Cr concentrations and possibly also with total organic carbon (TOC).
drilling fluids/pollution effects/embryonic development/toxicity tests/lethal effects/Patiria miniata/ASFA.

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N; Bibliography of North American Geology (1785-1970).
The field trip offers an opportunity to see on the surface the stratigraphic units of the Eocene, Oligocene, and Miocene which are of interest not only onshore but in the adjacent offshore area of the Santa Barbara channel. Four papers on the stratigraphy, paleogeography, and structure are cited separately.
California/Areal geology/Santa Ynez Mts./western/guidebook/GEOREF.

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petroleum engineering/oil seeps/fuel resources/gas seeps/production/offshore/natural gas/petroleum/pollution/controls Santa Barbara Channel/Santa Barbara Basin/Coal Oil Point/engineering geology/environmental geology/petroleum.

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1979;:361.
MINERALS MANAGEMENT SERVICE.

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The author discusses research on the distribution, detection and environmental impact of natural seeps, particularly in the Santa Barbara Channel, California area.
seepages/pollution detection/pollution effects/oil pollution/marine pollution/INE/Santa Barbara Channel/ASFA.

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Richardson Rock, 10 km west-northwest of San Miguel Island, represents the westernmost visible extension of the broad insular ridge beneath the northern Channel Islands off southern California. The rock is composed of porphyritic dacite, and its structure and orientation suggest that it is the exposed summit of one of many dikes cutting the submerged insular shelf west of San Miguel Island.
California/Petrology/Channel Islands/Richardson Rock/Structural geology/Continental shelf/Pacific Ocean/exposed dike/GEOREF.

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A display of agonistic behavior between 2 treefish was observed off Santa Catalina Island, California. The interaction is described in detail and is discussed with reference to the literature on similar observations in S. carnatus and S. atrovirens.
agonistic behavior/Scorpaenidae/treefish/Sebastes serriceps/Santa Catalina Island/marine biology/ichthyology.

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crude oil/ecology/marine biology/water pollution/southern california bight/anderson/anthropogenic/ntisdimms/chemical analysis/intertidal zone/hydrocarbons/sediments/oceanographic data/carbon/particles/water chemistry/sea water/environmental impacts/physical properties/tables data/sites/outer continental shelves/baseline studies/species diversity/Eganhouse/chemical oceanography/MINERALS MANAGEMENT SERVICE.

2516. Kaplan IR, Moberg ML, Gould GF. Year II. Intertidal study of the Southern California Bight (1976/77). Hydrocarbon sediment analysis. Vol. III. Sections 2.1 and 2.2. Prep. for U.S. Dep. Interior, Minerals Management Service, Pacific OCS Region, Los Angeles. Prep. by Science Applications, Inc., La Jolla, CA. 1978;:228.
MINERALS MANAGEMENT SERVICE.

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A carpometacarpus of Chendytes lawi, the first for the genus, a

furcula probably of the genus, and the first ulna of C. lawi have been found in a late Pleistocene marine terrace deposit on West Anacapa Island, Ventura County, Calif. Characteristics of these elements and of heretofore undescribed parts of the sternum, scapula, and humerus of C. lawi are discussed; this material supplements that described by L. Miller et al. (1961) from the same locality. The pectoral elements emphasize the marked degeneration of the flying mechanism; variability in detail of contour is evident where several specimens of each are available. Basic characters sufficient to differentiate C. lawi from C. milleri are clearly apparent in all pectoral elements that can be compared in the two species. Aves/Chendytes lawi/Quaternary/California/West Anacapa Island/late Pleistocene/Paleontology/Chendytes/GEOREF.

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growth/size/Haliotis rufescens/Santa Rosa Island/Johnson's Lee/marine biology.

2519. Karl HA. Speculations on processes responsible for mesoscale current lineations on the continental shelf, southern California. Mar. Geol. 1980;34(1-2):M9-M18.
California/sedimentary structures/sedimentation/Pacific Coast/geophysical surveys/bedding plane irregularities/Hickey/physical oceanography/acoustical surveys/parting lineation/marine transport/ocean circulation/United States/Southern California/continental shelf/San Pedro Bay/sonar methods/geophysical methods/side-scanning methods/bedforms/transport/MINERALS MANAGEMENT SERVICE.

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The National Oceanic and Atmospheric Administration is undertaking the design and construction of a new temperate water habitat system to be developed and operated by the University of Southern California. Located at Santa Catalina Island off the coast of Los Angeles, it will provide research opportunities in a temperate water kelp ecosystem. This program is one of NOAA's four regional undersea research programs. Thorough university-based operations, they provide unique capabilities with research locations, in addition to the kelp forest off California, in a mid-Pacific archipelago, in tropical coral reef waters, and on the Atlantic Continental shelf.
underwater habitats/laboratories/marine sciences/in-situ measurements/NOAA/ASFA.

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N; Bibliography of North American Geology (1785-1970).
Increase in offshore construction and emplacement of instrumentation on the sea floor have opened a new field to the engineering geologist. Construction includes drilling and pumping platforms, sewer outfalls, oceanographic research platforms, and ordnance test installations. Bottom-mounted instruments are used for ordnance tracking and testing, submarine detection, oceanographic data collection, and tsunami warning. Difficulties in constructing the San Diego sewer outfall off Pt. Loma and the three-dimensional submarine tracking array off the eastern coast of San Clements Island, both off California, are outlined. In both

cases, knowledge of the submarine geology and topography was important.
California/Engineering geology/Submarine installations/San Diego and San Clemente Island/San Clements Island hydrophone array and San Die/Submarine geology/Pacific Ocean/San Diego/and San Clemente Island/engineering installations/importance of geology/GEOREF.

2522. Hagemeier CE. Development plans for the Hondo field, Santa Barbara Channel. J. Pet Technol (Dallas) 1978;30(3):392 CONFERENCE ABSTRACT. DATES: 13 APRIL TO 14 APRIL 1978. Conf. No. 78-0033. technical production management/petroleum/Santa Barbara Channel/continental shelf/offshore petroleum.

2523. Smith KLJ. Metabolism of two dominant epibenthic echinoderms measured at bathyal depths in the Santa Catalina Basin. MAR. BIOL 1982;72(3):249-256. Metabolism of two abundant echinoderm species constituting 99.6% of the epibenthic megafauna in the Santa Catalina Basin, off southern California, USA was measured at 1 300 m during the 1979 "Bathyal Expedition". Specimens of the ophiuroid Ophiophthalmus normani and the holothurian Scotoplanes globosa , collected by the submersible "Alvin", were individually placed in respirometers, and measured in situ for O sub(2) consumption and ammonium excretion rates. Combined population O sub(2) consumption rates for O. normani) and S. globosa are of comparable magnitude to that of the sediment community and plankton in the benthic boundary layer (sediment and overlying 50 m water column) of the Santa Catalina Basin. oxygen consumption/ammonia/excretion/metabolism/Ophiophthalmus normani/Scotoplanes globosa/body weight/abyssobenthic zone/population characteristics/INE/USA/California/Santa Catalina Basin/ASFA.

2524. Mitchell EDJ, Lipps JH. Fossil collecting on San Clemente Island. Pacific Discovery. 1965;18(3):p.2-8 N; Bibliography of North American Geology (1785-1970). California/Paleontology/Fauna/Miocene/sedimentary beds/San Clemente Island/Tertiary/GEOREF.

2525. Hales LZ. Preliminary evaluation of wind and wave effects at potential LNG terminal sites, state of California. Appendix B: An evaluation of the relative wave climate at six offshore LNG sites considering island influences and topographic effects. Miscellaneous paper (Final). : Army Engineer Waterways Experiment Station Vicksburg Miss. WES-MP-H-78-2-APP-B; 1978. 453. Note: Appendix B to Rept. no. WES-MP-H-78-2 dated Jan 78, AD-A049 883. See also Appendix A, AD-A054 130.
This Station (WES) was requested to assist in the preliminary evaluation of the wave climate at alternate potential Liquefied Natural Gas (LNG) terminal sites by applying existing hindcast wave data of a general nature to obtain estimates of the times of excessive wave conditions at the various sites. After the preliminary evaluation was completed, WES was again requested to assist by analyzing the effects of island sheltering and topographic influences on the wave climates of six offshore sites in order to provide a more refined estimate of the wave conditions existing at the potential sites. Because of the absence of a comprehensive deepwater wave hindcast data base of sufficient degree of confidence to permit estimates of the absolute magnitude of occurrences of waves of different periods and heights, the analysis conducted is a relative evaluation only and should not be interpreted as projections of actual downtime, but rather as a consistently uniform basis for comparison. When the appropriate topographic coefficients. had been applied to the deepwater

hindcast wave data and the resulting wave climate at the potential offshore LNG site had been obtained, it was required that the effects of this resultant wave climate be determined on four possible terminal concepts at each of the six sites. These four concepts include: (a) fixed terminal with one pier, (b) fixed terminal with two piers, (c) floating barge, and (d) deepwater mooring tower.
Marine terminals/Site selection/Ocean waves/Height/Probability/Wind velocity/Climate/Topography/Offshore/Deep water/Peak values/Refraction/Oceanographic data/Seasonal variations/Piers/Floating bases/Barges/Towers/Mooring/Tankers/Ship motion/Liquefied natural gas/Legislation/California/Coastal regions/Wind waves/Hindcasting/Swells (Marine)/Santa Barbara Channel/oceanography.

2526. Berner RA. An idealized model of dissolved sulfate distribution in recent sediments. Geochim. et Cosmochim. Acta. 1964;28(9):p.1497-1503 N; Bibliography of North American Geology (1785-1970).
An idealized model is proposed to illustrate the depth distribution of dissolved sulfate, in recent subaqueous sediments, that would be expected under steady state deposition. The processes considered by the model are ionic diffusion, deposition plus compaction, and bacterial sulfate reduction. Rate parameters (diffusion coefficient, rate of bacterial sulfate reduction) calculated from the model, for a sediment core from the Santa Barbara Basin of southern California, agree within an order of magnitude with values estimated by independent methods. California/Sedimentation/Santa Barbara Basin/subaqueous sediments/sulfate distribution/Geochemistry/Sediments/Sulfate/subaqueous/distributi on/GEOREF.

2527. Haller JR. The unique stands of torrey pine pinus torreyana from the mainland coast and Santa Rosa Island California, USA. Proc. Int. Bot. Congr. 1981;13(0):138
Address: DEP. OF BIOLOGICAL SCIENCES, UNIV. OF CALIFORNIA, SANTA BARBARA, CALIF. 93106 CONFERENCE PAPER: MEETING OF THE 13TH INTERNATIONAL BOTANICAL CONGRESS, SYDNEY, AUSTRALIA, AUG. 21-28, 1981.
evolution/turpentine/isozyme Pinus/Sabinianae/Pinus muricata/torey pine/ terrestrial biology/botany.

2528. Liu KK, Kaplan IR. Nitrous oxide in the sea off southern California. THE ENVIRONMENT OF THE DEEP SEA. 1982;:73-92.
The N sub(2)O measurements of the air collected at UCLA show possible influences from industrial N sub(2)O sources, but the three-month average is not significantly different from that of the ocean air. The N sub(2)O saturation in the surface water is 8% in the Santa Barbara Basin and 23-31% near the sewage outfall at Whites Point. The N sub(2)O concentrations in the subsurface waters near Whites Point are 2-6 nM higher than those at a station 20 km away in the San Pedro Basin. The apparent N sub(2)O production is linearly correlated with (NO super(-)@)d3 + NO super(-)@)d2). The ratio of Delta N sub(2)O/ Delta (NO super(-)@)d3 + NO super(-)@)d2) is approximately 0.08% in the surface layer (0-100 m) and 0.3% in the deeper water. In the bottom water of Santa Barbara Basin, N sub(2)O was preferentially consumed during denitrification under normal conditions, whereas N sub(2)O production was temporarily enhanced following flushing of the basin water, but returned later to its normal steady state. USA/California Coast/nitrous oxide/marine environment/nitrogen cycle/microorganisms/INE/USA/California/levels/ASFA.

2529. Lipps JH. Late Pleistocene history of West Anacapa Island, California. Geol. Soc. America Bull. 1964;75(11):p.1169-1176 N; Bibliography of North American Geology (1785-1970).
A late Pleistocene surf-cut platform with a shoreline angle elevation of 28 feet above high-tide level is present on West Anacapa Island. The platform is covered by a sequence of marine and nonmarine deposits containing the remains of marine and terrestrial invertebrates, terrestrial vertebrates, and shore birds. The cutting of the platform and deposition of the rock sequence resulted from eustatic fluctuations of sea level. These rocks were probably deposited during the Sangamon interglacial and Wisconsin glacial times.
California/Paleontology/Faunas/Pleistocene/West Anacapa Island/Stratigraphy/upper/Quaternary/Pleistocene history of West Anacapa Island/Aves/Changes of level/late/Paleogeography/Shore features/Surf cut platform/GEOREF.

2530. Haller JR. Taxonomy and relationships of the mainland and island populations of Pinus torreyana (Pinaceae). Syst. Bot. 1986;11(1):39-50 Address: DEP. BIOL. SCI., UNIV. CALIF., SANTA BARBARA, CA 93106. Pinus torreyana is one of three species in Pinus subsect. Sabinianae (big-cone pines), but its maritime habitat and disjunct, edaphically restricted distribution indicate ecological similarity with coastal species of Pinus subsect. Oocarpae (closed-cone pines). Only two populations of Pinus torreyana exist, one on the southern California [USA] mainland, the other 280 km distant on Santa Rosa Island. These populations are shown to be distinct on the basis of gross morphology, both in the wild and in a common garden planting. Other investigators have shown differences based on turpentine composition and isozyme analysis. Authorship of the species and early confusion over the number of leaves per fascicle are discussed and clarified. The island population is given the name Pinus torreyana subsp. insularis. Evidence for the relict status of the species is presented. It is suggested that the island population may be as old or older than the present mainland population.
new subspecies/turpentine composition/isozyme analysis/leaf number/morphology/relict distribution/Pinaceae/big-cone pines/Sabinianae/Pinus torreyana/southern California mainland/Santa Rosa Island/terrestrial biology/botany.

2531. Pelaez J, Guan F. California Current chlorophyll measurements from satellite data. REP. CCOFI 1982;23:212-225.
A new procedure for rapid quantitative measurement of chlorophyll-like pigment concentrations from data collected by the Coastal Zone Color Scanner on board the Nimbus-7 spececraft has been implemented. Removal of atmospheric effects revealed ocean features not apparent in the original imagery. Comparison of chlorophyll estimates derived from independent shipboard and satellite data collected concurrently yielded a correlation coefficient of r = 0.92. Satellite chlorophyll images (1260 km on a side) showed a high degree of heterogeneity in the chlorophyll distribution patterns, at all scales. New, recurrent chlorophyll features in the California Current were detected. Comparison of two images collected one month apart showed important changes, both in-shore and offshore. Extensive, long-term programs like the California Cooperative Oceanic Fisheries Investigations may largely benefit from the synopticity and repetitive coverage of meaningful satellite observations.
chlorophylls/satellite sensing/satellite photography/INE/California Current/ISE/California Current/Coastal Zone Color Scanner/ASFA.

2532. Valentine JW, Lipps JH. Late Cenozoic rocky shore assemblages from Anacapa Island, California. Geol. Soc. America Spec. 1964;Paper 76.:p.229 Abstract N; Bibliography of North American Geology (1785-1970). California/Paleontology/Invertebrata/Pleistocene/Anacapa Island/Quaternary/GEOREF.

2533. Halvorson WL, Fenn DB, Allardice WR. Soils and vegetations of Santa Barbara Island, Channel islands National Park, California, USA. Environ. Manage. 1988;12(1):109-118
Address: COOPERATIVE PARK STUDIES UNIT, DEP. RECREATION PARKS, TEX. A AND M UNIV., COLLEGE STATION, TEX. 77843-2261.
The multifaceted development of an erosion surface on Santa Barbara Island, Channel Islands National Park, California, has led to this study of the relationship between soils and vegetation. A dry Mediterranean climate and past attempts at farming and introductions of alien species have led to vegetative degradation accompanied by both gully and surface erosion. Soil and vegetation analyses show this erosion to be in a location of transition. The soils are Typic Chromoxerets (Vertisol Order) with high clay, salinity, and sodium contents. The vegetation is ecotonal in nature, grading from a principally alien annual grassland with Avena fatua and Atriplex semibaccata to a shrub community dominated by the native Suaeda californica. Management toward revegetation and stabilization of this island ecosystem will be difficult with high clay, saline-sodic soils and disturbed vegetation.
erosion/grassland/shrub/clay/saline/sodium/soils/climates/revegetation/erosion/ gully erosion/environmental degredation/vertisons/ecotones/Avena fatua/Atriplex semibaccata/Suaeda californica/Santa Barbara Island/ terrestrial biology/botany/geology/environmental sciences.

2534. Haury L, Shulenberger E. Horizontal transport of phosphorus in the California Current. REP. CCOFI 1982;23:149-159.
Horizontal transport of phosphorus (inorganic dissolved PO sub(4) and zooplankton P) to a depth of 200 m through an area of about 4.2 x 10 super(5) km super(2) off California and Baja California has been calculated for four winter and six summer months of different years. Large seasonal and interannual variations occur in transport across CalCOFI lines 70, 80, and 110, and in the net P budget for the area. These variations are due to long-term changes in strength of the California Current and to small-scale, short-term variability caused by mesoscale turbulence and eddies. There is no correlation between upwelling indices and net P transport across lines by month. Mean summer and winter P transports were also calculated using CalCOFI PO sub(4) and geostrophic flow data from 1950 to 1978. The long-term mean transports for the area show a net export of about 300 g-at P/sec during winter and a net import of about 400 g-at P/sec during summer. This seasonal difference is probably due to (1) greater southward advection in summer and (2) higher mean phosphate concentrations throughout the area at all depths (0-200 m) during summer. Zooplankton contributes a mean of about 3 percent of the total P transports and budgets.
phosphorus/transport processes/horizontal distribution/seasonal variations/annual variations/zooplankton/INE/California Current/ISE/ California Current/ASFA.

2535. Mitchell EDJ, Lipps JH. Miocene marine vertebrates from San Clemente Island, California. Geol. Soc. America Spec. 1964;paper 76:p.214-215 Abstract N; Bibliography of North American Geology (1785-1970). California/Paleontology/Vertebrata/Miocene/San Clemente Island/faunal assemblage/Tertiary/vertebrates/GEOREF.

2536. Chelton DB. Large-scale response of the California Current to forcing by the wind stress curl. REP. CCOFI 1982;23:130-148.
Seasonal distributions of zooplankton volume in the California Current show a maximum at a distance of about 100 km offshore between San Francisco and northern Baja California. It is shown that this coincides with a region of offshore upwelling of the thermocline associated with a nearshore counterflow. This counterflow is evident year-round at depths below the thermocline (the California Undercurrent) but appears only seasonally in the upper 200 m (the Davidson Countercurrent). However, the integrated nearshore transport in the upper 500 m is poleward year-round. The seasonal California Current-Countercurrent system is shown to have a nonseasonal (anomalous) counterpart that fluctuates with a time scale of 5-6 months. The region of offshore upwelling associated with this anomalous pattern is found to be located somewhat farther (about 200-300 km) offshore than in the seasonal pattern. Statistical analysis of this anomalous patten of variability reveals a response resembling that expected from a simple model of offshore Ekman pumping (upwelling) driven by the wind stress curl. As such, this upwelling is not a boundary phenomenon and is therefore quite distinct from coastal upwelling in this region.
upwelling/wind stress/zooplankton/undercurrents/countercurrents/seasonal distribution/nearshore dynamics/INE/California Current/ISE/ California Current/ASFA.

2537. Haubrich RA. Comparison of microseisms recorded on continents and oceanic islands. Geol. Soc. America Spec. 1964;Paper 76:p.204 Abstract N; Bibliography of North American Geology (1785-1970). Seismology/Microseisms/California/San Clemente Island/Hawaii/comparison/GEOREF.

2538. Hammer RM. Day-night differences in the emergence of demersal zooplankton from a sand substrate in a kelp forest. Marine Biol. 1981;62(4):275-280
Address: Continental Shelf Assoc., Inc., Tequesta, FL.
Day-night differences in abundance and biomass of demersal zooplankton in the water column were determined by trapping these animals as they emerged from the sand substrate in a kelp forest (Macrocystis pyrifera) ecosystem off Santa Catalina Island, California, USA. The day and night sampling periods of the 24 June 1979 new moon each lasted 12 h. Abundance and biomass of total demersal zooplankton were significantly higher in night samples. A mean of 2,425 plus or minus 1,168 demersal zooplankton m super(-) super(2) 24 h super(-) super(1) migrated over a diel cycle; 97% of these animals were crustaceans. The mean biomass of demersal zooplankton was 94.2 plus or minus 27.6 mg ash-free dry wt m super(-) super(2) 24 h super(-) super(1).
Zooplankton/Abundance/Biomass/Diurnal variations/Nocturnal variations/Diurnal cycles/Sediment substrates/emergence/benthos/diel cycle/migration/planktivorous predators/demersal zooplankton/ecological distribution/emergence/sands/verticle migrations/abundance/Crustacea/Macrocystis pyrifera/giant kelp/Santa Catalina Island/marine biology.

2539. Mullin MM, Williams WT. Spatial-temporal scales of zooplanktonic assemblages in three areas of the North Pacific -- a further analysis. DEEP-SEA RES 1983;30A(5):569-574.
Contiguous samples of epizooplankton in three regions of the North Pacific Ocean were assigned to faunal assemblages using Bray-Curtis and POLYDIV methods. Faunal changes spatially were more significant

than those between night and day in the California Current and nearshore zones; diurnal-nocturnal changes were relatively more important in the central gyre. The faunal assemblages occurred in smaller patches in the central gyre than in the nearshore zone, but this did not imply ecologically important unpredictability in the central gyre. zooplankton/ecological aggregations/vertical distribution/geographical distribution/temporal variations/spatial variations/IN/North Pacific/ASFA.

2540. Howard H. A fossil owl from Santa Rosa Island, California, with comments on the eared owls of Rancho La Brea. Southern California Acad. Sci. Bull. 1964;63(pt.1):p.27-31
N; Bibliography of North American Geology (1785-1970).
California/Paleontology/Aves/Tecolote member of Santa Rosa Island Formation/Pleistocene/owl bone/Asio priscus/Quaternary/Santa Rosa Island/new Asio species/Wisconsinan age/GEOREF.

2541. Hammer RM, Zimmerman RC. Species of demersal zooplankton inhabiting a kelp forest ecosystem off Santa Catalina Island, California, USA. Bull. South. Calif. Acad. Sci. 1979;78(3):199-206
Address: ALLAN HANCOCK FOUND., UNIV. SOUTH. CALIF., LOS ANGELES, CALIF. 90007. substrate/feeding strategy/demersal zooplankton/kelp forest/giant kelp/Macrocystis pyrifera/Santa Catalina Island/marine biology.

2542. Miller PL. Late Cretaceous coccolith biostratigraphy of San Miguel Island, California. MICROPALEONTOLOGY 1983;29(2):182-201.
Coccoliths recovered from the northwest coast of San Miguel Island (latitude 34 degree N) provide definitive biostratigraphic criteria for subdivision of the Upper Cretaceous strata and for regional correlation with Upper Cretaceous rocks of the southern California mainland and offshore areas. Seven coccolith zones are recognized from the stratigraphic distibution of 38 species and suggest an early Turonian to middle Maestrichtian age. More than 500 m of stratigraphic section along the northwest coast previously mapped as Paleogene are Upper Cretaceous. Part of the Upper Cretaceous sequence of San Miguel Island can be correlated with the Jalama, Chatsworth, and Ladd formations and the Point Loma Formation of the southern California mainland.
coccoliths/biostratigraphy/stratigraphic correlation/Cretaceous/INE/ USA/California/San Miguel Island/ASFA.

2543. Harman RA. Distribution of foraminifera in the Santa Barbara Basin, California. Micropaleontology. 1964;10(1):p.81-96
N; Bibliography of North American Geology (1785-1970).
Foraminifera that are rare or absent in waters of normal oxygen content off southern California exist in great numbers in a low-oxygen environment within the Santa Barbara Basin, California. The foraminiferal faunas and their associated sedimentary features in this basin are described and compared with ot other Recent and Tertiary foraminifera and sedimentary features. Environmental significance is given to fossil homeomorphs based on this comparison.--Author's abstrac. Foraminifera/California/Santa Barbara Basin/Recent/areal distribution/with fossil forms/Paleontology/morphologic comparisons of Recent and fossil for/Cenozoic/GEOREF.

2544. Hammer RM. Ecology of kelp forest demersal zooplankton [dissertation]. Los Angeles, California, USA: University of Southern California; 1980. Unknown.
Demersal zooplankton are defined as those animals that migrate

at various times between the benthic and pelagic environments. Kelp forest demersal zooplankton off Santa Catalina Island, California are abundant and diverse, including species of polychaetes, ostracods, copepods, nebaliaceans, mysids, cumaceans, tanaids, isopods, amphipods, decapods, fishes, and various larval forms. The species composition of demersal zooplankton inhabiting six kelp forest substrates was investigated, providing the first demonstration of the existence of demersal zooplankton in this ecosystem and the first list of species caught in emergence traps. Crustaceans not only had the highest species abundance but also were the most important in terms of numerical abundance. Data supported the hypothesis that many of the zooplankton collected in the kelp forest do not originate in oceanic waters but rather are resident members of this neritic benthic community. Day-night differences in the migration of kelp forest demersal zooplankton from a sand substrate were investigated using emergence traps of different heights. Numerical abundance and biomass of demersal zooplankton in most taxa were significantly higher in night samples, indicating that diel emergence is primarily a nocturnal phenomenon. No significant differences were found in either the numerical abundance or biomass of demersal zooplankton collected in high and low traps, suggesting that both traps give. comparable estimates of the amount of demersal zooplankton available to planktivorous predators. Day-night differences and the effects of light on migration of demersal zooplankton from holdfasts of the giant kelp Macrocystis pyrifera were investigated. The diel emergence of demersal zooplankton from kelp holdfasts occurred primarily at night. Demersal zooplankton emerged into black experimental traps in significantly higher numbers during daylight hours than into clear control traps, suggesting that light is a major factor governing this migration. Data suggested that the migration of most gammaridean amphipods and harpacticoid copepods is initiated by the absence of light whereas the emergence of most ostracods is probably set by an internal biological clock. Neither all groups nor all individuals of a group or species exhibited the same behavioral response to artificial darkness. Removal trapping over a 5-day period using emergence traps provided data on the numerical abundance and biomass of demersal zooplankton migrating from M. pyrifera holdfasts. It was estimated that 38-48% of the total demersal zooplankton population migrated during the first diel cycle, suggesting that the distributions of species and patches within substrates are extremely dynamic due to the constant migratory activity of these animals. Sampling techniques and the adaptive significance of diurnal vertical migration are discussed in relation to demersal zooplankton.
demersal zooplankton/diurnal migration/diel emergence/giant kelp/Macrocystis pyrifera/Santa Catalina Island/marine biology/marine ecology.

2545. Hayward TL, Venrick EL. Relation between surface chlorophyll, integrated chlorophyll and integrated primary production. MAR. BIOL 1982;69(3):247-252.
The relationships between surface chlorophyll and integrated values of chlorophyll and primary production are examined in the California Current and the central North Pacific Ocean. In the California Current, surface chlorophyll is correlated with both integrated chlorophyll and integrated primary production, although there is considerable scatter in the relationships. In the central North Pacific, surface chlorophyll is not correlated with either integrated chlorophyll or integrated primary production. An analysis of closely spaced replicate casts shows that in both areas

most of the scatter in the relations between surface values and integrated values is due to spatial or temporal changes in the relations themselves rather than measurement error. The use of surface chlorophyll or fluorescence values as indicators of the biological state of pelagic ecosystems should thus be applied with caution.
chlorophylls/primary production/correlation analysis/INE/California Current/ISE/California Current/ASFA.

2546. Campbell DH. Percussion marks on quartz grains. Jour. Sed. Petrology. 1963;33(4):p.855-859
N; Bibliography of North American Geology (1785-1970).
Texas/Sedimentary petrology/Llano region/Hensel and Hickory Sandstones/percussion marked quartz grains/Florida/Santa Rosa Island/beach sand/United States/Southern/fluvial and beach sands/Sedimentary
rocks/Sandstone/Petrology/Sediments/Sand/GEOREF.

2547. Hamner WM, Strand SW, Matsumoto GI, Hamner PP. Ethological observations on foraging behavior of the ctenophore Leucothea sp. in the open sea. Linmol. Oceanogr. 1987;32(3):654-652
Of all the Leucothea seen during daylight dives in the Catalina Channel, 45% were between the depths of 18 and 22 m, usually feeding at the thermocline on a layer of copepods, primarily Clausocalanus. Undisturbed individuals were observed and video recorded for periods up to 40 min. The ctenophores actively selected specific depths for foraging and spent about 60% of their time foraging gorizontally in the water column, 20% of their time swimming rapidly either directly upward or downward, and 20% of their time immobile and neutrally buoyant. The extent and importance of long-distance horizontal foraging activity of zooplankton and the relationship of individual behavior of zooplankton to patch dynamics has been underestimated.
foraging behavior/Leucothea sp./ctenophore/Santa Catalina Island/Catalina Channel/marine biology.

2548. Smith KL, Baldwin RJ. Scavenging deep-sea amphipods: Effects of food odor on oxygen consumption and a proposed metabolic strategy. MAR. BIOL 1982;68(3):287-298.
In situ respiration rates as response to the odor of food were measured for two species of scavenging amphipods, Paralicella caperesca from 3,650 m in the western North Atlantic Ocean and Orchomene sp. B. from 1,300 m in the Santa Catalina Basin off southern California (USA). In addition, complementary laboratory starvation/respiration rates for a shallow-water species, Orchomene sp. A, were determined. Initial elevated O sub(2) consumption rates were found for up to 8 h in all deep-sea amphipods exposed to bait odor, followed by a period of lowered respiration equivalent to rates observed in individuals not exposed to bait. Orchomene) sp. A revealed a response similar to that observed in the deep-sea species. A metabolic strategy is proposed whereby scavenging amphipods efficiently utilize large episodic organic falls in the food-limited environment of the deep sea.
odor/oxygen consumption/starvation/respiration/organoleptic properties/food consumption/Paralicella caperesca/Orchomene/ASFA.

2549. Valentine JW, Lipps JH. Late Cenozoic rocky shore assemblages from Anacapa Island, California. Jour. Paleontology. 1963;37(6):p.1292 N; Bibliography of North American Geology (1785-1970).
California/Paleontology/Fauna/Quaternary/early Pleistocene/Anacapa Island/Mollusca and
other/list/age/ecology/Paleoecology/Littoral/molluscan

fauna/Mollusca/early Pleistocene faunal list/Stratigraphy/Pleistocene marine terraces/correlation/faunas/Terraces/Pleistocene marine/GEOREF.

2550. Harding Jr. LW, Prezlin B, Sweeney BM, Cox JL. Primary production as influenced by diel periodicity of phytoplankton photosynthesis. Mar. Biol. (Berl.) 1982;67(2):179-186
Address: CHESAPEAKE BAY INST., JOHNS HOPKINS UNIV., 4800 ATWELL. ROAD, Address: Chesapeake Bay Inst., John Hopkins Univ., 4800 Atwill Fd., SHADY SIDE, MARYLAND 20764.
Diel periodicity in parameters of photosynthesis-irradiance (P-I) curves was incorporated into calculations of integral daily phytoplankton production for the Santa Barbara Channel off southern California (USA). Model equations of the relationship between photosynthesis and light were used in combination with observed slope (.alpha.) and asymptote (Pmax) values presented in the preceding paper. Primary production was always 19-39% less than comparable estimates obtained with the assumption of constant maximum daily .alpha. and Pmax values. Regardless of which P-I formulation was used of 6 tested, observed production (using a temporal series of simulated in situ incubations) ranged from 13% less to 25% more than estimates from constant midday .alpha. and Pmax values. The amplitude and timing of diel oscillations differed somewhat among 3 field stations. Maximum to minimum ratios ranged from approximately 3-5 for .alpha., and 4-6 for Pmax. The differences in amplitude and timing of oscillations in P-I curves both contributed to errors in calculating phytoplankton production. Thus, photosynthetic periodicity in the upwelling area of the Santa Barbara Channel influences phytoplankton production. There were oscillations in both .alpha. and Pmax, and the time-dependence of these parameters should be considered to improve the accuracy of predictive models of primary productivity.
circadian rhythms/photosynthesis/phytoplankton/diel periodicity/primary production/upwelling/diel variations/Santa Barbara Channel/marine biology/phycology.

2551. Murray KG, Winnett-Murray K, Eppley ZA, Hunt GLJ, Schwartz DB. Breeding biology of the Xantus' murrelet. CONDOR 1983;85(1):12-21. Xantus' Murrelets (Synthliboramphus (Endomychura) hypoleucus) were studied on Santa Barbara Island, California from 1975-1979. Clutch initiation occurred from March to June and usually peaked in April. The two-egg clutch was 45% of the female's weight. Eggs were laid eight days apart. Both sexes shared duties during a 34-day incubation period; partners relieved one another every three or four days. Eggs were typically left unattended in the interval between laying of succesive eggs, immediately after clutch completion, and sporadically during incubation. Breeders and non-breeders of both sexes followed similar patterns of weight change, reflecting similar patterns of colony attendance: murrelets lost weight after the egg-laying period., then gradually gained weight through the rest of the breeding season. The downy young left the nest only two nights after hatching, unfed and weighing less than 30 g. Chicks and their parents apparently moved well offshore their first night at sea. Even though most murrelets on Santa Barbara nested in concealed rock crevices, irregular nest attendance patterns left eggs vulnerable to predation, resulting in the loss of 44% of the eggs laid. Predation by deer mice (Peromyscus maniculatus) is currently the greatest risk to the breeding of these murrelets on Santa Barbara Island.
USA/California/Santa Barbara Island/breeding/predation/clutch/Synthliboramphus hypoleucus/Peromyscus maniculatus/INE/USA/California/ Santa Barbara Island/ASFA.

2552. Bandy OL. Larger living Foraminifera of the continental borderland of southern California. Cushman Found. Foram. Research Contr. 1963;14(4):p.121-126 N; Bibliography of North American Geology (1785-1970).
Foraminifera/Quaternary/California/southern basins/Recent/GEOREF.

2553. Harris LG, Ebeling AW, Laur DR, Rowley RJ. Community recovery following storm damage: A case of facilitation in primary succession. Science 1984;224:1336-1338
disturbance/storm damage/succession/Santa Barbara Channel/marine biology.

2554. Mitchell EDJ. Contributions from the Los Angeles Museum Channel Islands Biological Survey No. 37, Brachydont desmostylian from Miocene of San Clemente Island, California. Southern California Acad. Sci. Bull. 1963;62(pt. 4):p.192-201 N; Bibliography of North American Geology (1785-1970).
California/Paleontology/Mammalia/Tertiary/Miocene/San Clemente Island/desmostylian/Paleoparadoxia sp./GEOREF.

2555. Harrold C, Reed DC. Food availability, sea urchin Stronglyocentrotus franciscanus grazing, and kelp forest community structure. Ecology 1985;66(4):1160-1169
Address: CENT. COASTAL MARINE STUDIES, UNIV. California, SANTA CRUZ, CALIF. 95064.
Unlike most previously reported kelp forests, which exhibit long-term persistence over large spatial scales, the kelp forest community on the west end of San Nicolas Island, California [USA] occurs as a dynamic patchwork of barren areas characterized by grazing sea urchins and an algal assemblage consisting of upright and encrusting coralline algae, and kelp-dominated areas characterized by high densities of perennial brown algae, including the giant kelp Macrocystis pyrifera. The factors that regulate the grazing activity of sea urchins (S. franciscanus), which in turn determines the structure of this community are examined. In the barren area, drift algae were sparse, sea urchins were poorly nourished, occupied open, unprotected microhabitats, and actively grazed the substratum. In the kelp-dominated area, drift algae were abundant, sea urchins were well nourished, moved little, occupied cracks and crevices, and probably fed on drift algae. Early in the study substantial recruitment of brown macroalgae occurred in both sites, and the barren area gradually transformed into a kelp-dominated area. Concomitant with this change, the abundance of drift algae in the barren area increased. Urchins in this area abandoned open microhabitats for protected crevices and pockets; sea urchin grazing intensity was reduced to levels characteristic of the kelp-dominated. area. From these observations a qualitative model is presented in which the transformation from one configuration to another is triggered by a behavioral switch in the mode of feeding of red sea urchins. This switch is controlled by the availability of drift algae, which in turn is dependent upon the abundance of attached macroalgae. The adult algal standing stocks appear to be regulated by prevailing hydrographic conditions, which are either favorable or unfavorable for kelp recruitment, survivorship, and growth. In this model grazing intensity is independent of urchin density and therefore provides a new view of how kelp forest communities function.
population density model/kelp forests/grazing/urchin barrens/kelp forest community/grazing/food availability/community structure/herbivores/persistence giant kelp/Macrocystis pyrifera/red sea urchins/Stronglyocentrotus franciscanus/San Nicolas Island/marine biology/ecology.

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The concentrations of super(222)Rn and super(226)Ra in the water column and in the sediments of Santa Barbara and San Nicolas basins have been measured semi-annually over the last four years. Approximately one-third of excess radon profiles obtained in the water column in these basins can be adequately fit with a one-dimensional eddy diffusion-decay model. Exponential profiles in the center of San Nicolas Basin yield a vertical eddy diffusivity of 26 plus or minus 16 cm super(2)/s and 3.4 plus or minus 10 cm super(2)/s for Santa Barbara Basin. The application of a two-dimensional eddy diffusion-decay model to profiles obtained in the center and on the margins of San Nicolas Basin produces a better fit than is found using a one-dimensional vertical eddy diffusivity. The two-dimensional model for San Nicolas Basin predicts a vertical eddy diffusivity of 17 cm super(2)/s and horizontal eddy diffusivity of 10 super(5) cm super(2)/s. These values are in reasonable agreement with those predicted from the vertical buoyancy gradient and the horizontal length scale.
water mixing/water column/sediments/radon isotopes/radioactive tracers/mixing/turbulent diffusion/INE/USA/California/Santa Barbara Basin/INE/ USA/California/San Nicolas Basin/ASFA.

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Allozyme and karyotype frequencies were determined for an isolated population of D. pseudoobscura on San Miguel island off the California coast. This population was not very different from that of the mainland, indicating that isolation does not necessarily lead to genetic differentiation.
allozyme/karyotype/population/genetic differentiation/isolation/gene frequencies
Diptera/Drosophilidae/Drosophila pseudoobscura/San Miguel Island terrestrial biology/evolution/entomology/genetics.

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variables and methods of computation are discussed. The region off the west coast of the United States and Baja California is characterized by net annual heat transfer from atmosphere to ocean. Net oceanic heat gain reaches a maximum during summer off Cape Mendocino. Near the coast, surface heat flux is determined by a balance between incoming solar radiation and effective back radiation.
climatology/surface temperature/heat transfer/ocean-atmosphere system/INE/California Current/ISE/California Current/ASFA.

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Plankton and surface sediment samples from the Gulf of California were examined to determine the present geographic distribution of silicoflagellates species in this area. Variations in the species composition of the silicoflagellate assemblage were found to be related to water mass distributions. Eight species were identified in these samples. Octatis pulchra is associated with high levels of primary productivity in the surface waters and is found in greatest abundance in the central Gulf of California. Dictyocha messanensis dominates the silicoflagellate assemblage in stations outside the Gulf of California and increases in relative abundance with decreasing amounts of Octactis pulchra. Dictyocha calida, Dictyocha sp. A, and Dictyocha sp. B are associated with equatorial waters and have the highest relative abundance near the mouth of the Gulf. Dictyocha epiodon and Distephanus speculum are associated with cold California Current Water, and Dictyocha epiodon is present in minor abundance in Gulf samples. Dictyocha sp. 2 has a patchy distribution with low relative abundance.
Mexico/California Gulf/water currents/ecological distribution/population levels/population number/water masses/Octatis/Dictyocha/ISE/California Gulf/ASFA.

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Nearshore fish communities are structured in response to local conditions, and so are best characterized by comparing communities from differing ecosystems. Particularly insightful are comparisons between communities at different latitudes because community structure is known to vary with latitude in many groups of animals and plants. This presentation compares the structure of fish communities on warm-temperate and tropical Pacific reefs. The comparison is between reefs at Santa Catalina Island, California (lat 33 degree 28'N, long 118 degree 29'W) and at the Island of Hawaii (lat. 19 degree 30'N, long. 155 degree 35'W). coral reefs/aquatic communities/population structure/trophic relationships/INE/USA/California/Santa Catalina Island/ISE/Hawaii/ASFA.

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tectonophysics/geophysical surveys/crust/seismic surveys/velocity structure/elastic waves/Mohorovicic discontinuity/Los Angeles Basin/ central Transverse Ranges, Southern California/Santa Catalina Island/geology/solid earth geophysics/applied geophysics.

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Satellite infrared imagery off the Califronia coast, near Pt. Sur, show thermal patterns associated with an upwelling center; the patterns frequently curl cyclonically when interacting with the warmer California Current. This pattern shows sharp thermal fronts, easily identified in satellite IR images, that are strongly correlated with nutrient fronts during the early stages of upwelling. With sea truth data available, it was feasible to calibrate satellite derived sea surface temperature, by applying radiative transfer theory, and to infer nutrient concentrations from their linear inverse correlations with temperature. Thus, it was possible to calibrate satellite thermal fields to produce maps of nutrient distributions. When the inferred relationships were applied over representative regions of the upwelling center, standard deviations of 0.5C, 1.7 microns and 0.1 microns were

computed for temperature, nitrate and phosphate, respectively.
satellite mosaics/upwelling/thermal radiation/surface
temperature/nutrients (mineral)/nutrients/INE/California
Current/ASFA.

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Earthquake hazard research in the Los Angeles Basin and its
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Geophysics Lab. TR-85-1; 1985. 44. ((Sponsored by Geological
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The Geophysics Laboratory at the University of Southern California
is conducting a comprehensive investigation of seismicity in the
greater Los Angeles basin and its offshore area under U.S.G.S.
Contract No. 14-08-0001-21858. As a part of this investigation,
U.S.C. operates a seismic network in the Los Angeles basin area.
During the 1984 fiscal year the authors have concentrated on
seismotectonic analysis of the seismicity recorded in the Los
Angeles Basin during the last 10 years. A comprehensive study of
earthquakes along the Newport-Inglewood fault is in progress and
the authors report the latest results. The authors are also
reanalyzing the January 1, 1979 Malibu earthquake and its
aftershocks. A substantial swarm of small earthquakes that occurred
in the Santa Barbara channel during 20-25 April 1984 offers new
understanding of active tectonics in southern California coastal
zone offshore oil fields.
Hazards/Earthquakes/Geological faults/Seismic
waves/Tectonics/Channels(Waterways)/Coasts/Oil fields/hazard
assessment/Seismic activity/seismicity/geophysical exploration/Los
Angeles Basin/Santa Barbara Channel/Newport-Inglewood fault
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disposal/marine transport/United States/Santa Monica
Bay/sewage/sludge/suspended materials/environmental
geology/dispersion/Pacific
Ocean/Hood/ecosystem/waves/marine
environment/processes/current/water density
anthropogenic/anderson/eganhouse/chemical
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circulation/sediments/oceanography/processes/currents/distributio
n/continental shelf/detrital sedimentation/seasonal
variations/clay/Santa Barbara Channel/United
States/transport/clastic sediments/fines/Santa Clara River/Ventura
River/deposition/continental borderland/marine transport/bottom
sediments/Santa Barbara Basin/Pitas Point/Anacapa

Island/Oxnard/Montalvo Ridge/Hueneme Canyon/Santa Cruz Island/patterns/bottom currents/California Current system/Hickey/physical oceanography/MINERALS MANAGEMENT SERVICE.

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Observed and interpolated temperature and salinity data with computed sigma-t values are reviewed for all oceanographic stations occupied by U.S. Coast Guard cutters at Ocean Station NOVEMBER (30 deg 00 N, 140 deg 00 W) and Pacific Standard Monitoring Sections P3, P4, P5, and P6 from July 1966 through June 1974. The water properties show certain seasonal trends with near-surface density appearing to be primarily controlled by temperature. The mixed layer demonstrates and annual growth and decay dependent on changes in atmospheric conditions. The depth of this layer varies from 150 m in March to 10 m in September. Temperatures have annual periodicity; salinity has a semi-annual periodicity. There is great year-to-year variability in the seasonal layer. Anomalous decreases in temperature were usually accompanied by decreases in salinity. Vertical sections of temperature and salinity for Standard Sections P3, P4, P5, and P6 are examined to determine the seasonal variations of the boundaries between the Pacific Central Water, the Pacific transition zone, and the California Current. These water masses and the limits of their boundaries are identified by the characteristic rising of isotherms and isopycnals, T vs S relationships, and intense horizontal salinity gradients.
T vs S diagrams/in situ density/water masses/boundary layers/IN/North Pacific/seasonal variations/ASFA.

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California/Paleontology/Foraminifera/Santa Barbara Basin sediments/assemblages/GEOREF.

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Regional variations in crustal thickness and Pn velocity, anisotropy in the mantle. 2800 travel times used in the analysis. The Ventura and Los Angeles basins have sediment delays which indicate sediment thicknesses near 10 km. The Moho depth itself varies by 10 km over Southern California with a mean of about 29 km. Five kilometers of rapid thinning between the coast and the Channel Islands is shown by a sharp gradient in the delay times. Normal crustal thicknesses occur over the rest of the array except for the area east of the Salton Trough, where an anomalously thin crust of 22 km exists. High velocities are found in the Mojave and offshore regions. Low velocities are found in the Peninsular Ranges and the Transverse Ranges. The analysis supports a mean anisotropy of 0.15 km/s with the fast direction at N 75 degrees W.--Modified journal abstract.
mantle/velocity structure/thickness/Mohorovicic discontinuity/traveltime/Pn-waves/P-waves/anisotropy/California Channel Islands/California coast geology/geophysics/seismology.

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Two huge steel pyramids have been moored beneath the Santa Barbara Channel in an unprecedented effort to cap the natural gas and oil seeps that have polluted that coastal area for centuries. The two structures, each 100 feet square and 50 feet high, and weighing 350 tons, were placed side by side on the ocean floor at a depth of 220 feet, covering a major seep of nearly half an acre. Together, they will collect as much as 500,000 cubic feet of natural gas and 50 barrels of crude oil that escape daily from the cratered bottom.
pollution control/oil pollution/marine pollution/oil seepages/underwater technology/oil wells/offshore structures/materials recovery/INE/Santa Barbara Channel/natural gas/off shore operations/ASFA.

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seismology/earthquakes/tectonophysics/Mohorovicic discontinuity/arrays/cartography/refraction/velocity/crust/mantle/Salton Trough/basins/batholiths/intrusions/Gila Bend/time series analysis/Pn-waves/California Channel Islands/Los Angeles/Ventura/Sierra Nevada/Gulf of California/geology/solid earth geophysics.

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fisheries/california/resources/marine fishes/distribution

property/seasonal variations/fishes/Hickey/physical oceanography/MINERALS MANAGEMENT SERVICE.

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Address: Dep. Geol., Univ. Alberta, Edmonton, Alta. T6G 2E3, Canada Conference: 3. Canadian Conference on Marine Geotechnical Engineering St. John's, Nfld. (Canada). Jun 1986.
Offshore California, gravity cores were taken from mass-wasting sites in Santa Barbara, Santa Cruz and San Nicolas Basins. X-ray diffraction analyses show that the < 2 mu m silicate fraction is dominantly smectite (> 50%). Lithologies are clayey silts, less commonly sandy-clayey silts. All samples plot below the A-line on the Casagrande Plasticity Chart; the activity of most samples is > 1. Piston cores from offshore the Queen Charlotte and Vancouver Islands were sampled, including material from shallow marine settings, and deep-sea flanks of seamounts and abyssal plains. Offshore Baffin Island, gravity cores were taken from sites of mass-wasting. The geotechnical properties correlate with texture, organic carbon and sedimentary facies.
sediment properties/clay minerals/geotechnology/clay mineralogy/soil mechanics/geophysical surveys/areal studies/materials/gravity surveys/plasticity/Atterberg limits/bathymetry/sediments/bioturbarion/sedimentary structures/biogenic structures/clay Canada, Queen Charlotte Island/Canada, British Columbia, Vancouver Island/Pacific Northwest/Baffin Island/Santa Barbara Basin/Santa Cruz Basin/San Nicolas Basin geology/engineering/sedimentary geology.

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Studies off Pt. Sur, California employing satellite thermal imagery and in situ underway sampling methods show that coastal upwelling waters may become cyclonic or occur as elongated plumes extending more than 250 km across the California Current with sharp thermal and chemical fronts. The occurrence of microplanktonic blooms adjacent to the sharp gradients suggests a relationship between the horizontal nutrient flux and primary production and between chemical mesoscale and biological patchiness. Because of the recurrence of upwelling systems in favored locations, an oceanic climatology could be developed for predicting upwelling phenomena from satellites.
coastal upwelling/infrared imagery/satellite sensing/algal blooms/phytoplankton/primary production/INE/USA/California/ASFA.

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zooplankton/grazing/primary production/USA/California Coast/phytoplankton/Calanus pacificus/INE/USA/California/spatial distribution/correlation/ASFA.

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Santa Catalina Island, California, USA. Calif. Fish Game 1988;74(2):82-86
Address: CALIF. DEP. OF FISH AND GAME, MARINE RESOURCES DIV., 1301 W. 12TH ST., LONG BEACH, CALIF. 90813.
Pink abalone, Haliotis corrugata, populations, once abundant at Santa Catalina Island, have declined drastically. During January and April 1983, 517 adult pink abalone were experimentally transplanted from San Clemente Island to Emerald Bay on the northeast side of Santa Catalina Island as a potential concentrated spawning stock. By February 1984, the shells of 91 (18%) dead abalone had been recovered, and only 24 (5%) live abalone could be located at the transplant site. The loss of the remaining 402 (78%) tagged abalone is believed due to illegal take. Changes in length of 12 of the live abalone ranged from -8 to +7 mm (.hivin.x = 0 mm), with only three showing growth. Growth was affected by the disappearance of the local kelp, due to an influx of warm water associated with an El Nino event.
population biology/abundance/El Nino/Kelp/spawning stock/population dynamics/water temperature/illegal harvesting/pink abalone/Haliotis corrugata/Santa Catalina Island/Emerald Bay/marine biology.

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Temperature, in vivo fluorescence, silicate, phosphate, dissolved hydrogen, and carbon monoxide were measured in surface waters while crossing the California Current system into San Diego. The measurements were made to define surface water variability and to help understand the causes of variations in H sub(2) and CO concentrations. Striking changes were observed crossing the current system, with the most dramatic effects occurring within 100 km of the coast. In an attempt to separate the effects of different water histories, the data were subdivided according to "water type," with four types identified on the basis of temperature. Relations between parameters were distinctly different in the different waters. Carbon monoxide showed a distinct daily cycle when data from different water types were examined separately. The amplitude of daily CO variation was positively correlated with mean fluorescence. This lends support to the hypothesis that the CO abundance is related both to light intensity and to organic content of the water.
fluorescence/silicates/phosphates/dissolved gases/hydrogen/surface water/water temperature/nutrients (mineral)/INE/California Current/ISE/ California Current/ISE/Mexico/Baja California/carbon monoxide/ASFA.

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California/Maps/Anacapa Island/geologic/Sediments/Relation of insular shelf sediments to sedimenta/Submarine geology/insular shelf sediments/GEOREF.

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measurements were in good agreement.
geostrophic flow/current meter data/oceanic eddies/Eulerian current measurement/Lagrangian current measurement/INE/California Current/ASFA.

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Terraces/Marine/Santa Rosa Island/California/GEOREF.

2599. Henry ME. Marine petroleum prospecting and pollution monitoring with an airborne Rraunhofer line discriminator [dissertation]. Texas, USA: Texas A&M University; 1982. 217.
A suite of twenty-eight crude oils and fourteen refined products were analyzed in the laboratory and in outdoor tank experiments to determine their luminescence properties. Open column and high performance liquid chromatography were employed to classify the crude oils and to determine the types of aromatic molecules present in the crude oils respectively. The only strong positive correlation found between luminescence intensity and the chromatographic data was with percent aliphatic molecules present. Aromatic crude oils generally displayed a slight shift toward higher luminescence intensity at longer emission wavelengths compared to aliphatic crude oils. This shift was not great enough to separate aromatic crudes from aliphatic crudes based only on luminescence data. Refined products showed an increase in luminescence intensity at shorter emission wavelengths compared to crude oils. Fraunhofer Line Discriminator (FLD) data collected from a natural oil slick in the Santa Barbara Channel compared favorably with simultaneous observations made by trained observers. Outdoor tank experiments demonstrated the ability of the FLD to detect small amounts of oil on a water surface. Oil was detected by a strong positive luminescence signal at the. 486.1 nm Fraunhofer line for only two samples; sample 1 and Pennzoil, which were among the brightest samples analyzed in the laboratory. Digital image processing and enhancement techniques which are applicable to small data sets are discussed. Although detection of oil films on a water surface by means of airborne luminescence measurements appears feasible, the identification of the material comprising the film requires, at a minimum, an instrument with simultaneous multispectral capabilities and a knowledge of the luminenscence properties of the underlying water column.
crude oil/luminescence/aromatic crude oils/oil films/oil and gas exploration/pollution monitoring/airborne sensing/airborne equipment/surface films/oil pollution/marine pollution luminescence/Fraunhofer Line Discriminator/oil spills environmental monitoring/ Santa Barbara Channel/geology/petroleum/water quality/pollution/air quality/resource management.

2600. Bailey TL. Geology of the western Ventura Basin, Santa Barbara, Ventura, and Los Angeles Counties, Map Sheet no. 4 of Jahns, R. H., ed., Geology of southern California. Calif. Dept. Nat. Res., Div. Mines Bull. 170. scale 1 in. to 6 mi., geol. map with sections and text, Sept, 1954. 1954 N; Bibliography of North American Geology (1785-1970).
California/Geologic maps/Ventura basin/Western/Historical geology/Triassic/Quaternary/Physical geology/GEOREF.

2601. Harding LWJ, Prezelin BB, Sweeney BM, Cox JL. Primary production as influenced by diel periodicity of phytoplankton photosynthesis. MAR. BIOL 1982;67(2):179-186.

Diel periodicity parameters of photosynthesis-irradiance (P-I) curves was incorporated into calculations of integral daily phytoplankton production for the Santa Barbara Channel off southern California (USA). Primary production was always 19 to 39% less than comparable estimates obtained with the assumption of constant maximum daily alpha and P sub(max) values. Regardless of which P-I formulation was used of 6 tested, observed production (using a temporal series of simulated in situ incubations) ranged from 13% less to 25% more than estimates from constant midday alpha and P sub(max) values. Maximum to minimum ratios ranged from approximately 3 to 5 for alpha , and 4 to 6 for P sub(max). Photosynthetic periodicity in the upwelling area of the Santa Barbara Channel influences phytoplankton production. There were oscillations in both alpha and P sub(max), and the time-dependence of these parameters should be considered to improve the accuracy of predictive models of primary productivity.
primary production/periodicity/phytoplankton/photosynthesis/INE/USA/California/Santa Barbara/ASFA.

2602. Bailey EH. Road log for Santa Catalina Island [Calif.], G.S.A. field trip, Oct. 31, 1954. 1954:p.15 N; Bibliography of North American Geology (1785-1970). California/General/Excursion/Santa Catalina Island/Excursions/Geologic Maps/GEOREF.

2603. Henyey TL, Teng TI, McRaney JK, Manov DV. A sea-floor seismic monitoring network around an offshore oilfield platform and recording of the August 13, 1978 Santa Barbara Earthquake. Proceedings of Eleventh Annual Offshore Technology Conference 1979;4:2219-2223
An eight element seismic monitoring array has been established around the Dos Cuadras offshore oil field in the Santa Barbara Channel, a highly faulted region with a history of important seismicity. The array consists of five sea floor seismometers and three onshore coastal zone stations. The proper mechanical coupling of ocean-bottom seismometers to the sea floor has been a problem. The existence of a layer of soft sediments on top of the sea floor often results in severe attenuation of the transmitted seismic waves. A method has been devised of installation whereby the sea floor sensors are inserted into pipes vibracord 2-5 meters into the sea floor where water depths range from 20 to 100 meters. The sensor outputs are transmitted by sea floor coaxial cables to a central platform and then telemetered (in combination with the onshore stations) via telephone line to a recording facility in Los Angeles. Records from the August 13, 1978 Santa Barbara earthquake and its aftershocks demonstrate that the method of sensor emplacement used gives superior coupling to the sea floor resulting in a record with.
Hazards/Seismic studies/Risks/Monitoring/Outer Continental Shelf/Offshore platforms/Water pollution sources/Resources development/Oil fields/Earthquakes/Petroleum development/Santa Barbara(CA) earthquake/water quality management/pollution effects/Santa Barbara Channel/Dos Cuadras offshore oil field.

2604. Wicksten MK. Pagurus redondoensis , a new species of hermit crab from southern California (Anomura: Paguridae). J. CRUST. BIOL 1982;2(4):605-611. Pagurus redondoensis , new species, is the only known member of the provenzanoi group of the genus Pagurus in California. This small hermit crab occurs along the mainland of southern California and Santa Catalina Island. It is particularly common in shallow subtidal areas of King Harbor,

Redondo Beach. new species/animal morphology/taxonomy/Pagurus redondoensis/INE/USA/ California/ASFA.

2605. Shor GGJ, Raitt RW. Seismic studies in the southern California Continental Borderland. Tomo 2 of Geofisica aplicada. Internat. Geol. Cong., 20th, Mexico, D. F., 1956 [Trabajos] 1958;sec. 9:p.243
N; Bibliography of North American Geology (1785-1970).
California/General/Seismic studies/Southern/Crustal structure of continental borderland/Physical geology/Continental borderland/crustal structure/Continental Shelf/seismic refraction/Earth/Crust/Geophysical Investigations/Submarine Geology/Southern coast/GEOREF.

2606. Hinds BD, Gillespie JB. Optical characterization of atmospheric particulates on San Nicolas Island, California. Technical rept. 22 Oct 78-10 May 79. : Army Electronics Research and Development Command, White Sands Missile Range, NM. Atmospheric Sciences Lab. ERADCOM/ASL-TR-0053; 1980. 36. The US Army Atmospheric Sciences Laboratory at White Sands Missile Range, New Mexico, analyzed eight atmospheric particulate samples and one soil and one abalone shell sample taken on San Nicolas Island. These samples were collected by the Naval Weapons Center and Pacific Missile Test Center meteorological personnel for composition and average imaginary refractive index analyses in the visible and infrared spectral region.
Atmospheric chemistry/Aerosols/Optical analysis/Refractive index/Sampling/Particulates/Soils/Chemical composition/Electron microscopy/X ray diffraction/Infrared spectroscopy/Air mass analysis/Meteorological data/San Nicolas Island/Atmospheric Sciences/Meteorology.

2607. Greenblatt PR. Small-scale horizontal distributions of zooplankton taxa. MAR. BIOL 1982;67(1):97-111.
Small-scale (100 to 2,400 m) horizontal distributions of major taxonomic categories (class and order) of zooplankton were measured at a depth of 90 m with an opening-closing plankton net over a 3 d period in Oct. 1978 in the California Current. Some zooplankton categories showed evidence of diurnal vertical migration, while others had long-period temporal changes in mean abundance. Variance-to-mean ratio for large copepods and euphausiids was higher at night than during the day, while the opposite was true for chaetognaths and pteropods. The proportions of biomass in taxonomic groups differed from day to night due to the large variability of euphausiids. Comparisons of wet weight biomass to taxonomic counts indicated that biomass was usually less variable than taxonomic counts. horizontal distribution/vertical migrations/zooplankton/taxa/ISE/ California Current/correlation analysis/circadian rhythm/ASFA.

2608. Scholl DW. Exposures of San Onofre breccia on Anacapa Island, California. Am. Assoc. Petroleum Geologists Bull. 1959;43(1):p.222 N; Bibliography of North American Geology (1785-1970).
Breccia/California/Anacapa Island/Historical geology/San Onofre breccia/Miocene/GEOREF.

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competition/reef fish/Embiotica lateralis/Embiotica lateralis/Santa Barbara Channel/marine biology/ecology.

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copepods on fish larvae. U.S. Natl. Mar. Fish. Serv. Fish. Bull. 1971;69(3):655-667. copepods/california current/fish larvae/predation/zooplankton/Pieper/fisheries/taxonomy/life cycles/animal migrations/thompson/invertebrates/crustacea/seasonal variations/animal migrations/MINERALS MANAGEMENT SERVICE.

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Thirty years of temperature, salinity, steric height and zooplankton data are examined to explore the potential causes of large-scale biological variability in the California Current. The physical and biological properties are all found to be dominated by a pronounced interannual signal with very large spatial scale. In contrast to the classical view of the dynamics of epipelagic ecosystems in eastern boundary currents, wind-forced coastal upwelling of nutrient-rich deep water is shown to play a relatively minor role in controlling the large-scale zooplankton biomass. Over interannual time scales, zooplankton abundance is primarily influenced by large-scale variations in the flow of the California Current. Increases in the southward transport lead to increases in zooplankton biomass, while decreases in the transport result in abnormally low zooplankton biomass. hydrography/plankton surveys/zooplankton/biomass/current observations/California Current/ecosystem dynamics/INE/California Current/ISE/ California Current/variations/ASFA.

2613. Resig JM. Ecology of foraminifera of the Santa Cruz Basin, California. Micropaleontology. 1958;4(3):p.287 N; Bibliography of North American Geology (1785-1970). California/Paleontology/Foraminifera/Santa Cruz basin/Recent/Ecology/ecology and fossil contamination/Quaternary/GEOREF.

2614. Hoagland PI, Eichenberg TK. The Channel Islands National Marine Sanctuary. Oceanus 1988;31(1):66
The M/V Wellwood grounding: a sanctuary case study.
Oil exploration/History/Channel Islands National Marine Sanctuary/grounding/California Channel Islands/policy/petroleum/.

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2616. Henry ME. Marine petroleum prospecting and pollution monitoring with an airborne Fraunhofer Line Discriminator. DISS. ABST. INT. PT. B - SCI. & ENG 1982;43(6).
A suite of twenty-eight crude oils and fourteen refined products were analyzed to determine their luminescence properties. Refined products showed an increase in luminescence intensity at shorter emission wavelengths compared to crude oils. Fraunhofer Line Discriminator (FLD) data collected from a natural oil slick in the Santa Barbara Channel compared favorably with simultaneous observations made by trained observers. Outdoor tank experiments demonstrated the ability of the FLD to detect small amounts of oil

on a water surface.
oil and gas exploration/pollution monitoring/airborne sensing/airborne equipment/surface films/oil pollution/marine pollution/luminescence/oil spills/environmental monitoring/remote sensing/dissertation/Fraunhofer Line Discriminator/ASFA.

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2618. Hobson ES,, Huntsman GR, Nicholson WR, Fix WW,. The structure of fish communities on warm-temperate and tropical reefs. G.R. Huntsman, W.R. Nicholson, W.W. Fix J. The biological bases for reef fishery management. Proceedings. Beaufort, NC (USA): NOAA-TM-NMFS-SEFC-80; 1982. 160-166.
Address: Natl. Mar. Fish. Serv., Southwest Fish. Cent., Tiburon, CA, USA. National Marine Fisheries Serv., Beaufort, NC (USA). Southeast Fisheries Cent. Nearshore fish communities are structured in response to local conditions, and so are best characterized by comparing communities from differing ecosystems. Particularly insightful are comparisons between communities at different latitudes because community structure is known to vary with latitude in many groups of animals and plants. This presentation compares the structure of fish communities on warm-temperate and tropical Pacific reefs. The comparison is between reefs at Santa Catalina Island, California (lat 33 degree 28'N, long 118 degree 29'W) and at the Island of Hawaii (lat. 19 degree 30'N, long. 155 degree 35'W). coral reefs/aquatic communities/population structure/trophic relationships/fish/Santa Catalina Island/Island of Hawaii/marine biology/ichthyology/fisheries/resource management.

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Santa Barbara/botanic garden/Bathymetric distribution/geographic distribution/faunal groups/current patterns/basin patterns/fishes/zoology/vertebrates/MINERALS MANAGEMENT SERVICE.

2620. Grossman EL. Stable isotopes in live benthic foraminifera from the Southern California borderland. DISS. ABST. INT. PT. B - SCI. & ENG 1982;43(6). The major objective of this dissertation is to examine and establish several fundamental relationships that underlie the use of stable isotopes in paleoenvironmental studies. These relationships include: (1) an aragonite-water delta super(18)O paleotemperature scale, (2) an aragonite-calcite paleotemperature scale, and (3) super(13)C fractionation between calcite and dissolved bicarbonate. They are determined empirically from isotopic measurements of Rose Bengal-stained benthic formainifera and ambient water collected from the Southern California borderland. The paleotemperature scale for aragonite has been determined based on the super(18)O composition (delta super(1)8)) of live Hoeglundina elegans) (this study), core-top Hoeglundian , inorganic precipitate, and molluscs. Over the temperature range of 0 degree -25 degree C the equation is T(degree C) = 20.19-4.56(delta super(18)O- delta sub(w)) + 0.19(delta super(18)O- delta sub(w)) super(2), where delta sub(w) is the composition of CO sub(4) in equilibrium with the ambient water at 25 degree C.
paleotemperatures/calcite/chemical composition/water

composition/oxygen
isotopes/aragonite/zoobenthos/INE/USA/California/ASFA.

2621. Orr PC, Broecker WS. Sea level changes on Santa Rosa Island, California. Geol. Soc. America Bull. 1957;68(12, pt. 2):p.1840 Abstract N; Bibliography of North American Geology (1785-1970). California/Physiographic geology/Santa Rosa Island/Pleistocene terraces/Changes of Level/Terraces/Pleistocene/GEOREF.

2622. Hobson ES, McFarland WN, Chess JR. Crepuscular and nocturnal activities of Californian nearshore fishes with consideration of their scotopic visual pigments and the photic environment. U.S. Natl. Mar. Fish. Serv. Fish. Bull. 1981;79(1):1-30
Address: SOUTHWEST FISHERIES CENTER TIBURON LABORATORY, NATIONAL MARINE FISHERIES SERVICE, NOAA, 3150 PARADISE DRIVE, TIBURON, CALIF. 94920.
Activities in 27 of the major southern Californian nearshore fish species, with emphasis on trophic relationships, were studied between 1972-1975 at Santa Catalina Island [California, USA]. Because these fish orient primarily by vision, they are strongly influenced by the underwater photic environment, which is defined with representative spectra. Crepuscular and nocturnal events are emphasized but daytime events are described for comparison. Fish (28 spp.) are listed according to whether they feed by day, mostly at night or show no clear diurnal or nocturnal mode. Activity patterns tend to be defined less clearly in the warm-temperate fish communities of California than in fish communities of tropical reefs. Included are the twilight patterns of transition between diurnal and nocturnal modes, which are considered to be defined by predation pressures. The lesser definition of twilight patterns in California could mean reduced crepuscular predation there, but Californian fish have probably evolved under severe threats from crepscular and nocturnal predators. This is evidenced in the spectral sensitivities of their scotopic visual pigments, which cluster around 500 nm, the best position for vision during twilight and at night in Californian. coastal waters. Although the scotopic system dominates vision in dim light, the spectral sensitivities of the scotopic pigments are poorly matched to the major forms of incident light at night-moonlight and starlight. They match twilight and bioluminescence, which favor similar spectral sensitivities. This probably benefits these fish most on defense. The match with twilight, when the low levels of incident light shift briefly to shorter wavelengths, enhances vision during the crepuscular periods of intensified threats from predators. The match with bioluminescence permits fish to react to threatening moves in nocturnal predators by responding to luminescing plankton that fire in the turbulence generated by these moves.
plankton/bioluminescence/diurnal feeding behavior/temperate tropical reef/predation/evolution/sight/vision/nocturnal fish/diurnal fish/activity patterns/epipelagic zone/trophic relationships/pigments/light/diel rhythms/activity patterns/teleost/marine fish/Santa Catalina Island/ marine biology/ichthyology.

2623. Ng A, Patterson CC. Changes of lead and barium with time in California off-shore basin sediments. GEOCHIM. COSMOCHIM. ACTA 1982;46(11):2307-2321.
During ancient times, the natural deposition fluxes of lead which can be leached with dilute acid from sediments in Santa Barbara, Santa Monica, and San Pedro basins offshore from the Los Angeles Urban complex, were about 0.7, 0.1 and 0.2 mu g Pb/cm super(2) yr

respectively. Since there was little difference in biological productivity in surface waters of these basins, it is proposed that clay is a major transport vehicle for sequestered soluble lead, which then explains why the lead deposition flux within the Santa Barbara basin was so much larger compared to the other basins. Today deposition fluxes of acid soluble lead within these three basins are 3- to 9-fold greater, being about 2.1, 1.1 and 1.8 mu g Pb/cm super(2) yr respectively, partly in the form of directly deposited large sewage particles, which account for none, 2/3, and 3/4 of the total industrial lead deposition fluxes in the respective basins. sediments/lead/barium/marine pollution/INE/USA/California/ASFA.

2624. Orr PC. Radiocarbon, mammoths, and man on Santa Rosa Island [Calif.]. 1956:p. 1777
Abstract N; Bibliography of North American Geology (1785-1970). California/Paleontology/Mammoths/dwarf/Santa Rosa Island/Pleistocene/Mammalia/Mammuthus/Quaternary/Long Beach Santa Ana area/Santa Barbara Channel Islands/terraces/origin/GEOREF.

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Address: Army Coastal Engineering Research Cent., Ft. Belvoir, VA (USA). The data collected for this study consist of 28 vibratory cores of sediments, 8 cores from sites along a native beach profile, and 20 cores from sites within the trap. The long-term sediment transport study provided the remaining data used in this report. In general, the trap functioned as designed, trapping the bulk of longshore transport which entered the trap mouth in a series of pulses or surges of sand. From an analysis of the textural data it is concluded that sediment distribution within the trap area is similar to that of the updrift coastline although the trapped sand is slightly finer and better sorted than the native beach sand. Also from the textural distributions within the trap, it is concluded that the sediment as beach fill but that bypassing could be planned to utilize the textural patterns in the construction of a beach fill downcoast. sediment traps/sediment transport/longshore sediment transport/sediment distribution/sand trap/sediments/infilling/Channel Islands Harbor/engineering/sedimentary geology/marine geology.

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N; Bibliography of North American Geology (1785-1970). California/Paleontology/Mammoths/dwarf/Santa Rosa Island/Pleistocene/Man archeological sites/Mammalia/Mammuthus/Quaternary/Man/Radiocarbon Dating/Pleistocene mammoths/GEOREF.

2627. Hochberg RG,J, Rogh B, Miller WB. Rediscovery of Radiocentrum avalonense Hemphill in Pilsbry 1905. Gastropoda: Pulmonata. Bull South. Calif. Acad. Sci. 1987;86(1):1-12
Address: DEP. INVERTEBR. ZOOL., SANTA BARBARA MUS. NAT. HIST., 2559 PUESTA DEL SOL ROAD, SANTA BARBARA, CALIF. 93105. distribution/coastal sage scrub community/arid environment/lecotype/designation/reproductive system/Gastropoda/Pulmonata/land snail/Oreohelix avalonensis/Radiocentrum/Santa Catalina Island/terrestrial biology/malacology.

2628. Anon. The Mexican fishery for northern anchovy, Engraulis mordax. MAR. FISH. REV 1982;44(6-7):64-68.
The northern anchovy, Engraulis mordax , is the most abundant species found in the California Current which dominates the coastal waters off the Baja Peninsula in Mexico and off Southern California in the United States. Until recently, the species was relatively unutilized by either Mexican or U.S. fishermen. This study explores the development of the Baja Peninsula anchovy fishery and its implications.
clupeoid fisheries/exploitation/fish meal/stock assessment/Engraulis mordax/ISE/Mexico/Baja California/ASFA.

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2630. Holbrook SJ, Schmitt RJ. Experimental analyses of patch selection by foraging black surfperch Embiotoca jacksoni. J. Exp. Mar. Biol. Ecol. 1984;79(1):39-64
Address: DEP. BIOL. SCI., UNIV. CALIF., SANTA BARBARA, CALIF. 93106. The dynamics of microhabitat use by foraging adult and juvenile black surfperch (E. jacksoni Agazzi) were explored. Detailed observations of black surfperch feeding at Santa Catalina Island, California [USA] revealed that adults and young-of-year juveniles co-occurred in the same habitat but used different algal substrata as foraging sites. Juveniles selected invertebrate prey almost exclusively from the surface of foliose algae. The occurrence of young E. jacksoni was highly correlated with that of foliose algae. Adults tended to bite most frequently from turf, a low-growing matrix of plants, colonial animals, and debris covering the rocky substratum. The abundance of adults was negatively correlated with the occurrence of foliose algae. Adults and juveniles showed marked, but different, preferences in their use of taxa of algae as foraging substrata. Certain algae (e.g., Zonaria farlowii Setchell et Gardner) were preferred; other taxa (e.g., Sargassum palmeri Grun) were avoided by both age groups. Most types of algae were preferred by 1 group but not the other. To test the hypothesis that knowledge of algal substratum composition allows prediction of fish occurrence and foraging behavior in a patch, algal cover on 2 .times. 2 m2 areas of bottom was manipulated creating plots dominated by turf, Zonaria farlowii or Sargassum palmeri. Fish occurrence could be accurately. predicted on the basis of abundance of foliose algae, but foraging activity of fish was highly dependent on the algal taxon that dominated the patch. Differential prey availabilities among foraging substrata provided some insight into the patterns of foraging patch preferences displayed by adult and juvenile E. jacksoni.
foraging ecology/feeding biology/prey selection/foraging behavior/habitat siliction/microhabitat/feeding ecology/feeding behavior/food organisms/competition/black surfperch/Embiotoca jacksoni/Santa Catalina Island/marine biology/ecology.

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Sea urchins (Strongylocentrotus purpuratus) were collected from intertidal stations at Point Dume, Redondo Beach and White's Point in the Southern California Bight. Cytosolic metal levels varied both within and between stations, with the highest levels found in organisms from White's Point. Examination of the cytosolic metal

distribution by Sephadex G-75 gel chromatography indicated that organisms adapted to increased levels of trace metals by producing more of a metallothionein-like metal-binding protein. Histological and histochemical examinations indicated that organisms were not stressed over the range of metal concentrations encountered in this study.
metals/cytosol/pollution indicators/USA/California Coast/indicator species/Strongylocentrotus purpuratus/INE/USA/California/distribution/cytosolic metals/ASFA.

2632. McGlasson RH. Foraminiferal biofacies around Santa Catalina Island, California. Micropaleontology. 1959;5(2):p.217-240
N; Bibliography of North American Geology (1785-1970).
California/Paleontology/Foraminifera/Santa Catalina Island/biofacies/ecology/Petrology/submarine sediments/Physiographic geology/submarine/Sediments/Submarine Geology/topography and sediments/GEOREF.

2633. Holbrook SJ, Schmitt RJ, Coyer JA. Age-related dietary patterns of sympatric adult surfperch. Copeia 1985;1985(4):986-994
Dietary separation between age-classes of adult black and striped surfperch was explored. Despite the fact that the sampled fish were locally sympatric and were capable of consuming the entire range of available invertebrate prey sizes and taxa, there were significant differences between diets of older (Age III-V) and younger (Age I-II) fish within each species. Intraspecific differences were of the same magnitude as interspecific dietary differences. Divergence in both sizes and taxa of prey contributed to the dietary separation.
diet/competition/foraging behavior/Embiotoca lateralis/striped surfperch/Embiotoca jacksoni/black surfperch/Santa Cruz Island/Santa Rosa Island/San Nicholas Island/marine biology/ecology.

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N; Bibliography of North American Geology (1785-1970).
California/Economic geology/Oil and gas/Santa Cruz basin/possibilities/Natural Gas/Petroleum/Santa Cruz basin possibilities/GEOREF.

2635. Hollenberg GJ. Phycological notes Part 8: Two brown algae (Phaeophyta) new to California, USA. Bull. South. Calif. Acad. Sci. 1978;77(1):28-35
Address: DEP. BIOL., UNIV. REDLANDS, REDLANDS, CALIF. 92373. Two brown algae, Cutleria cylindrica Okamura and Myriactula rivulariae (Suhr in Areschoug) J. Feldmann from Santa Catalina Island are reported as new to California [USA]. Neither genus was previously reported from the eastern north Pacific Ocean. Comparisons with related taxa [Splachnidium sp., Levringia sp. and Myriogloia sp.] are not wholly conclusive because of anomalous features shown by the California plants.
new record/morphology/distribution/ecology/algae/biogeography/taxonomy/new records/geographical distribution Phaeophyta/Cutleria cylindrica/Myriactula rivulariae/Santa Catalina Island/marine biology/botany/phycology.

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California/Pacific Ocean/faults/oceanography/structural

geology/geophysical surveys/tectonophysics/displacements continental margin/neotectonics/acoustical surveys/ocean floors/plate tectonics/wrench faults/Pacific Coast/Western U.S./United States/Southern California/continental borderland/seismic surveys/high-resolution methods/Seabeam/North American Pacific/active faults/strike-slip faults/shear zones/San Clemente Fault/plate boundaries/transform faults/bottom features/bathymetry/STRUCTURAL GEOLOGY/GEOPHYSICS/SOLID EARTH/MARINE GEOLOGY/ OCEANOGRAPHY/MINERALS MANAGEMENT SERVICE.

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introductio/MINERALS MANAGEMENT SERVICE.

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baroclinic instability/shear flow/ocean circulation/Rossby parameter/ISE/California Current/INE/California Current/equations/ASFA.

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Geologic History/New Mexico/Santa Rosa buried island/Historical geology/Physical geology/GEOREF.

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carbon/isotopes/geochemistry/economic geology/surveys/fuel resources/Monterey Formation/heavy oil/oil and gas fields/Hondo Field/Pescado Field/Sacate Field/middle Miocene/Miocene/Neogene/Tertiary/hydrocarbons/organic materials/C-13/stable isotopes/geochemical methods/Santa Barbara Channel/geology/petroleum.

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Data from two cruises in April and Novenber 1977 indicate the presence of Pacific equatoral water on the continental shelf north of Vancouver Island. Water with the general temperature/salinity characteristics of the California Undercurrent was found on the shelf at both times. Evidence for the presence of equatorial water was supported by the occurrence in the study area of six normally subtropical zooplankton species: Mesocalanus tenuicornis, Lophothrix frontalis, Candacia bipinnata, Lucicutia flavicornis, Heterostylites longicornis , and Pleuromamma xiphias . An increase

in the proportion of equatorial water on the shelf, and a concomitant extension of the limits of distribution of equatoral water on the shelf, and a concomitant extension of the limits of distribution of oceanic zooplankters in the study area, both imply and intrusion of deep water onto the shelf. This intrusion is probably a regular event with important ramifications for the zooplankton and fish communities of the area.
water circulation/indicator species/equatorial waters/continental shelves/hydrographic data/INE/California Current/INE/Canada/British Columbia/Vancouver I./ASFA.

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2643. Horvitz SA. Processing near-surface hydrocarbon data to yield improved interpretations; a case study. Oil and Gas Journal 1987;85(17):95-96, 98, 100
Address: Tex. South. Univ., Houston, TX.
fuel resources/case studies/mathematical models/models/reservoir rocks/oil-water interface/statistical analysis/sampling/standard deviation/ Santa Ynez Mountains/Santa Barbara Channel/economic geology/petroleum.

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The effects of water-soluble fractions (WSF) of thirteen used ferrochrome lignosulphonate muds on developing embryos of Patiria miniata were studied. The muds were collected during the drilling of a single slant well from Platform Hondo in the Santa Barbara Channel, California, at drilling depths of 4220 to 9858 ft. None of the embryos survived 48 hours exposure in 25% WSF of the muds (25,000 ppm mud added (v/v)). Significant reduction in growth and high abnormalities (up to 100%) were observed in the 15% WSF. In lesser concentrations the effects varied from significant reduction of growth, down to 0 multiplied by 5% for three muds, to significant enhancement of growth for several muds in some dilutions. The EC sub(50)'s ranged from 5% to greater than 15% WSF. In the 5% WSF, decreased embryo growth was correlated with increasing Cr concentrations and possibly also with total organic carbon (TOC). The results of these experiments are discussed in terms of the effects of dispersions of drilling muds in the oceanic environment. It is concluded that water column effects on organisms during the dumping of such muds are only likely within short distances of the discharge pipes of offshore drill rigs.
oil installations/ferrochrome lignosulfonate muds/pollution effects/survival/development/embryos/USA/California/Santa Barbara Channel/drilling/drilling fluids/Patiria miniata/INE/Santa Barbara Channel/toxicity/environmental impact/ASFA.

2645. Zbyszewski G. Le volcan de Furnas dans l'ile de Saint Miguel (Acores). Int. Geol. Cong., 19th, Algeria, C. R. 1954;sec. 15(f.17):p.139-151 E; Bibliography and Index of Geology Exclusive of North America (1933-1968). On the basis of a geologic survey of the Furnas volcano on San Miguel island in the Azores (Portugal) it is concluded that the trachytes and basalts of which the island is composed were erupted during three main phases of volcanic activity. Portugal/Physical geology/Furnas volcano/Azores/Volcanism/Volcanos/GEOREF.

2646. Huber H. Natality and weaning success in relation to age of first reproduction in northern elephant seals. Can. J. Zool. 1987;65(6):1311-1316 Address: NATL. MARINE MAMMAL LAB., NORTHWEST ALASKA FISHERIES CENT., NATL. MARINE FISHERIES SERV., 7600 SAND POINT WAY N.E., SEATTLE, WASH., 98115. Reproductive histories of female northern elephant seals (Mirounga angustirostris) tagged as pups at the Farallon, Ano Nuevo, San Miguel, and San Nicolas islands were followed on the Farallon Islands, California [USA], from 1975 to 1983. Age of primiparity ranged from 3 to 6 years. Females that first reproduced at age 4 or 5 had significantly higher subsequent natality and weaning success than did females first giving birth at 3 years. However, no difference in weaning success was evident between primiparous and experienced 4- and 5-year-olds. The number of primiparous 3-year-old animals that skipped pupping the following year was significantly higher than the number of primiparous 4-year-old animals that skipped the following year. Overall subsequent natality by parous females (both known-age and females tagged as adults) followed by 4 consecutive years averaged 0.86. On average, 14% (range 8 to 20%) of parous females did not give birth each year. Some of the females that skipped pupping hauled out in the fall with immature animals and some were present at breeding rookeries during the season of their missed pupping only to copulate. From 1974 to 1977, the number of pups born increased an average of 60% each year; however, from 1978 to 1983 the rate decreased to 25%. Most population growth was due to immigration. The range in age of parous. females increased from 3 to 5 years in 1975 to 4 to 13 years in 1983. population growth/immigration/reproductive biology/life history/sexual reproduction/sexual maturity/breeding success/fecundity northern elephant seals/Mirounga angustirostris/Farallon Islands/San Miguel Island/San Nicolas Island/Ano Nuevo Island/marine biology/mammalogy.

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2649. Hundley JB. Containment of a natural hydrocarbon seep in Santa Barbara Channel. O.T. Magoon, H. Converse. Coastal zone '83. Proceedings of the Symposium on Coastal and Ocean Management 3. ; 1983. 1261. Address: ARCO Oil Gas Co., Bakersfield, CA

Conference: Third symposium on coastal and ocean management; Coastal zone '83. San Diego, CA, June 1-4, 1983. marine installations/pollution/oil seeps/offshore/structures/Santa Barbara Channel/Goleta/engineering geology/environmental geology/petroleum.

2650. Parrish RH, Nelson CR, Bakun A. Transport mechanisms and reproductive success of fishes in the California Current. BIOL. OCEANOGR 1981;1(2):175-203. Surface marine observations are used to infer the large-scale seasonal patterns of ocean surface drift near the coast in the California Current. Reproductive strategies of the most successful coastal fishery species show a pattern of correspondence to the major features of surface transport. The apparent dependence of spawning strategies upon surface drift conditions suggests the hypothesis that anomalies in surface drift patterns could be a major cause of the observed wide variations in spawning success of the major fishery species of the California Current region.
reproductive behavior/transport processes/fishery oceanography/surface circulation/Pisces/INE/California Current/ISE/California Current/ASFA.

2651. Clements TD, Dana SW. Geologic significance of a coarse marine sediment from near Santa Catalina Island, California. Jour. Geology. 1944;52(5):p.351-354
N; Bibliography of North American Geology (1785-1970).
Andesite/California/Santa Catalina Island/marine sediment/Basalt/Beaches/Boulders/cobbles/Historical geology/Petrology/Physical geology/Changes of level/Dacite/Diorite/Faults and faulting/Folding/Igneous rocks/Metamorphic rocks/Pebbles/Quartzite/Quaternary/Sandstones/marine/Sediments/Catalina Island/Subsidence/Tertiary/GEOREF.

2652. Hunt GL,J, Butler JL. Reproductive ecology of Western Gulls and Xantus' Murrelets with respect to food resources in the Southern California Bight. Rep. CCOFI 1980;21:62-67
Address: Dept. Ecology and Evolutionary Biology, Univ. CA Irvine, Irvine, CA 92171, USA.
Western Gull (Larus occidentalis) and Xantus' Murrelet (Endomychura hypoleuca) reproduction on Santa Barbara Island, California, showed considerable sensitivity to changes in pelagic fish populations in the Southern California Bight. Western Gulls responded to decreases in the availability of schooling fish by failing to breed or by switching to alternate foods. The use of alternate foods may result in lower growth rates and chick survival. Timing of breeding was not significantly changed. Xantus' Murrelets foraged on larval fish, particularly larval northern anchovies (Engraulis mordax). Murrelets responded to the unavailability of larval anchovies either by failing to breed or by delaying breeding until larval anchovies became available. Our results demonstrate not only the sensitivity of marine bird reproduction as an indicator of the availability of their food resources, but also how specific differences in reproductive biology influence the flexibility of response to environmental change.
reproductive behavior/food fish/predators/prey abundance/alternate foods/switching/Larus occidentalis/Western Gull/Endomychura hypoleuca/Xantus' Murrelet/Santa Barbara Island/terrestrial biology/ornithology.

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The Geological Society of America. 1978 Joint Annual Meeting, Toronto, Ont. (CAN), Oct. 23-26, 1978. In: Geol. Soc. Am., Abstr. Programs 1978;10(7):444-445.
California/Invertebrata/paleontology/ecology/trophic analysis/United States/Southern California/continental borderland/marine environment/benthonic taxa/communities/bathymetry/currents/deposit feeders/suspension feeders/sedimentation patterns/transport/marine transport/paleoecology/Holocene/Quaternary/modern ANTHROPOGENI/Canderson/MINERALS MANAGEMENT SERVICE.

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Address: DEP. ECOL. EVOL. BIOL., UNIV. CALIF., IRVINE, CALIF. 92717. Female-female pairs constituted at least 10%, perhaps a substantially greater fraction, of the 1972-1978 breeding population of western gulls (L. occidentalis) on Santa Barbara Island, California. In this population, the adult sex ratio was 0.67 males/female. This may be the consequence of differential survival rates and may have a causal role in the formation of female-female pairs. sex ratio/breeding biology/reproductive biology/survival/seabirds/population structure/bird behavior/breeding behavior/reproductive behavior/pair bond Charadriiformes/Western Gulls/Larus occidentalis/Santa Barbara Island/terrestrial biology/ornithology.

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The primary productivity of flocculent marine snow (fragile and amorphous macroscopic particulates) was measured for the first time using samples collected quantitatively in surface waters of the Southern California Bight. C super(14) production rates averaged 53 plus or minus 12 times higher on macroscopic aggregates than in equal volumes of surrounding, aggregate-free seawater. Although only 0.1 to 9.1% of total primary production at 10 m occurred on flocculent marine snow at the time of sampling, the majority of photosynthetic activity in the water column may be associated with these particles during periods of high snow density. Chlorophyll a concentrations were 252 plus or minus 61 times greater but carbon fixed per unit chl a was 4 times lower on marine snow than in the

surrounding seawater.
primary production/chemical composition/surface water/chlorophylls/marine snow/suspended particulate matter/suspended matter/flocculants/chlorophyll/INE/Southern California Bight/INE/Southern California Bight/California Coast/marine snow/ASFA.

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Eisenia arborea/Agarum fimbriatum/Laminaria farlowii/Florometra serratissima/coralline/algae/ophiuroid/red algae/brown algae/sea star/gorgonian sponge/understory algae/depth abundance/coastal influence/ReishThompson/invertebrates/MINERALS MANAGEMENT SERVICE.

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Address: Dep. Ecol. and Evol. Biol., Univ. California, Irvine, CA 92717, USA. The behavior of male-female (M-F) and female-female (F-F) paired western gulls (Larus occidentalis) before egg laying was examined on Santa Barbara Island, California to test the hypothesis that one female in a F-F pair may assume a male role. In M-F pairs, no behaviors were performed exclusively by either sex, although males mounted more often, females head-tossed more often and males acted more aggressively toward intruders. Within F-F pairs, neither partner consistently showed masculine behavior. In a comparison of behavior toward intruders, both members of F-F pairs resembled the female in M-F pairs, and were generally significantly different from males. The authors therefore reject the hypothesis that female-female pairing is the result of either the adoption of a "male" behavioral role by one or both partners, or an extreme "female" role by one member.
aggressive behavior/breeding/reproductive behavior/sex ratio/survival seabirds/population structure/pair bond/egg laying/mating behavior/aggressive behavior/courtship Larus occidentalis/Western Gulls/Santa Barbara Island/terrestrial biology/ornithology.

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TEXT/CROSS/ALLEN/FISH/MINERALS MANAGEMENT SERVICE.

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MINERALS MANAGEMENT SERVICE.

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1982;21(3):399-407.
Seasonality, survivorship and individual growth patterns of Pelagophycus porra were studied. Bi-weekly measurements were obtained from a cohort of seventy plants growing at 17-21 m depth off Santa Catalina Island, California, beginning with the undivided lamina stage and continuing until plant death or loss. Pelagophycus is an annual, as 86% of the cohort disappeared within 12 months. Stipe elongation rates of the cohorts had a maximum mean rate of 0 multiplied by 7 cm/d from July through November. The zone of greatest blade elongation was 10-30 cm from the blade-stipule junction. Blade growth ranged from 5 multiplied by 1-6 multiplied by 5 cm/d during July and August, and 2 multiplied by 7-3 multiplied by 2 cm/d from January through March. Rates of stipe elongation and blade growth in naturally occurring Pelagopycus x Macrocystis hybrids were similar to Pelagophycus , but longevity was lower.
population studies/growth patterns/growth/hybrids/survival/USA/ California Coast/Pelagophycus porra/Pelagophycus/Macrocystis/INE/USA/ California/Santa Catalina I./ASFA.

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Address: Calif. State Univ., Los Angeles, Calif., USA Conference: Pacific Coast paleogeography symposium 3; Cenozoic paleogeography of the western United States. Anaheim, Calif., March 15-16, 1979.
igneous rocks/absolute age/petrology/volcanic rocks/dates/geochemistry/Conejo Volcanics/Miocene/Neogene/Tertiary/genesis/K Ar/pillow lava/pyroclastics/clastic rocks/lava flows/plugs/intrusions/andesite/andesite-rhyolite family/dacite/basalt/basalt family/dikes/Transverse Ranges/Santa Monica Mountains/Channel Islands/geology/igneous petrology/metamorphic petrology.

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BRAY/MURRAY/ALGAE/MARINE SPERMATOPHYTES/TEXT/MINERALS MANAGEMENT SERVICE.

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The adjustment of the eastern coastal zone of an inviscid ocean with vertical walls to a change in wind conditions occurs in two stages. After the propagation of a Kelvin wave across the forced region in a time T sub(k) which is of the order of a day or two, the coastal upwellingzone is temporarily in equilibrium with the wind. Further adjustment occurs after a time T sub(R), which is of the order of a few months, when westward Rossby dispersion of the

coastal jet becomes important. These time scales define three frequency ranges that characterize the response to fluctuating winds with period P. 1) At high frequencies (P less than or equal to T sub(k)) short Kelvin waves can destroy coherence between the forcing and response. 2) At intermediate frequencies (T sub(k) much greater than P < T sub(R)) long Kelvin waves from the boundary of the forced region establish an equilibrium response so that the ocean and atmosphere are practically in phase. 3) At low frequencies (P much greater than T sub(R)) the offshore scale is the distance Rossby waves travel in time. It is proposed that the California Current system is generated in this manner.
boundary currents/coastal upwelling/upwelling/coastal waters/wind-driven circulation/wind effects/ASFA.

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California/Mineralogy/Fulgurites/San Clemente Island/Physiographic geology/GEOREF.

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Address: Inst. of Geochemical Research & Environmental Science, Dept. of Geology, California State Univ., Los Angeles, CA 90032.
Volcanic rocks of mixed tholeiitic to calc-alkaline affinities were generated during mid-Miocene times in the southern California Borderland. The volcanic eruptions ranged in composition from basalt to rhyolite with basalt to basaltic andesite dominating. The onshore volcanic suites (Conejo, Santa Cruz Island, Santa Catalina) and offshore volcanic suites show similarities in their major-element (K"SUB 2"O, TiO"SUB 2", FeO"SUP *"/MgO) and isotopic composition ("SUP 87"Sr/"SUP 86"Sr 0.7024-0.7020 for fresh samples) suggesting similar petro-tectonic histories. Where discrepancies exist, sea-water and/or continental margin interactions appear to provide viable explanations of deviations observed in the geochemical signatures of the volcanic suites. The observed Sr isotopic compositions, trace-element and major-element characteristics provide clues to the evolution of microplate tectonics in the southern California borderland as well as the transition from a subduction complex to a mid-ocean ridge/subduction interaction during mid-Miocene time.
volcanic rocks/Miocene/volcanic eruptions/microplate tectonics/subduction Conejo/Santa Cruz Island/Santa Catalina Island/geology.

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From October 1978 to October 1979, a series of current and temperature observations was gathered in 75 m of water on the

continental shelf off Isla de Todos Santos in the pacific coast of northern Baja California. Current meters were deployed at 25 m and 60 m throughout the period and at 42 m from 17 January 1979. During eleven days in June 1979, measurements were made at six additional levels at same site. In April, May and June, observations were obtained at 25 m and 60 m at similar shelf site off Cabo Colonet, B.C. 100 km further south of Isla Todos Santos. The data set is displayed and summarized in the form of time series plots. Simple statistics, histograms and progressive vector diagrams. Information on the mooring techniques is included.
current measurement/current charts/current data/mooring motion effects/temperature data/graphs/ISE/Mexico/Baja California/current data/statistical analysis/ASFA.

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2674. Hurst RW, Wood WR, Hume M. The petrologic and tectonic evolution of volcanic rocks in the southern California borderland; a transitional tectonic environment. E.G. Frost, D.L. Martin. Mesozoic-Cenozoic tectonic evolution of the Colorado River region, California, Arizona, and Nevada. : Cordilleran Publ.; 1982. 287-297.
Address: Calif. State Univ., Dep. Geol., Los Angeles, CA, USA.
igneous rocks/magmas/tectonophysics/structural geology/volcanic rocks/differentiation plate tectonics/tectonics/genesis/fractional crystallization/East Pacific Rise/North American Plate/continental margin partial melting/oceanic crust/island arcs/mid-ocean ridges/triple junctions Santa Barbara County/Ventura County/Los Angeles County/Santa Monica Mountains/Santa Cruz Island/Santa Catalina Island/structural geology.

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In late 1984 the University of Southern California plans to conduct its first science mission from a new saturation diving-habitat complex at Santa Catalina Island, California. The Western Regional Undersea Laboratory Program will consist of a 9-foot diameter, 40-foot long habitat attached to a baseplate in 70 feet of water, and will allow aquanauts access to a variety of substrates and habitats including large kelp beds, rocky reefs, and a highly productive soft-bottom area. Typical missions will include studies on algae physiology, animal behavior, physical/biological interactions, resource development, pollution, human physiology, gear development and archaeological survey methods. Emphasis will be placed on long- and short-term experimental work, and will be oriented toward making maximum use of the available study sites and the need for saturation capability.
deep sea diving/training/test facilities/scientific personnel/marine ecology/diving physiology/California/USA/California/Santa Catalina Island/US/Univ. Southern California/Santa Catalina Island/ASFA.

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N; Bibliography of North American Geology (1785-1970). California/Physiographic geology/Santa Catalina Is./Santa Catalina Is. terraces/Terraces/GEOREF.

2678. Hyland J. Monitoring potential environmental effects of oil and gas development and production in the Santa Maria Basin. G. St. Amant. Proceedings of a symposium/workshop on the marine environment of Santa Barbara and its coastal waters. NOAA Technical Memorandum NOS/MEMD No. 23. ; 1988. 44-49. A study was conducted to investigate the initial environmental effects of an offshore oil and copper spill resulting from the sinking of the freighter Pac Baroness approximately 19 km southwest of Point Conception. oil/copper/Pac Baroness/benthic monitoring/environmental impacts/petroleum/Point Conception/water quality/pollution/marine biology/resource management.

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prey/escape behavior/orientation/feeding behavior/morphology/morphology (organisms)/Euphausiidae/Triphoturus mexicanus/Triphoturus nigrescens/ASFA.

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N; Bibliography of North American Geology (1785-1970). California/Historical geology/Catalina Is./Physical geology/Catalina Is. emergence/Diastrophism/Terraces/Tertiary/GEOREF.

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oil/copper/Pac Baroness/benthic monitoring/environmental impacts/Point Conception/marine biology/pollution/petroleum/water quality/resource management.

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Sebastes paucispinis/bocaccio/ichthyoplankton/habitat/distribution/early life history/larvae/community/fish/Cross/MINERALS MANAGEMENT SERVICE.

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Ichthyoplankton/seasonality/geographic/spawning/northern anchovy/hake/jack mackerel/Engraulis mordax/Merluccius productus/Trachurus symmetricus/fish/MINERALS MANAGEMENT SERVICE.

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The horizontal variability of zooplankton biomass was sampled using a multiple opening-closing plankton net. Thirty-eight plankton hauls were taken over four days and three nights, at 90 m depth, 350 km west of San Diego, California. Temporal pattens showed a day-night change but no finer temporal structure was apparent. No spatial pattern was found on scales of 100m-2.4 kilometres in either day or night samples. However, linear trends resulting from larger-scale variability, were present throughout the sampling period. The data fit a longnormal distribution well, but fit a normal distributions almost as well, indicating that the biomass distributions were not strongly skewed. Small changes in net depth did not significantly influence the observed spatial pattern. If predators upon zooplankton are food generalists, those predators' food supply would be predictable on scales of less than 2.4 kilometres due to the dominance of larger scale variability.
zooplankton/biomass/INE/California Current/ISE/California Current/horizontal distribution/diurnal variations/ASFA.

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Results obtained to date provide a basis for beginning to understand environmental processes and relations that will be important in detecting and interpreting any subsequent impacts caused by oil and gas development and production activities in this region of the California OCS. Much of the predrilling chemical, physical, and biological data generated to date in this program demonstrate that impacts of discharges from oil and gas operations should be detectable, if they occur, and should be distinguishable from natural environmental variability. oil and gas development and production/offshore monitoring/fate and effects of drilling discharges/long-term environmental impacts/Santa Maria Basin/petroleum/water quality/pollution/marine biology/resource management.

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invertebrates/MINERALS MANAGEMENT SERVICE.

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A brief, but intense, heat wave on 9 June 1979 caused catastrophic chick mortality in a populaton of Western Gulls (Larus occidentalis) on Santa Barbara Island, California, USA. Mortality ranges from 0 to 90% in different areas of the colony. Mortality was not a functon of the amount of vegetation cover available to chicks, nor did chick age or size affect the probability of mortality during the heat wave. In the absence of a heat wave, chick mortality due to heat stress is rare in this population. Microclimate analysis in 1980 showed that the area of high chick heat stress mortality in 1979 was characterized by higher ground and air temperatures and lower wind velocities than the area of low mortality. The persistent nesting by gulls in areas of high potential chick mortality cannot be explained by habitat shortage or by the competitive inferiority of those birds. Enhanced access to food resources may explain the presistence of one area, but not of several others. The present nesting distribution of gulls on the island has probably not evolved in a regime of frequent heat waves, but rather in response to a long period of highly equable climatic conditions.
colonies/juveniles/mortality/thermoregulation/heat stress/USA/California/Santa Barbara Island/biological stress/temperature effects/mortality causes/Larus occidentalis/INE/USA/California/Santa Barbara Island/ASFA.

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Cooperative Oceanic Fisheries Investigations during the years 1966 through 1979.
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fish/Cross Allen TEXT/MINERALS MANAGEMENT SERVICE.

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Studies on the distribution of first-feeding larval anchovy and their food were made to test the hypothesis that the upper mixed layer of the ocean must be in a stable (non-turbulent) state for survival of enough larval anchovy to insure the production of a good year-class. Turbulent conditions destroy food aggregations and dilute potential food organisms to below feeding threshold concentrations of first-feeding larval anchovies. Surveys during the anchovy spawning season of 1975, 1976, and 1978 provided data supporting this hypothesis. Food of first-feeding larval anchovies became limiting when storms (1978) or drastic upwelling (1975) occurred which diluted food aggregations. A complicating factor was that nutritionally inadequate larval fish food could be occasionally overwhelmingly dominant in the larva's environment (1975). The drought year (1976) was characterized by stable conditions in the Southern California Bight and produced one of the best of the last 16 anchovy year-classes; 1975 produced one of the worst. Partial success of the anchovy year-class in 1978 is predicted based on the onset of stable conditions and food aggregations in the latter part of the spawning season.
recruitment/environmental factors/fish larvae/food availability/feeding/upwelling/stock assessment/population dynamics/hydrology/Engraulis mordax/INE/California Current/California Current/ASFA.

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Address: Ocean Sci. Div., Nav. Res. Lab. Washington, DC 20375, USA. Particulate aerosol size spectra obtained during the CEWCOM-78 exercise (8-22 May 1978) at San Nicolas Island, California, are presented for the particle size range 0.7- to 45- m diameter, as measured with a PMS Axially Scattering Spectrometer Probe. In addition, an informal account of the daily meteorological and visibility conditions as observed visually from several vantage points on the island is given to help in the interpretation of the

aerosol and optical data collected during the measurement session. These observations point out: (1) the need for slant path optical transmission measurements due to the generally strong, vertical gradient in visibility in the lowest 300 m or so above sea level (2) the general susceptibility of Sites A and D to surf-generated aerosols and the additional susceptibility to dust for winds above 10 m/s (3) the suitability of the upper two levels of the NRL tower for representative aerosol measurements, except possibly during near calm wind conditions (4) the suitability of SNI as a site for obtaining optical transmission measurements in maritime clouds and (5) the existence of a newly observed phenomenon in which the downward vortex of air behind large, breaking or cresting waves in high-wind situations prevents much of the crest-generated spray from becoming airborne. This mechanism may help explain the recently reported cases where the particle concentrations are lower and the visibilities are better in high-wind situations than is to be expected from aerosol models, where particle number densities. increase indefinitely with wind speed.
aerosols/particle size/weather conditions/optical properties/winds/clouds San Nicolas Island pollution/air quality/atmospheric sciences/meteorology.

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The plankton collections analyzed for this study correspond to the monthly California Cooperative Oceanic Fisheries Investigation (CalCOFI) cruises of 1954, 1956, 1958. These years were selected because they were respectively "slightly colder", "colder", and "warmer" then the long-term average for the California Current. The total plankton was analyzed for species of Chaetognatha, Siphonophorae, Chondrophorae, Medusae and Ctenophora. Predation by these zooplankters has been observed frequently by planktologists, who find larvae in various stages of digestion in the guts of these predators, which are more effective on actively swimming large fish larvae than on relatively passive yolk-sac larvae. Data on the distribution and abundance of larvae of the northern anchovy (Engraulis mordax) were compared with concentrations of predator species. While analyzing collections for the five groups of invertebrate predators, information was also taken on other zooplankton groups which occurred abundantly in the collections; Copepods, Euphausiids, Decapod larvae, Pteropods, Heteropods, Polychaetes, Salps, Doliolids and Pyrosomes.
larvae/abundance/distribution/predators/zooplankton/USA/California Coast/fish larvae/California Coast/Engraulis mordax/INE/USA/California/ASFA.

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California/Paleontology/Helminthoglypta/Gastropoda/Quaternary/California./GEOREF.

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Particulate aerosol size spectra obtained during the CEWCOM-78 exercise (8-22 May 1978) at San Nicolas Island, California, are presented for the particle size range 0.745 micrometers diameter as measured with a PMS Axially Scattering Spectrometer Probe. In addition, an informal account of the daily meteorological and visibility conditions as observed visually from several vantage

points on the island is given to help in the interpretation of the aerosol and optical data collected during the measurement session. These observations point out: (1) the need for slant path optical transmission measurements due to the generally strong, vertical gradient in visibility in the lowest 300m or so above sea level, (2) the general susceptibility of Sites A and D to surf-generated aerosols and the additional susceptibility to dust for winds above 10m/sec, (3) the suitability of the upper two levels of the NRL tower for representative aerosol measurements except possibly during near calm wind conditions, (4) the suitability of SNI as a site for obtaining optical transmission measurements in maritime clouds, and (5) the existence of a newly observed phenomenon in which the downward vortex of air behind large, breaking or cresting waves in high wind situations prevents much of the crest-generated spray from becoming airborne. This mechanism may help explain the recently. reported cases where the particle concentrations are lower and the visibilities are better in high wind situations than is to be expected from aerosol models where particle number densities increase indefinitely with wind speed.
Aerosols/Marine meteorology/Sprays/Micrometeorology/Particle size/Surf/Clouds/Cloud cover/Fog/Meteorological phenomena/Visibility/Pacific Ocean Islands/Measurement/Sea spray/San Nicolas Island/Atmospheric Sciences/Meteorology/air quality/pollution.

2703. Brewer GD, Lavenberg RJ, McGowen GE. Abundance and Vertical Distribution of Fish Eggs and Larvae in the Southern California Bight: June and October 1978. THE EARLY LIFE HISTORY OF FISH: RECENT STUDIES.; RAPP. P.-V. REUN. CIEM 1981;178:p.165.
Ten transects and four stations per transect at depths of 8, 15, 22 and 36 m were sampled as well as four stations in San Diego Bay and four stations in Los Angeles Harbor. For this preliminary report, ichthyoplankton abundance and distribution were analyzed from samples of all oblique tows (46 samples) collected during June 1978 and oblique tows and discrete-depth tows from transects 80, 87, and 95 collected during October 1978 (12 stations; 48 samples). Over 66% of all larvae collected from the discrete-depth samples during October were taken from the epibenthic strata, based on numbers per 1000 m super(3). Sixty-eight percent of the eggs collected in the same samples were found in the neuston. All dominant families, except the atherinids and blenniids, were most abundant in the epibenthic samples. However, at the 36 m stations, relatively more larvae occurred in the mid-depth samples. Abundance of total larvae, estimated from oblique tows at each station, was not significantly different from estimates based on combined neuston, mid-depth, and epibenthic samples. The oblique tows yielded lower estimates of egg densities and lower estimates of neustonic larvae (i.e., atherinids) relative to the combined discrete-depth samples.
abundance/vertical distribution/fish eggs/fish larvae/check lists/community composition/marine fish/ichthyoplankton surveys/California Coast/San Diego Bay/species composition/Pisces/developmental stages/USA/California Coast/INE/San Diego Bay/INE/USA/California/Los Angeles Harbor/Los Angeles Harbor/ASFA.

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N; Bibliography of North American Geology (1785-1970). California/Areas described/San Miguel Is/GEOREF.

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University; 1986. 141.
Fish cleaning by shrimp has received little research effort to date compared to fish cleaning by fish, and no comprehensive quantitative study of fish cleaning by shrimp has yet been recorded. The present study, through field and laboratory observation including quantitative event recording of behavioral interactions, quantifies and compares the cleaning behavior of five cleaner shrimp. The five species of cleaner shrimp are from three families (Stenopididae, Hippolytidae, Palaemonidae). Stenopus hispidus and Lysmata grabhami were studied in Hawaii, Lysmata californica was studied in Southern California, and Periclimenes pedersoni and Periclimenes yucantanicus were studied in the Caribbean. Nine individual shrimp from each species were tested with three different host fish species for a total laboratory observation time of 3 h/individual and 27 h/shrimp species. In addition to the laboratory observations, over 50 h of qualitative observations were made in the field using SCUBA. Laboratory observations were recorded using a computerized 16 channel event recorder and software collectively known as BEAST (Behavior Analysis and Acquisition System--Windward Technology, Kaneohe Hawaii). Fish cleaning by shrimp was only a small part (1 to 5%) of the shrimp's time budget. Fish hosts spent more time than did the shrimp in cleaning related behaviors. Also, the data indicate that the difference in cleaner shrimp. performance is due to the hosts evaluation of the cleaner shrimp as a cleaner. There appears to be an association between the number and duration of host poses and the shrimp response times. Shrimp that responded seemed to get more poses. It appeared that host pose generally initiated a cleaning session. Although shrimp cleaning behavior was qualitatively stereotypic, the five shrimp species studied differed quantitatively in stimulus-response time and in amount of fish cleaning. The genus Lysmata had both the best (Lysmata grabhami) and the worst (Lysmata californica) cleaner. The cleaners most widely distributed geographically had the highest CEI (Cleaning Efficiency Index) scores, while the most localized cleaner had the lowest CEI.
fish cleaning by shrimp/cleaning behavior/cleaner shrimp/Lysmata californica/marine biology.

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mining/natural resources/continental shelves/mineral deposits/government policies/mineral economics/sand/gravel/phosphate deposits/sedimentary rocks/California/limestone/San Miguel Island/Santa Rosa Island/santa Cruz Island/Anacapa Island/Eganhouse/chemical oceanography/MINERALS MANAGEMENT SERVICE.

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Investigations of the colonies of western gulls on Santa Barbara Island, California, have revealed a surplus of females and the occurrenceof female-female paris that produce clutches with as many as six eggs. Females are able to establish and defend breeding territories, behaviours generally thought to be under the control of androgens. Only females sampled in 1977, in both homo- and heterosexual pairs, have elevated plasma levels of oestrogens, in spring, coincident with the period in which they show courtship behaviors such as food begging and solicitation of copulation.

Given a sex ratio skewed in favour of females, as is apparently the case with the colonies of this species onSanta Barbara Island, and the essentially equal plasma levels of androgens in males and females, it is not difficult to rationalize the formation of female-female pairs. These findings do not support the hypothesis that female-female pairing involves hormonal masculinization of one mumber of the pair.
sex ormones/homosexual behavior/females/sexual behavior/endocrinology/Larus occidentalis wymani/INE/California/Santa Barbara Island/effects on/ASFA.

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land bridge/food/stress/fire/vision/olfaction/genetic variability/swimming/Quaternary/paleogeography/Cenozoic/biogeogra phy/stratigrap hy/evolution/Santarosae/transgression Proboscidea/Elephantidae/island mammoths/Mammuthus exilis/Northern California Channel Islands/Santarosae paleozoology/mammalogy/vertebrate paleontology/terrestrial biology.

2710. Lynn RJ. Seasonal variation of temperature and salinity at 10 meters in the California current. Calif. Coop. Oceanic Fish. Invest. Rep. 1967;11:157-186.
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salinityanomalies/california current/annual variations/temperature anomalies/Hickey/physical oceanography/abstract only/geopotential anomaly/MINERALS MANAGEMENT SERVICE.

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Anchovy Population in the Southern California Bight: Comparison of Time Series. LIMNOL. OCEANOGR 1982;27(1):1-17.
Two new time series for the Southern California Bight are presented: anchovy biomass, 1951-1979, and primary production, estimated for the years 1920-1979 from 15 cruises conducted between 1974 and 1979. Annual and longer term averages show little relationship to each other except that values for both were low in the climatically warm water years 1957-1958. The primary production time series is similar to two existing time series: CalCOFI zooplankton in the bight and microplankton in Santa Monica Bay, 1951-1966. Thus estimated primary production does reflect the carrying capacity of these waters for lower trophic level consumers. Seasonal averages of anchovy larvae are highest in the winter and spring quarters when primary production is increasing. Interannual variation was pronounced in both seasonal average primary production and seasonal average abundance of anchovy larvae.
primary production/secondary production/time series analysis/ecological efficiency/abundance/energy flow/trophic levels/USA/California Coast/Engraulidae/INE/Southern California Bight/effects on/ASFA.

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California/Paleontology/Foraminifera/GEOREF.

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text/fish/birds/recruitment/environmental/factors/fish larvae/food availability/upwelling/stock assessment/engraulis mordax/zooplankton/pieper/cross/allen/baird/MINERALS MANAGEMENT SERVICE.

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California/Paleontology/Santa Cruz Is. flora/Paleobotany/Santa Cruz Is./Calif./Quaternary/California./Floras/GEOREF.

2721. Johnson GF, deWit LA. Ecological effects of an artificial island, Rincon Island Punta Gorda, California. : Army

Coastal Engineering Research Center Miscellaneous Report No. MR-78-3. DACW 72-76-C-0011; 1978. 108. Address: Dames and Moore, Los Angeles, CA. Address: Dames and Moore, L.A., CA 90024.
Marine ecological conditions at Rincon Island, located approximately 0.8 kilometer offshore between Ventura and Santa Barbara, California, in a depth of 14 meters are documented. The island, which was constructed between 1957 and 1958 to serve as a permanent platform for oil and gas production, is particularly suitable for ecological study. Habitat features associated with the armor rock and concrete tetrapods surrounding the island support a 'microecosystem' which differs in biotic composition from surrounding natural bottom areas. A major part of the study is devoted to analysis of seasonal dynamics in biotic composition. Data analysis indicates that many species exhibit significant variability in abundance from one season to the next. Other studies include a gill net survey of fish fauna, mapping of mussel 'talus' beds at the base of the island, and a survey of biota along a natural bottom transect between the island and shore. In general, the findings indicate a rich and varied fauna and flora associated with the high-relief solid substrate of Rincon. Island which differs substantially from the more depauperate natural bottom habitats in the area. (Sinha-OEIS).
Ecology/Offshore platforms/Environmental effects /Water quality/Outer Continental Shelf/Artificial Islands/Resources development/Biota/Water resources /California/Oil wells/Ecological effects/artificial reefs/manmade/eslands/sediments/aquatic organisms/platforms/population composition/population parameters/species diversity/seasonal variations Rincon Island/offshore between Ventura and Santa Barbara petroleum/marine biology.

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Sebastes paucispinis/bocaccio/ichthyoplankton/larvae/distribution/seasonality/early life history/fish/Cross/Allen TEXT/MINERALS MANAGEMENT SERVICE.

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Rates of sediment ingestion and organic matter uptake by Parastichopus parvimentsis , an epibenthic deposit-feeding holothurian have been examined in relation to intraspecific patterns of age-size distribution, differences in sediment type ingested, seasonal variations in temperture and annual evisceration events. Individuals living in areas of rock rubble along cove margins in the vicinity of the Isthmus, Santa Catalina Island, southern California were 27% smaller and seven times more numerous than holothurians living on granular sediments on cove bottoms. Animals feeding on granular sediments consume almost eight times the quantity of organic matter per animal per day than those feeding on sediment from rock surfaces. P. parvimensis is non-selective with respect to grain size ingested. By only ingesting the top few millimeters of sediment it does, however, exploit the sediment layer with the highest and most readily utilizable organic matter. Annual evisceration events, which affected 60% of the population during Oct. and Nov., caused a cessation in feeding for

similar to 4 weeks until minimal gut connections were formed, and can result in an annual decrease of 10% in rates of sediment reworking and organic matter removal by the entire population. ingestion/sediments/environmental factors/organic matter/age composition/size distribution/detritus feeders/deposit feeders/California Coast/USA/California/Santa Catalina Island/Parastichopus parvimensis/INE/USA/California/Santa Catalina Island/feeding behavior/Santa Catalina Island/ASFA.

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Direct field measurements of the feeding of five schools of northern anchovy (E. mordax) over four sets of conditions indicate consistent size-selective feeding on the dominant zooplankton taxa. At low-to-moderate prey concentrations (10-40 mg carbon per cubic meter), the schools consumed 35-50% of the total zooplankton biomass and >90% of the largest zooplankters present. The schools' feeding was a positive function of prey size primarily. The density of particular prey items did not significantly affect feeding selectivity. The northern anchovy fed preferentially upon a particular species in only one instance. No significant difference was found in the selectivity of two northern anchovy schools composed primarily of late 0-group and II-group fish, respectively,

that were feeding under similar feeding conditions. At prey concentrations of 10-40 mg carbon per cubic meter, the degree of selectivity was inversely related to the size of the largest prey available. The prey size at which consumption is predicted to be 100% was proportional to the size of the largest prey.
feeding behavior/Engraulis mordax/INE/USA/California/ASFA.

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The reproductive cycles of these 2 closely related calcareous sponges were studied to determine whether they were reproductively isolated. Populations of both species were sampled at Santa Catalina Island, California, for 2.5 yr. The reproductive period is from July to Oct. in C. coriacea and from Apr. to Aug. in C. blanca. Seawater temperature and habitat influence reproduction in both species. Fragmentation occurs in C. coriacea in summer, while asexual reproduction by budding is seen in C. blanca throughout the year. The 2 sponges are separate species.
Sexual Reproduction/Seawater temperatures/Habitats/reproductive isolation/temperature effects/asexual breeding/fragmentation/life cycles/oogenesis/embryonic development Porifera/Calcareous Sponges/Clathrina coriacea/Clathrina blanca/Santa Catalina Island/marine biology.

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Address: LGL Ltd., Environmental Research Assoc., 103 Pleasant St., Bryan, TX 77801.
Maturing oocytes were observed in C. blanca between Apr. and June in 1973 and 1974, and between Apr. and Aug. in 1975. In C. coriacea reproductive elements were seen from July to Sept. in 1973, from July to Aug. in 1974, and from July through Oct. in 1975. Oogenesis is asynchronous in the 2 closely related species C. coriacea and C. blanca. Spermatogenesis was not observed. Cleavage is total and equal, resulting in the formation of a blastula larva. The larva of C. coriacea contains one large posterior granular cell, whereas 2 posterior granular cells are present in the larva of C. blanca. Migration of the larval blastomeres into the blastocoel begins while the larva is in the tube of the parent sponge. The differences in the eosinophilic amebocytes, the number of posterior granular cells in the larvae, and the dimensions of the oocytes and larvae, in addition to the differences in the reproductive period between C. coriacea and C. blanca, reaffirm that the 2 sponges are separate species.
Gametogenesis/Embryology/Larvae/Oogenesis/Taxonomy/posterior granular cells/cleavage/blastula/reproductive biology/asynchronous oogenesis/cleavage/blastula Porifera/Clathrina coriacea/Clathrina blanca/sponges/ Santa Catalina Island/marine biology.

2733. Tont SA, Delistraty DA. The Effects of Climate on Terrestrial and Marine Populations. REP. CCOFI 1980;21:85-89.
The variability associated with marine populations in the

California Current system is largely due to climatic fluctuation. The interplay of short (upwelling) and longer term (water mass influx) changes in the physical environment have been shown to regulate diatom blooms. In most cases, however, the mechanisms involved in climatic-biological interaction are not yet clear. climate/environmental impact/marine organisms/upwelling/algal blooms/Bacillariophyceae/INE/California Current/ISE/California Current/ASFA.

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2735. Johnson MF. A comparative study of the external form and skeleton of the calcareous sponges Clathrina coriacea and Clathrina blanca from Santa Catalina Island, California, USA. Can. J. Zool. 1978;56(8):1669-1677 Address: LGL LTD. US INC., 103A PLEASANT ST., BRYAN, TEX. 77801. The external morphology and skeleton of C. coriacea (Montagu) and C. blanca (Miklucho-Maclay) from Santa Catalina Island, California [USA] were studied to determine whether the differences taken as a whole were consistent and justified the separation into 2 distinct species. C. coriacea is an encrusting sponge, whereas C. blanca is pedunculate in form. The diameter of the uncontracted anastomosing tubes is significantly greater in C. coriacea. The skeleton of the 2 sponges consists of equiangular triradiate spicules; these are more sagittal in C. blanca. The junction of the spicule rays is more nearly planar in C. coriacea than in C. blanca. The spicule dimensions are significantly greater in C. coriacea. These differences in external morphology and skeleton between the 2 sponges and the lack of intergrading forms indicate that separate specific names are justified.
Species differences/spicules/taxonomy/morphology/skeleton/Porifera/calcareous sponges/Clathrina coriacea/Clathrina blanca/Santa Catalina Island/marine biology.

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There are six species of pinnipeds - California sea lion, Zalophus californianus ; northern sea lion, Eumetopias jubatus ; northern fur seal, Callorhinus ursinus ; Guadalupe fur seal, Arctocephalus townsendi ; harbor seal, Phoca vitulina richardsi ; and northern elephant seal, Mirounga angustirostris - that inhabit the study area of the California Cooperative Oceanic Fisheries Investigations (CalCOFI). The numbers of animals in each population are given; the size, distribution, and seasonal movements are described. The known prey species of the pinnipeds are listed for each species. The otariids, with certain exceptions, consume the same kinds of prey, although in slightly different amounts. In general they feed most

commonly on the smaller schooling fishes and squids of the epipelagic zone, and the two sea lion species enter nearshore and estuarine waters to prey on small schooling and anadromous fish. The two phocids, again with certain excepions, prey on different species. The elephant seal apparently feeds in deeper water than the harbor seal on benthic and demersal species and the harbor seal on nearshore demersal and neretic species, occasionally entering estuarine and river waters to prey on anadromous fish and such small schooling fishes that regularly enter these waters.
morphology (organisms)/geographical distribution/migrations/predators/food preferences/food fish/population number/Pinnipedia/Zalophus californianus/Eumetopias jubatus/Callorhinus ursinus/Arctocephalus townsendi/Phoca vitulina/Mirounga angustirostris/INE/California Current/ISE/California Current/IE/marine ecology/ASFA.

2739. Kew WSW. Geologic sketch of Santa Rosa Island, Santa Barbara County, California. Geol. Soc. America, Bull. 1927;38(4):pp.645-653 N; Bibliography of North American Geology (1785-1970).
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Address: LGL ECOLOGICAL RES. ASSOCIATES, 1410 CAVITT ST., BRYAN, TEX 77801. Habitats of 2 closely related calcareous sponges, C. coriacea (Montagu) and C. blanca (Miklucho-Maclay), from Santa Catalina Island, California are described. In submarine caves, C. coriacea grows in areas exposed to greater illumination and wave action than C. blanca. The 2 sponges occur adjacent to one another at some locations.
illumination/wave action/habitat/ecological distribution Porifera/calcareous sponges/Clathrina coriacea/Clathrina blanca/Santa Catalina Island/marine biology.

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NOTES Incl. Bibliogr: 93 ref.

The authors discuss in detail the possibilities of incorporating environmental effects into fishery models for fishery management use. The definition of environmental variation is given and population biology considerations are described. Recent advances in the analysis of the fisheries of the Californai Current region are presented.
fishery management/environmental factors/population dynamics/upwelling/stock assessment/marine fisheries/Pisces/INE/California Current/ISE/ California Current/mathematical models/eastern boundary currents/ASFA.

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California/Physiographic geology/Santa Barbara channel islands/GEOREF.

2745. Johnson NK, Marten JA. Evolutionary genetics of flycatchers II. Differentiation in the Empidonax difficilis complex. Auk 1988;105(1):177-191 Address: MUSEUM VERTEBRATE ZOOLOGY, UNIV. California, BERKELEY, CALIF. 94720. We used starch-gel electrophoresis to assess variability at 41 genetic loci in 208 individuals from 11 breeding populations of the Western Flycatcher (Empidonax difficilis) complex. Genic variability was substantial in most populations and equivalent to levels found in other avian taxa. A sample of E. d. insulicola from Santa Catalina Island [California, USA], however, showed reduced heterozygosity and an unusually low percentage of polymorphic loci. We attribute this to a bottleneck at the time of the original colonization. Nei's genetic distances among populations of one taxon ranged from .hivin.D = 0.0003 (in E. d. difficilis) to .hivin.D = 0.0033 (in E. d. hellmayri). Intertaxon Nei's .hivin.D ranged from 0.009 (E. d. insulicola vs. D. d. difficilis) and 0.0149 (E. d. difficilis vs. E. d. hellmayri) to 0.0228 (E. d. insulicola vs. E. d. hellmayri). Fst statistics revealed significant population subdivision within the complex. With Slatkin's rare-allele method we estimated the gene-flow parameter, Nm. Mainland populations experience moderately high gene flow (9.62 immigrants/generation). In contrast, Santa Catalina Island receives an estimated 0.093 immigrants/generation, pointing to very low gene flow and essential genetic isolation. Genetic distances yielded phenograms and distance. Wagner trees that provide hypotheses for the relationships and phylogenesis of populations in western North America. The lineage leading to modern E. d. difficilis split from that leading to E. flavescens in the mid-Pleistocene at 866,800 yr BP; the ancestors of modern E. d. difficilis diverged from those of present-day E. d. hellmayri at 248,700 yr BP; and the stock leading to modern E. d. insulicola budded from the lineage that became E. d. difficilis in the late Pleistocene, approximately 187,000 yr BP. Empidonax d. difficilis and E. d. hellmayri nest sympatrically and mate assortatively in the Siskiyou region of northern California. Interbreeding has not been demonstrated conclusively, and we regard these taxa as biologic species. In the absence of a test of sympatry, the well-differentiated form E. d. insulicola of the California Channel Islands cannot be proved to be a biologic species. It is clearly a phylogenetic species, however, in the sense of Cracraft.
population variation/gene flow/Slatkin's rare allele method/Nei's genetic distance/genetic variability phenogram/taxonomy/electrophoresis/Pleistocene Empidonax/flycatchers/Empidonax difficilis difficilis/Empidonax difficilis insulicola/Empidonax difficilis hellmayri/Empidonax flavescens/Santa Catalina Island/terrestrial

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2748. Smith WST. The geology of Santa Catalina Island. Cal Ac Sc 1897;Pr (3) G 1.:p.1-71
N; Bibliography of North American Geology (1785-1970). California/Historical geology/Santa Catalina Island/Petrology/Physiographic geology/Geologic history/Geologic maps/Igneous and volcanic rocks/Physiographic geology general/Migration of divides/GEOREF.

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J
Ecological characterization studies compile existing information (utilizing a holistic approach) that identifies functional relationships among natural processes and components of coastal ecosystems. Some studies have mapped habitat changes from aerial photographs over a 20- to 25-year time period. The studies integrate environmental and socioeconomic information in a form useful for planning, impact assessment and analysis. Studies completed or underway include the Chenier Plain of Southwestern Louisiana and Southeastern Texas, Sea Islands Region of South Carolina and Georgia, Pacific Northwest, Northern and Central California, Mississippi Deltaic Plain, Texas Barrier Islands Region, Rocky Coast of Maine, Northeastern Gulf of Mexico, and Southwestern Florida. Data from the Sabine basin of the Chenier Plain study demonstrated the quantified effects of modifying natural river flow on Sabine Lake and the associated. estuarine area. Navigation channel developments, construction of reservoirs on the incoming rivers, and impoundment of marshes were the primary causes of ecological changes. The Mississippi Deltaic Plain study mapped habitat changes from the mid-1950's to 1978. Many of the habitat changes resulted from the modification of freshwater inflow. The study indicated that over 500,000 acres (202,000 ha) of Louisiana coastal wetlands were lost or altered during the period. The information developed from the ecological characterizations will enable planners to understand and predict the consequences of future alterations in the coastal zone. Ecosystems/Coasts/Estuaries/Planning/Coastal zone

management/Environmental effects/River flow/Channelization /Reservoirs/Marshes/water quality/anthropogenic effects/ecological impacts/Wetlands/Erosion/Ecological effects Freshwater inflow Chenier Plain of Southwestern Louisiana/Southeastern Texas/Sea Islands Region of South Carolina and Georgia/Pacific Northwest/Northern and Central California/Mississippi Deltaic Plain/Texas Barrier Islands Region/Rocky Coast of Maine/Northeastern Gulf of Mexico and Southwestern Florida/Chenier Plain/Mississippi Deltaic Plain/water quality/pollution/resource management.

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Address: U. S. Geol. Surv., Menlo Park, CA, USA; Carnegie Inst. Washington, USA. deformation/tectonophysics/field studies/crust/strain/seismology/observations/dilatometers/boreholes/arrays/eart hquakes/Mojave Desert/San Andreas Fault/San Jacinto Fault/Southern California/Palmdale/California Channel Islands/structural geology.

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2754. Jones GF, Thompson BE. The ecology of Parvilucina

tenuisculpta (Bivalvia: Lucinidae) on the Southern California USA Borderland. Veliger 1984;26(3):188-198
Address: DEP. BIOL. SCI., UNIV. SOUTHERN California, LOS ANGELES, CALIF. 90089. The pelecypod P. tenuisculpta (Carpenter, 1864) is a widely distributed member of the benthos of the southern California borderland where it is a prominent faunal element of every major habitat except the deep basins. In this fairly wide range of environments it lives with a large number of other taxa which may differ markedly from one location to another. The population densities of Parvilucina were highest in 2 very dissimilar environments: the insular shelf of the northern Channel Islands and the central part of the mainland shelf (Santa Monica Bay and San Pedro Bay). The insular shelf is primarily a non-depositional environment where relatively strong currents result in the development of coarse sediments rich in biogenic CaCO3 components. The area is influenced by persistent upwelling The parts of the mainland shelf where population densities of Parvilucina were highest are in equilibrium environments highly influenced by the release of sewage wastewaters. Organic enrichment, in one case upwelling and the other sewage wastewaters, may be the factor responsible for the areas of high population densities.
habitat/population density/sediments/currents/calcium carbonate/upwelling/organic enrichment/sewage/waste water Bivalvia/Lucinidae/Parvilucina tenuisculpta/northern California Channel Islands/Santa Monica Bay/San Pedro Bay/marine biology/malacology.

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An adult giant kelp plant (Macrocystis pyrifera), moved from an inshore kelp forest to an offshore, low-nitrogen environment near Santa Catalina Island, California (USA), maintained growth for 2 wk on internal nitrogen reserves. Frond elongation rates decreased significantly during the third week, and plant growth rate (wet wt) dropped from an initial inshore rate of 3.6 to 0.9% d super(-1). During this 3 wk period, nitrogen contents and free amino acid concentrations decreased, while mannitol and dry contents increased in frond tissues. Net movem ent of nitrogen occurred within large fronds, but not between different frond size classes. The nitrogen content of holdfast tissue remained relatively constant at 2.4% dry wt and accounted for 18 to 29% of the total nitrogen. Holdfast nitrogen was not used to support growth of nitrogen-depleted fronds. In comparison to Laminaria longicruris , which is adapted to long seasonal periods of low nitrogen availability, M. pyrifera has small nitrogen-storage capacity. However, internal reserves of M. pyrifera appear adequate to make nitrogen starvation uncommon in southern California kelp forests.
growth curves/nitrogen/plant nutrition/Macrocystis pyrifera/INE/USA/ California/Phaeophyceae/ASFA.

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California/Economic geology/San Diego Co./Historical geology/Santa Cruz Island/GEOREF.

2757. Jones GF, Thompson BE. The ecology of Cyclocardia ventricosa Gould 1950 (Bivalvia: Caritidae) on the Southern California Borderland, USA. Veliger 1987;29(4):374-383
Address: DEP. BIOL. SCI., UNIV. SOUTHERN CALIF., LOS ANGELES, CALIF. 90089. The pelecypod Cyclocardia ventricosa (Gould, 1850) is a widely distributed member of the benthos of the southern

California borderland. It is particularly prominent in three borderland habitats: the northern portion of the mainland shelf (Point Conception to Pitas Point); the slope adjacent to the central portion of the mainland shelf (Mugu Submarine Canyon to Dana Point), and the shelf of San Miguel and Santa Rosa islands. Its depth range on the borderland was 14 to 574 m, but 75% of the locations where it was collected were in depths of 200 m or less. Within the Amphiodia-Cyclocardia community on the northern portion of the mainland shelf, the dispersion of C. ventricosa was aggregated; elsewhere where densities were lower, randomness characterized its distribution. Aggregated dispersion may be a function of the mode of reproduction of this species, which broods its young rather than having planktonic larvae. Cyclocardia ventricosa is associated with a diverse array of macrofaunal taxa which differ markedly from one habitat to another.
reproduction/community stricture/spatial distribution/habitat pelecypod/Pelecypoda/bivalves/Bivalvia/Cyclocardia ventricosa southern California borderland/Point Conception to Pitas Point/Mugu Submarine Canyon to Dana Point/shelf of San Miguel Island and Santa Rosa Island marine biology/malacology/ecology.

2758. Allredge AL, Silver MW. Abundance and Production Rates of Floating Diatom Mats (Rhizosolenia castracanei and R. imbricata var. Shrubsolei) in the Eastern Pacific Ocean. MAR. BIOL 1982;66(1):83-88.
Abundance and production rates were measured on free-floating mats composed of the diatoms Rhizosolenia castracanei and R. imbricata var. shrubsoleiin the California Current and boundary waters of the central North Pacific during October, 1980. Mats ranged from 3.0 to 10.6 cm in maximum length and had a mean volume of 6.4 ml. Production rates of the diatom mats averaged 4.0 mu g C colony super(-1) h super(-1), more than 10 super(3) times higher than that of an equal volume of surrounding water. However, because of their low density at these sites, about 1 mat m super(-3), diatom mats contributed only about 1% of the total primary production. The two large Rhizosolenia species comprised almost all of the phytoplankton biomass within the mats. Rhizosolenia species rarely occurred in seawater between mats, where the phytoplankton community was dominated by a diverse array of nannoplankton. The Rhizosolenia species in the mats appeared to be in healthy condition and contained intracellular bacteria. The very high production rates of the colonies indicate high nutrient demand and, since these particular diatoms lack the symbiotic cyanobacterium Richelia intracellularis , which is implicated in N-fixation in other species of Rhizosolenia , our results indicate that other nutrient sources must be present. We discuss the potential role of the intracellular bacteria in nitrogen fixation.
primary production/chlorophylls/environmental factors/population number/horizontal distribution/Rhizosolenia castracanei/Rhizosolenia imbricata/INE/California Current/ASFA.

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California/economic geology/oil and gas fields/Pacific Ocean/sedimentary rocks/composition/chemical composition/Sisquoc Formation/Monterey Formation/Rincon Formation/USGS/Miocene/Neogene/Tertiary/lower

Pliocene/Pliocene/Pacific Coast/Western U.S./United States/Southern California/Ventura Basin/Santa Barbara Basin/South Elwood Field/offshore/cuttings/well logging/North American Pacific/major elements/mineral composition/GEOREF.

2760. Jones ML, Swartz SL. Radio-telemetric study and aerial census of gray whales during their southward migration in the Channel Islands National Marine Sanctuary, January 1986. Final report. : Cetacean Research Associates, San Diego, CA.; 1987. 142. ((Sponsored by National Oceanic and Atmospheric Administration, Washington, DC.)).
The Channel Islands National Marine Sanctuary (CINMS) is a tract of ocean, about 1,252 n sq. m, encompassing the waters within 6nm of San Miguel, Santa Rosa, Santa Cruz. This island system is uniquely positioned in the Southern California Bight, being the first islands south of Point Conception where the mainland coast turns east toward Santa Barbara. From January 18 to February 4, 1986, a pilot study was conducted in the CINMS with the overall goal of producing baseline information on gray whales (Eschrichtius robustus) during the peak period of their southward migration. Strip-surveys were flown to determine the abundance, distribution, behavior, and resource use of gray whales in the CINMS. Aerial surveys/Animal migrations/Census/Animal behavior/Spatial distribution/Abundance/Populations/Radio tracking/Baseline studies/Whales/cetaceans/Gray whales/Eschrichtius robustus/California Channel Islands/Channel Islands National Marine Sanctuary/CINMS marine biology/mammalogy.

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Euphasiid crustaceans in the Gulf of California were examined from four biomonthly CalCOFI grid cruises during February through August of 1957. Of the nine species found to regularly inhabit the Gulf, Nematoscelis difficilis and Nyctiphanes simplex are common to the warm-temperate California Current. These have the broadest ranges in the Gulf, peaking in abundance and reproducing maximally during February-April and February-June respectively, before intense August heating takes place in the Gulf. Euphausia eximia , a species having high densities at zones considered marginal to the eastern tropical Pacific, also varies little in range during the year, consistently occupying the southern half of the Gulf. Tropical Nematoscelis gracilis shows a range complementary to that of N. difficilis ; these species overlap in the southern Gulf. Three Euphausia species of the tropical Pacific occupy the southern Gulf in February-April, expanding northward during June-August but, like the cool-water species, scarcely reproducing in the Gulf during the warm season. The distributions and abundances of the species and their life stages, particularly the youngest larvae, are described in relation to seasonal variation in flow and temperature in the Gulf.
zooplankton/geographical distribution/breeding seasons/environmental factors/Euphausiacea/Nyctiphanes simplex/Nematoscelis difficils/Nematoscelis gracilis/Euphausia eximia/Euphausia distinguenda/Euphausia lamelligera/Euphausia tenera/Stylocheiron affine/Stylocheiron carinatum/Nematobranchion flexipes/Euphausia diomedeae/ISE/California Gulf/abundance/ASFA.

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California/stratigraphy/Neogene/geochemistry/strontium/Monterey Formation/Pacific Coast/Western U.S./United States/alkaline earth metals/metals/isotopes/Sr 87/Sr 86/stable isotopes/chronostratigraphy/carbonates/Santa Barbara Basin/reservoir rocks/petroleum/solution/calcite/diagenesis/Tertiary/offshore/cores/dolomite/pr ecipitation/carbon/C 13/C 12/GEOREF.

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maps/continental shelf/continental borderland/structure/structural maps/seismic surveys/geophysical surveys/profiles/sections/explanatory text Southern California/Channel Islands/marine geology/oceanography.

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sediment transport/suspended load/sedimentation/gyres/surface currents/flooding/INE/USA/California/ASFA.

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U. S. Miner. Manage. Serv., Herndon, VA, United-States Fifth Circum-Pacific energy and mineral resources conference, Honolulu, HI, July 29-Aug. 3, 1990 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).
Pacific Coast/economic geology/petroleum/Pacific Ocean/geophysical surveys/seismic surveys/Monterey Formation/Point Arena Formation/data acquisition/Western U.S./United States/Gulf of Alaska/North American Pacific/common depth point method/Tertiary/Washington/Oregon/Southern California/California/Central California/Northern California/Santa Barbara Channel/maturity/reservoir rocks/sandstone/clastic rocks/Santa Maria Basin/Ano Nuevo Basin/La Honda Basin/Bodega Basin/Point Arena Basin/Eel River basin/Kodiak/Shumagin/continental shelf/GEOREF.

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Address: Univ. Calif., Dep. Geol., Santa Barbara, CA, USA; Univ. Ill., Dep. Geogr., Urbana, IL, USA Conference: Multidisciplinary

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biogeography/stratigraphy/oceanography/biostratigraphy/Quaternary/geophysical surveys/Cenozoic/land bridges/seismic profiles/seismic surveys/Pleistocene/mammals/mammalia/Elephantidae/Elephas/Proboscidea/California Channel Islands/surficial geology/quaternary geology.

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organic compounds/sediments/chemical composition/carbon compounds/marine environment/INE/Santa Barbara Basin/ASW/Cariaco Basin/reduction/distribution/ASFA.

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metamorphic rocks/schists/geochemistry/California/petrology/metamorphism/migration of elements/nitrogen/isotopes/N 15/N 14/Catalina Schist/Santa Catalina Island/Pacific Coast/Western U.S./United States/stable isotopes/volatiles/ratios/terranes/GEOREF.

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pollution/fuel resources/offshore/oil spills/Santa Barbara Basin/Santa Barbara Channel/economic/geology/energy sources/engineering/environmental geology/petroleum.

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the amounts accountable in the local surface sediments. Some of this super(238)Pu has undoubtedly migrated outside the region sampled, and dilution of the super(238)Pu with fallout levels in the environment has effectively obscured its detection elsewhere. Subsurface sediment deposits in the region may have inventories of excess super(238)Pu. Analysis of super(238)Pu concentrations in core samples is still in progress. plutonium/pollution monitoring/sea water/sediments/bioaccumulation/USA/ California/San Clemente Island/Phaeophyta/INE/USA/California/San Clemente Island/ASFA.

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Atlantic Ocean/oceanography/sea water/California/organic materials/properties/fluorescence/methods/laser methods/pore water/organic carbon/marine environment/environment/optical properties/fluorimetry/vents/rainfall/hydrothermal conditions/San Clemente Basin/Straits of Florida/Sargasso Sea/Pacific Coast/Western U.S./United States/laser induced fluorescence detector/GEOREF.

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Long serial sequences of macrozooplankton samples from the North

Pacific Central Gyre, the western California Current, and the nearshore area off southern California indicated a strong intraspecific pattern, in that copepodite stages of each of two species in both the nearshore and California Current samples covaried in space. At the same time the authors found interspecific associations in all three areas. In neither case were the associations very strong at particular spatial scales, however. The areas differed in intensity of patchiness of the dominant species but not in characteristic spatial scales of variation, although characteristic scales of distance often differed between day and night within the Central Gyre. There was little indication of pattern in comparisons of the distributions of chlorophyll or of temperature with those of individual categories of zooplankton. When the abundances of the dominant zooplankters in each area were summed, however, this index of the zooplanktonic biomass was related to the distribution of chlorophyll at certain scales in two of the three areas. zooplankton/distribution patterns/associations (ecological)/dominant species/abundance/IN/ASFA.

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California/stratigraphy/Holocene/plants/paleoecology/palynomorphs /miospores/Pac ific Coast/Western U.S./United States/Central California/Santa Barbara Basin/pollen/microfossils/Quaternary/vegetation/forests/GEOREF.

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Geologic observations and previous palaeomagnetic studies have suggested that the W Transverse Ranges arrived at their anomalous E-W orientation by clockwise tectonic rotation. A paleomagnetic study of the N Channel Islands was undertaken, in order to test the extent of rotated areas and to develop constraints on tectonic models concerning the formation of the S California Borderland. The results suggest that the N Channel Islands have been tectonically rotated into place since early(?) Miocene time as the outer borderland area translated northwestward within a large shear zone between the Pacific and N American Plates. tectonic rotation/paleomagnetic study/tectonic models/paleomagnetism/tectonophysics/structural geology/Neogene/stratigraphy/plate tectonics/neotectonics/sedimentary rocks/block structures/Northern California Channel Islands/Anacapa Island/Santa Cruz Island/Santa Rosa Island/San Miguel Island/geology/solid earth geophysics.

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0904753109-04753/209-03045/INE/SA/California/pollution surveys/ANTHROPOGENIC/REISH/eganhouse/chemical oceanography/calcium transport/seawater/phytoplankton/cadmium transport/phosphorus/MINERALS MANAGEMENT SERVICE.

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of the California Current. OCEANOL. ACAD. SCI. USSR 1980;20(3):272-278. The eddy activity of the California current is investigated. The eddies are identified from monthly dynamic topography charts of the free surface and of the 200-db surface, constructed for the period from 1949 to 1965. Twelve cyclonic and 8 to 9 anticyclonic eddies are observed here on the average during a year. Eddy generation is associated with meandering of the core of the current, and also with constant factors such as bottom topography, the shoreline and upwelling conditions in Californian waters. Cyclonic eddies are concentrated primarily in the shore belt, and anticyclonic eddies along the mainstream of the current. The propagation of the latter to the left of the current (looking down-stream) is blocked by the shore. The characteristics of eddy distribution in the California current distinguish its vortex field from the corresponding fields in the Gulf Stream and the Kuroshio. eddies/dynamic topography/meanders/bottom topography effects/upwelling/cyclones/anticyclones/INE/California Current/ISE/California Current/ASFA.

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This paper describes the fabrication, load out, transportation, and installation of the jacket for a platform in the Santa Barbara Channel. The jacket was fabricated in Japan and installed in 318 feet of water off the coast of Ventura, California in 1979. During installation, a falling pile follower caused some damage that required underwater repairs. The presentation includes: (1) Fabrication highlights including lifting a 620-ton panel with only 2 cranes; (2) A load-out that had to be completed within 20 hours; (3) Towing highlights including results from instruments installed on the jacket during a 45 day tow across the Pacific Ocean; (4) Installation highlights including results from strain gages and accelerometers installed on two piles during pile driving; (5) The complete replacement of two structural members damaged during

installation. This was accomplished by dry hyperbaric welding and wet welding in about 100 feet of water. installation/jackets/offshore platforms/towing/Santa Barbara Channel/construction methods/California Coast/Pacific Ocean northeast/INE/Santa Barbara Channel/INE/USA/California/ASFA.

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2787. Bruland KW, Silver MW. Sinking Rates of Fecal Pellets From Gelatinous Zooplankton (Salps, Pteropods, Doliolids). MAR. BIOL 1981;63(3):295-300. Sinking rates were determined for fecal pellets produced by gelatinous zooplankton (salps, Salpa fusiformis

and Pegea socia ; pteropods, Corolla spectabilis ; and doliolids, Dolioletta gegenbaurii) feeding in surface waters of the California Current. Pellets from the sapls and pteropods sank at rates up to 2 700 and 1 800 m d super(-1), respectively; such speeds exceed any yet recorded for zooplankton fecal pellets. Fecal pellets of salps of sapls were rich in organic material, with C:N ratios from 5.4 to 6.2, close to values for living plankton. The relation between volume and sinking rate indicates that salp and pteropod pellets are slightly less dense than those of pelagic Crustacea; moreover, pellet density varied between different collection dates, probably because of differences in composition. In contrast, doliolid pellets sank at rates up to 208 m d super(-1), a rate much lower than would be expected from pellet size. Thus, density and sinking rates of pellets are much more variable in zooplankton than would be expected from studies of crustaceans alone. These tunicates may be disproportionately important in the flux of biogenic materials during periods when they form dense population blooms.
fecal pellets/organic constituents/zooplankton/sedimentation/Salpa fusiformis/Pegea socia/Corolla spectabilis/Dolioletta gegenbaurii/ISE/ California Gulf/ASFA.

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sediments/organic materials/oceanography/clastic sediments/geochemistry/sand/coastal environment/chemical analysis/methods/photometry/bacteria/algae/Corona Del Mar/Santa Catalina Island/San Nicolas Island/geology/geochemistry/chemistry.

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86013467/8807/behavior/swimming/ciliary/propulsion/feeding/papillae/sensory/str ucture/california bight/usa/ecology/animal behavior/biology/animal behavior/nutrition/general studies/nutritional status/methods/sense organs/general studies/methods/invertebrate morphology/physiology/pathology/ctenophora/invertebrate body regions/appendages/ecology/oceanography/movement/ctenophora/MINERALS MANAGEMENT SERVICE.

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Demersal Zooplankton From a Sand Substrate in Kelp Forest. MAR. BIOL 1981;62(4):275-280. Day-night differences in abundance and biomass of demersal zooplankton in the water column were determined by trapping these animals as they emerged from the sand substrate in a kelp forest (Macrocystis pyrifera) ecosystem off Santa Catalina Island, California, USA. The day and night sampling periods of the 24 June 1979 new moon each lasted 12 h. Abundance and biomass of total demersal zooplankton were significantly higher in night samples. A mean of 2,425 plus or minus 1,168 demersal zooplankton m super(-2) 24 h super(-1) migrated over a diel cycle; 97% of these animals were crustaceans. The mean biomass of demersal zooplankton was 94.2 plus or minus 27.6 mg ash-free dry wt m super(-2) 24 h super(-1). No significant differences were found in either the abundance or biomass of demersal zooplankton collected in low and high traps, suggesting that most animals collected 25 cm off the bottom can sustain swimming to at least 75 cm and that both traps give comparable estimates of the amount of demersal zooplankton available to planktivorous predators. emergence/sands/diurnal variations/vertical migrations/abundance/zooplankton/Macrocystis porifera/ASFA.

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geographic location can change the chemistry of materials entering deep water. In addition, fecal pellets of both salps and pteropods include partially digested residues of phytoplankton that appear as olive-green spheres, having an ultrastructure identical with that of the socalled olive-green "cells." Presumably, fecal pellets, after sinking into deep water, ultimately disintegrate, releasing both the viable phytoplankton and the olivegeen spheres into aphotic waters. Thus the feces of epipelagic herbivores are likely sources of much of the flora of the deep ocean.
feeding/zooplankton/fecal pellets/deep water/biochemical cycle/food organisms/Salpa fusiformis/Pegea socia/Corolla spectabilis/Bacillariophyceae/Coccolithophorida/Algae/ASFA.

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Duke Univ., Dep. Geol., Durham, NC, United-States; Fla. State Univ., Dep. Oceanogr., Tallahassee, FL, United-States; East Carolina Univ., United-States; Yale Univ., United-States Cambridge Univ. Press, New York, NY Analytic; Book B; Bibliography and Index of Geology (1969-present).
California/sedimentary petrology/sediments/North Carolina/Florida/carbon/isotopes/C 13/C 12/Hawthorn Formation/Pungo River Formation/Monterey Formation/Neogene/Tertiary/dolomite/carbonates/phosphate composition/precipitation/Southeastern U.S./Eastern U.S./United States/Pacific Coast/Western U.S./Peru/South America/pellets/IGCP/stable isotopes/models/apatite/phosphates/authigenic minerals/sedimentation/composition/Santa Barbara Basin/DSDP Site 533/Leg 76/IPOD/Deep Sea Drilling Project/DSDP Site 467/Leg 63/DSDP Site 479/Leg 64/DSDP Site 147/Leg 15/marine sediments/Quaternary/pore water/geochemistry/GEOREF.

2796. Kastendiek J. Competitor mediated coexistence interactions among 3 species of benthic macroalgae. J. Exp. Mar. Biol. Ecol. 1982;62(3) Manipulative field experiments were used to determine the mechanism of coexistence of 3 spp. of benthic macro-algae (Eisenia arborea Areschong, Halidrys dioica Gardner and Pterocladia capillacea (Gmelin)) which occur in a narrow band of substratum from 0.3 to 2.3 m below MLLW [mean low low water] on Santa Catalina Island, California [USA]. Eisenia forms a canopy and excludes Halidrys from areas beneath this canopy. Pterocladia occurs in the space beneath the Eisenia canopy. With canopy removal, Halidrys grows adventitiously, excludes Pterocladia, and preempts all space on the substratum. However, Pterocladia is not physiologically restricted to being an understory plant. When the canopy is removed and Halidrys is prevented from entering the area, Pterocladia flourishes. Pterocladia persists in the community because of its ability to utilize the refuge from its superior competitor, Halidrys, afforded by the Eisenia canopy. Eisenia, the competitive dominant to Halidrys, therefore, mediates the coexistence of Halidrys and its inferior competitor, Pterocladia, in a manner similar to the role that predators and physical disturbance play in other marine communities.
predators/physical disturbance/coexistence/competition/Eisenia arborea/Halidrys dioica/Pterocladia capillacea/Santa Catalina Island/marine biology/ecology/phycology/botany.

2797. Gamboa AD, Romero R, Fox C. (Population Census of Sea

Lions (Zalophus californianus) by Age and Sex in La Paz Bay and Surrounding Areas, Baja California Sur, Mexico). INF. GEN. LABORES CENT. INVEST. BIOL. BAJA CALIF 1978;:139-154.
A study was made of the population of the sea lion (Zalophus californianus) in La Paz Bay, Mexico, to determine the age and sex distribution, preliminary data on migrations and population density of the different breeding sites in that area. Population census were made every 15 days from May to December, 1978. Most of the studies were made at 1 breeding site located on Islote Island, because this was the only site where reproduction took place. A total of 300 individuals were counted, from Santa Cruz Island to Los Frailes Island. 50% of the population were females, 25-30% were adult and subadult males, 10% were juveniles and 15-18% were litters. The male population number is affected by the female and subadult male movements.
population number/sex ratio/seasonal variations/migrations/California Gulf/La Paz Bay/population density/Zalophus californianus/ISE/ California Gulf/La Paz Bay/ASFA.

2798. Sautter LR. Seasonal variability in the flux and stable isotopic composition of planktonic foraminifera from an upwelling region; sediment trap results from the San Pedro Basin, Southern California Bight. [dissertation] ; 1990.
University of South Carolina, United-States; Doctoral Monographic; Thesis B; Bibliography and Index of Geology (1969-present) Univ. Microfilms, Ann Arbor, MI, United States.
177 p.
Pacific Ocean/geochemistry/isotopes/California/foraminifers/biochemistry/ stable isotopes/oxygen/O 18/O 16/carbon/C 13/C 12/Pacific Coast/Western U.S./United States/seasonal variations/microfossils/planktonic taxa/upwelling/sediments/San Pedro Basin/Southern California Bight/stratification/planar bedding structures/sedimentary structures/assemblages/thermocline/Neogloboquadrina pachyderma/Globigerinacea/Rotaliina/foraminifera/Globigerina quinqueloba/Globigerina bulloides/Globigerina/Globigerinidae/Neogloboquadrina dutertrei/Orbulina universa/Orbulina/Holocene/Quaternary /GEOREF.

2799. Keenam EM. Amino acid recemization dating: theoretical considerations and practical applications [dissertation]. Newark,Deleware, USA: University of Deleware; 1982. 369.
Intergeneric comparisons of the results of pyrolysis at 152.5(DEGREES)C of mollusks and mixed foraminifera demonstrate that, as in fossils, mollusks and mixed foraminifera are characterized by slow racemizing genera (Protothaca, Mercenaria and mixed foraminifera) and a fast racemizing genus (Macoma). The functions describing the rate of racemization of leucine in all heated material duplicated the non-linear form of the rate curve previously documented in fossils and other heating experiments. The initial rate constants followed the extended linear form seen in the pyrolysis experiments. An activation energy of 27.4 kcal/mole was calculated for the racemization of leucine in the Total Mercenaria sample. Intrageneric racemization rates in fossils were reproduced by pyrolysis which indicates that the concerted hydrolysis mechanism occurring in fossils is also the directing force during pyrolysis. The initial and subsequent rate constants in the high molecular weight fraction (MW > 640) of heated Mercenaria were strongly influenced by the hydrolysis/racemization of amino acids with

stable peptide bonds such as aspartic acid. The use of pre-packed Sephadex columns for gel filtering the Total sample produced consistent, reproducible trends in the high (> 640 MW). and low (< 640 MW) molecular weight fractions. Tivela and Chione from terraces along the Pacific Coast of Baja California Sur produced four groups of D/L valine and leucine ratios corresponding to oxygen isotope stages 5, 7, (GREATERTHEQ) 9 and the high mean annual temperature of the region dictates that only valine and leucine can be used to resolve amino acid ages. However, even those amino acids were racemic in samples (GREATERTHEQ) 300,000 years. Amino acid ages for Epilucina and Tivela from terraces on San Miguel Island, Channel Islands include: (DIAGRAM, TABLE OR GRAPHIC OMITTED...PLEASE SEE DAI) Analyzed Epilucina frequently produced anomalous D/L ratios whereas Tivela was consistently reproducible. Racemization studies of well-preserved bone samples from Natural Trap Cave, Wyoming indicated that the samples do not conform to trends expected from their chrono-stratigraphic position. Their anomalously high, variable rate constants combined with data on molecular weight distribution of D/L ASP indicate that non-thermal diagenesis has significantly altered the amino acids in these samples.
amino acid recemization dating/fossils/geochronology/organic materials/geochemistry/pyrolysis/temperature/hydrolysis terraces/shells
molluscs/Mollusca/Foraminifera/foraminiferans/Protothaca, Mercenaria Macoma/Tivela/Chione/Epilucina/San Miguel Island/Baja California/chemistry/geology/geochemistry.

2800. MBC Applied Environmental Sciences. Point Arguello field pipeline current measurement program. final report. Prep. for Chevron Oil Field Research Company, La Habra, California 1983;II:63.
physical oceanography/MINERALS MANAGEMENT SERVICE.

2801. Nielsen C. On Morphology and Reproduction of "Hippodiplosia" insculpta and Fenestrulina malusii (Bryozoa, Cheilostomata). OPHELIA 1981;20(1):91-125.
H. insculpta and F. malusii were studied at Santa Catalina Island, California. In H. insculpta the protruded lophophores form a continuous incurrent area, and the growing edges are the only excurrent areas. The hydrodynamics of this pattern apparently sets a maximum to the size of the colonies. Female zooids can be recognized already at the growing edge; later on they induce their distal neighbor to form an ovicell. While the first oocyte develops the maternal polypide degenerates and a small, non-feeding polypide develops. These non-feeding zooids develop a series of eggs, the nutrients of which must be supplied by the neighboring zooids. Larvae which were prevented from settling for 12 hours or more were not able to settle or the metamorphosis/ancestrula formation was unsuccessful. In F. malusii almost all zooids produce eggs and the individual polypides are feeding during several cycles of oocyte development and embryogenesis. When two colonies meet and fuse, a maternal zooid from one colony may induce a zooid from the other colony to form an ovicell. reproduction (biology)/morphology (organisms)/life history/colonial characteristics/reproduction/USA/California/Hippodiplosia insculpta/Fenestrulina molusii/ISE/USA/California/ASFA.

2802. Bunnell D. Sea caves of Santa Cruz Island. ; 1988. 123 p. McNally and Loftin, Santa Barbara, CA Monographic; Book B; Bibliography and Index of Geology (1969-present).
California/geomorphology/shore features/caves/Santa Cruz

Island/Pacific Coast/Western U.S./United States/Southern California/erosion features/Santa Barbara Channel/erosion/faults/speleology/solution features/sea caves/GEOREF.

2803. Dymond J, Fischer K, Clauson M, Cobler R, Gardner W, Richardson MJ, Berger W, Soutar A, Dunbar R. A Sediment Trap Intercomparison Study in the Santa Barbara Basin. EARTH PLANET. SCI. LETT 1981;53(3):409-418.
Four sediment traps of radically different design were deployed in the Santa Barbara Basin for approximately 45 days. The measured fluxes ranged from 370 to 774 g m super(-2) yr super(-1) for the different designs. These values lie within flux measurements previously determined for the basin. Compared to the 25-year record (920 g m super(-2) yr super(-1)), however, all fluxes determined in this experiment are somewhat low. Because this experiment was conducted during a general period of high storm activity and runoff, measurement of greater than average flux was expected. It is probable that the higher flux recorded by the sediments results from a significant input of detritus into the basin by near bottom transport. The chemical composition of trapped material was nearly identical in all four trap designs.
comparative studies/sediment traps/chemical composition/accumulation rates/INE/Santa Barbara Basin/ASFA.

2804. Melchiorre EB. Geology and history of the Little Fishermans Campground landslide, Santa Catalina Island, California. The Compass. 1990;67(2):p.94-98
Univ. South. Calif., Dep. Geol. Sci., Los Angeles, CA, United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present). California/engineering geology/slope stability/San Onofre Breccia/Catalina Schist/Pacific Coast/Western U.S./United States/Southern California/Santa Catalina Island/landslides/mass movements/Little Fisherman's Campground/genesis/Mesozoic/Miocene/Neogene/Tertiary/history/rates/GEOREF.

2805. Keller BR. Structural discontinuity within the Southern California continental margin: seismic and gravity models of the western Transverse Ranges [dissertation]. Santa Barbara, CA: University of California; 1984. 108.
isostasy/tectonophysics/geophysical surveys/anomalies/crust surveys/observations/Transverse Ranges;continental crust continental margin/seismic surveys/gravity surveys/P-waves velocity structure/teleseismic signals/Neogene/Mohorovicic discontinuity/Santa Barbara Channel/California Channel Islands/Santa Ynez Range Coast Ranges/East Santa Cruz Basin Fault/East Pacific Rise/geology/solid earth geophysics.

2806. Moore WS, Bruland KW, Michel J. Fluxes of Uranium and Thorium Series Isotopes in the Santa Barbara Basin. EARTH PLANET. SCI. LETT 1981;53(3):391-399. Samples from the MANOP Santa Barbara Basin sediment trap intercomparison were analyzed for the isotopes of uranium, thorium, radium, lead, and polonium. All of the traps showed approximately the same compositions and isotopic ratios, indicating that they trapped similar materials. The super(234)Th flux via falling particles was very close to the flux predicted from the production and scavenging rates of super(234)Th from the water column. The super(210)Pb content of the trapped particles and the surface sediments were the same, however, the measured flux of super(210)Pb was seven times greater than the predicted flux. Predicted and measured fluxes of super(228)Th and super(210)Pb were similarly out of balance. It is suggested that the Santa Barbara

Basin is an area where scavenging from the water column is intensified and where sediments deposited initially on the margins may be physically remobilized on a short time scale. sediment analysis/sediment composition/radioisotopes/uranium isotopes/thorium isotopes/radium isotopes/lead isotopes/polonium isotopes/INE/ Santa Barbara Basin/ASFA.

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Univ. of California, San Diego, United-States; Doctoral Monographic; Thesis B; Bibliography and Index of Geology (1969-present) Univ. Microfilms, Ann Arbor, MI, United States.
California/structural geology/tectonics/geophysical surveys/geodesy/surveys/Global Positioning System/accuracy/Pacific Coast/Western U.S./United States/Southern California/Central California/very long baseline interferometry/standard deviation/statistical analysis/networks/Santa Barbara Channel/Gulf of Santa Catalina/strain/Salton Trough/flexure/thickness/GEOREF.

2808. Keller B, Prothero W, Trehu A, Stierman D. 1982 Santa Barbara, California, land-sea seismic refraction experiment. American Geophysical Union; 1982 fall meeting. Eos, Transactions, American Geophysical Union 1982;63(45):1037 Address: Univ. Calif. Santa Barbara, Dep. Geol. Sci., Santa Barbara, CA, USA; U.S. Geol. Surv., USA; Univ. Calif. Riverside, Dep. Earth Sci., USA
Conference: American Geophysical Union, 1982 fall meeting. San Francisco, CA, Dec. 7-15, 1982.
geophysical surveys/tectonics/seismic surveys/traveltime/refraction methods/seismic methods/ocean bottom seismographs/Pn-waves/North American Pacific/Santa Barbara Channel/Santa Cruz Island Fault/Anacapa Passage/Mid-Channel Fault/Diablo Arch/San Rafael Mountains/Santa Ynez Mountains/Santa Ynez Fault/structural geology.

2809. White LD. Chronostratigraphic and paleoceanographic aspects of selected chert intervals in the Miocene Monterey Formation, California. [dissertation] ; 1989.
Univ. of California, United-States; Doctoral Monographic; Thesis B; Bibliography and Index of Geology (1969-present) Univ. Microfilms, Ann Arbor, MI, United States.
250 p.
California/stratigraphy/Miocene/paleoclimatology/algal flora/diatom flora/sedimentation/sedimentation rates/cyclic processes/Monterey Formation/Pacific Coast/Western U.S./United States/Neogene/Tertiary/chronostratigraphy/paleo oceanography/chert/chemically precipitated rocks/microfossils/cycles/Bodega Basin/Santa Cruz Basin/Santa Maria Basin/Point Reyes/Ano Nuevo/Mussel Rock/Lions Head/upwelling/ooze/clastic sediments/porcellanite/clastic rocks/shale/dolostone/carbonate rocks/thickness/Milankovitch theory/turbidite/Shell Beach/GEOREF.

2810. Keller B, Prothero WA,, Trehu AM, Stierman DJ. Ray trace model of the Santa Barbara, California, land-sea seismic refraction experiment. Geophys. Res. Lett. 1983;10(10):933-936 Address: Univ. California, Santa Barbara, CA, USA.
A seismic refraction profile utilizing shots at sea and receivers on land on the ocean bottom lies on a north-south line from the southernmost Coast Ranges, across the western Transverse Ranges, to the northern Borderland at the longitude of Santa Barbara. Computer ray tracing to model the data from this profile shows significant lateral P velocity variations extending to at least 15 km depth. A deep low velocity trough underlies the Montalvo trend in the Santa Barbara Channel. Lateral velocity variations suggest that

earthquake hypocenters and fault plane solutions calculated assuming a laterally homogenous crust-model may be significantly in error.
seismic refraction profiles/crustal structure/crust/oceanography/geophysical surveys continental shelf/seismic surveys/velocity structure/Transverse Ranges/raypaths/geophysical profiles/refraction methods/seismic methods/deep seismic sounding/deep-seated structures/P-waves/faults/fault planes/earthquakes/continental borderland/discontinuities/low-velocity zones/Santa Barbara Channel/seismology/geology/geophysics.

2811. Heinbokel JF. Studies on the Functional Role of Tintinnids in the Southern California Bight. 2. Grazing Rates of Field Populations. MAR. BIOL 1978;4(2):191-197.
The feeding behavior of relatively undisturbed natural populations of tintinnids was studied in a series of experiments which utilized water samples collected in Southern California coastal waters. Dilute suspensions of corn starch were presented to the tintinnids and the rates of ingestion of this visual tracer determined after short (5 to 20 min) incubations followed by fixation in Lugol's iodine fixative. Tintinnids were observed to ingest particles of diameters up to approximately 43% of their lorica oral diameter and at rates proportional to their oral diameters. Grazing rates observed in these experiments ranged up to approximately 10 mu l tintinnid super(-1) h super(-1), and generally agreed well with the rates observed in experiments utilizing laboratory cultures of tintinnids. No significant diel periodicity in feeding rates was observed in the one study extending over a 24 h period.
grazing/zooplankton culture/ingestion/food composition/Tintinnidae/Tintinnopsis/Amphorella quadrilineata/Eutintinnus pectinis/Amphorellopsis acuta/Salpingella curta/ASFA.

2812. Bohacs KM. Sequence stratigraphy of the Monterey Formation, Santa Barbara County; integration of physical, chemical, and biofacies data from outcrop and subsurface. Keller, Margaret A., McGowen, Mary K. Miocene and Oligocene petroleum reservoirs of the Santa Maria and Santa Barbara-Ventura basins, California; a core workshop. U. S. Geol. Surv., Menlo Park, CA, United-States. SEPM-Core-Workshop. 1990;14:p.139-200
Exxon Prod. Res. Co., United-States; U. S. Geol. Surv., Menlo Park, CA, United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
California/stratigraphy/Miocene/geochemistry/sedimentary rocks/surveys/Santa Barbara County California/Monterey Formation/Pacific Coast/Western U.S./United States/deposition/environment/changes of level/Neogene/Tertiary/Santa Maria Basin/Santa Barbara Channel/southwestern California/sedimentary structures/organic carbon/organic materials/debris flows/mass movements/faults/folds/pelagic sedimentation/thickness/processes/foraminifers/microfossils/turbidite/porcellan ite/clastic rocks/bedding/planar bedding structures/deformation/GEOREF.

2813. Keller BR. Structural discontinuity within the Southern California continental margin: seismic and gravity models of the western transverse ranges [dissertation]. Santa Barbara, California, USA: University of California; 1984. 108.
Crustal models of P wave velocity structure and bulk density along a north-south profile across the western Transverse Ranges of California are based on published seismic reflection

profiles, a seismic refraction experiment using shots at sea to receivers on land and at sea, Pn and teleseismic arrivals at permanent seismic stations, and published gravity data on land and at sea. The seismic ray trace model is further constrained by two intersecting east-west crustal refraction profiles. The density model is constrained by an auxiliary profile tying the outer Borderland to oceanic lithosphere. A range of density models is evaluated based on the range of densities reported for particular P wave velocities and the preferred model is selected by regional seismic criteria. Lateral variations in the crust are resolved to greater than 10 km depth. The Santa Ynez Range and Coast Ranges form a block with flat lying structure. The north half of Santa Barbara Channel is a deep low velocity, low density feature. This is deepest in the southern 10 km, where model properties attributable to young sediment are identified to deeper than 10 km. The Channel Islands platform is a higher density and higher velocity block. South of the Santa Cruz Island. fault is a ridge-like body of very high density and velocity associated with outcrops of mafic crystalline rock. South of the East Santa Cruz Basin fault is a sedimentary basin with lower density and velocity to about 5 km depth. Lower crustal material with velocity near 7.0 km/sec may be Neogene oceanic rocks generated at the East Pacific Rise. Moho depth decreases from 31 km under the Santa Ynez Range to 23 km under the outer Borderland, with a step or ramp shaped offset under Santa Barbara Channel. Variations observed in teleseismic arrival times are substantially accounted for by the crustal velocity model. The western Transverse Ranges are not in isostatic balance, the south side being heavier than the north side. seismology/sediment/ continental margins/seismic reflection profiles/seismic refraction discontinuity layers/Santa Barbara Channel/western Transverse Ranges of California/Santa Ynez Range/East Santa Cruz Basin/fault geology/seismology/geophysics.

2814. McEvoy J, Maxwell JR. Diagenesis of steroidal compounds in sediments from the Southern California Bight (DSDP leg 63, site 467). Proceedings 10th International Meeting Advanced Organic Geochemistry 1983;:449-464. CA09914108418/steroidal/diagenesis/sediment/pacific/chemical oceanography/geological sediments/marine/steroids/reactions/Eganhouse/MINERALS MANAGEMENT SERVICE.

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2816. Heinbokel JF. Studies on the Functional Role of Tintinnids in the Southern California Bight. 1. Grazing and growth Rates in Laboratory Cultures. MAR. BIOL 1978;47(2):177-189. Five species of tintinnids, Amphorella quadrilineata Tintinnopsis cf. beroidea, T. cf. acuminata, Eutintinnus pectinis and Helicostomella subulata , were isolated from Southern California coastal waters and maintained in laboratory cultures which were used to investigate several aspects of the feeding dynamics and population growth rates of this group of planktonic ciliates. Both E. pectinis and H. subulata displayed ingestion and growth rates which increased with increasing food concentration until a maximum rate was obtained which then remained essentially constant as food levels increased further. Maximum hourly ingestion was equivalent

to similar to 10 to 20% body weight. T. cf. acuminata showed no such maximum ingestion rate, as ingestion rates increased throughout the entire range of food concentrations used. The dependence of growth rate of T. cf. acuminata on food concentration also differed from the other species, being characterized by a broad region of maximum growth at intermediate food levels with reduced growth at both lower and higher food concentrations. Maximum observed growth rates represented doubling times of similar to 12 h for both E. pectinis and T. cf. acuminata and 24 h for H. subulata . The data suggested gross growth efficiencies exceeding 50% over much of range of food concentrations used. grazing/growth/zooplankton culture/food availability/Tintinnidae/Amphorella quadrilineata/Tintinnopsis/Eutintinnus pectinis/Helicostomella subulata/ASFA.

2817. Miles GA, Rigsby CA. Lithostratigraphy and depositional environments of the Vaqueros and upper Sespe/Alegria formations, Hondo Field, Santa Barbara Channel, California. Keller, Margaret A., McGowen, Mary K. Miocene and Oligocene petroleum reservoirs of the Santa Maria and Santa Barbara-Ventura basins, California; a core workshop. U. S. Geol. Surv., Menlo Park, CA, United-States. SEPM-Core-Workshop. 1990;14:p.39-87 U. S. Geol. Surv., Menlo Park, CA, United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present). California/stratigraphy/Oligocene/Miocene/sedimentary petrology/sedimentary rocks/clastic rocks/sandstone/Monterey County California/Vaqueros Formation/Sespe Formation/Alegria Formation/Rincon Formation/lithostratigraphy/deposition/environment/Hondo Field/Santa Barbara Channel/Transverse Ranges/interpretation/Paleogene/Tertiary/Neogene/lower Miocene/upper Oligocene/Santa Ynez Mountains/faults/folds/Greenfield California/Pacific Coast/Western U.S./United States/angular unconformities/grain size/mollusks/cores/siltstone/foraminifers/microfossils/GEOREF.

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2819. Kennedy B, Pearse JS. Lunar synchronization of the montholy reproductive rhythm in the sea urchin Centrostephanus coronatus Verrill. J. Exp. Mar. Biol. Ecol. 1975;17:323-331 reproductive biology/lunar synchronization/Echinoidea/Diadematidae/Centrocstephanus coronatus/Santa Catalina Island/Big Fisherman's Cove/marine biology.

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2821. Keller MA. Introduction to stratigraphy and hydrocarbon occurrence in Oligocene and Miocene rocks of the Santa Barbara Ventura and Santa Maria basins of California. U. S. Geol. Surv., Menlo Park, CA, United-States. 1990;14:p.1-11 U. S. Geol.

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Keller, Margaret A., McGowen, Mary K. Miocene and Oligocene petroleum reservoirs of the Santa Maria and Santa Barbara-Ventura basins, California; a core workshop.
California/stratigraphy/Oligocene/Miocene/economic geology/petroleum/Sespe Formation/Alegria Formation/Vaqueros Formation/Monterey Formation/Sisquoc Formation/Santa Barbara Basin/Santa Maria Basin/Pacific Coast/Western U.S./United States/Ventura Basin/Neogene/Tertiary/Southern California/Transverse Ranges/sandstone/clastic rocks/conglomerate/deposition/environment/Paleogene/GEOREF.

2822. Keough MJ, Downes BJ. Effects of settlement and post-settlement mortality on the distribution of the ascidian Trididemnum opacum. Mar. Ecol. Prog. Ser. 1986;33(3):279-285
Address: Dep. Zool., Univ. Melbourne, Parkville, Vic. 3052 Australia. At Isthmus Reef, Santa Catalina Island, California, colonies of the colonial ascidian T. opacum occur disproportionately in cracks and crevices on rock surfaces. Small colonies are found in the open, but large colonies occur only in crevices. Transplantation of established colonies into unprotected open habitats showed that they are preyed upon intensively, probably by fish and urchins (up to 19% mortality d super(-1) and 80% mo super(-1)), with colonies of all sizes being eaten. Recruitment was primarily into pits in experimental substrata. A caging study of recruitment patterns suggested that the recruitment pattern results from disproportionate but not exclusive settlement of larvae into depressions, followed by differential mortality of colonies in the open during the first month after settlement. Sampling in 1985 suggested that changes during El Nino years of 1982-3 may have resulted in altered abundance and size-distributions of T. opacum. colonization/biological settlement/mortality/size distribution/colonies/microhabitats/predation/recruitment patterns/El Nino/ascidian/tunicates/Trididemnum opacum/Santa Catalina Island/Isthmus Reef/marine biology/ecology.

2823. Keller MA, McGowen MK. Miocene and Oligocene petroleum reservoirs of the Santa Maria and Santa Barbara Ventura basins, California; a core workshop. U. S. Geol. Surv., Menlo Park, CA, United-States 1990;14
Monographic; Serial Individual articles are cited separately. B; Bibliography and Index of Geology (1969-present).
California/stratigraphy/Miocene/Oligocene/economic geology/petroleum/Santa Maria Basin/Pacific Coast/Western U.S./United States/Ventura Basin/Santa Barbara Basin/Neogene/Tertiary/Paleogene/GEOREF.

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decreased. Therefore, to avoid rupture of the bladder, fishes with gas bladders must be brought to the surface slowly to allow the excess gas to be reabsorbed into the blood.
vertical distribution/swim bladder/decompression/Chaetodon falcifer/scythe butterflyfish/Santa Catalina Island/Galapagos Islands/marine biology/ichthyology.

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Analytic; Serial B; Bibliography and Index of Geology (1969-present). Pacific Ocean/oceanography/sea water/geochemistry/isotopes/radium/Ra 228/Ra 226/alkaline earth metals/metals/radioactive isotopes/Ra 228/Ra 226/sedimentation/provenance/West Pacific/North American Pacific/Kuroshio/California Current/Northeast Pacific/methods/GEOREF.

2826. Kies RP. Paleogene sedimentology, lithostratigraphic correlations and paleogeography, San Miguel Island, Santa Cruz Island, and San Diego, California [dissertation]. San Diego, CA: California State University; 1982. 577. sedimentary rocks/paleogeography/sedimentation/faults/Paleogene clastic rocks/environment/orientation/provenance/deltaic environment/strike faults/Mount Soledad Conglomerate/Tertiary Cenozoic/conglomerate/composition/metavolcanic rocks/lithofacies/East Santa Cruz Basin Fault/Malibu Coast Fault System/Mount Soledad Fault/Northern California Channel Islands/San Miguel Island/Santa Cruz Island/San Diego/Santa AnaMountains/northern Mexico/Valle de Las Palmas/stratigraphy/historical geology.

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California/oceanography/sedimentation/Pacific Ocean/geochemistry/isotopes/Pacific Coast/Western U.S./United States/Southern California/North American Pacific/bioturbation/biogenic structures/sedimentary structures/radioactive isotopes/radioactive tracers/Santa Catalina Basin/sea water/marine sediments/diagenesis/mixing/deep sea sedimentation/advection/time series analysis/statistical analysis/GEOREF.

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Conference: The Geological Society of America, Cordilleran Section, 78th annual meeting. Anaheim, CA, April 19-21, 1982.
California/sedimentary rocks/clastic rocks/conglomerate/Poway Dacite/Owl Creek Dacite/Las Palmas Dacite/Black Dacite/Mount Soledad Formation/continental borderland/Paleogene/Tertiary/Cenozoic/marine environment/fluvial

environment/deltaic environment/dacite/andesite-rhyolite family/phenocrysts/Santa Barbara County/San Miguel Island/Santa Cruz Island/Santa Ana Mountains/San Diego County/San Diego/geology/sedimentary/petrology.

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2831. Kies RP, Abbott PL. Sedimentology and paleogeography of lower Paleogene conglomerates, Southern California continental borderland. D.L. Fife, J.A. Minch. Geology and mineral wealth of the California Transverse Ranges; Mason Hill volume. : South Coast Geol. Soc.; 1982. 337-349.
Address: Union Oil Co., Anchorage, AK, USA; San Diego State Univ. sedimentary rocks/conglomerate/lower Paleogene/rhyolite/clasts/sedimentary petrology/lithostratigraphy/correlation Southern California/Transverse Ranges/California Channel Islands/Santa Ana Mountains/Valle de Las Palmas/San Miguel Island/Santa Cruz Island/geography/geology/stratigraphy/lithostratigraphy/paleogeography/paleonto logy.

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Abstracts-with-Programs-Geological-Society-of-America. 1989;21(6):p.5 Stanford Univ., Dep. Geol., Stanford, CA, United-States; Washington Univ., Dep. Earth and Planet. Sci., St. Louis, MO, United-States; Univ. Mo.-Columbia, United-States Geological Society of America, 1989 annual meeting, St. Louis, MO, Nov. 6-9, 1989 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present). California/stratigraphy/Holocene/Pacific Coast/Western U.S./United States/El Nino/Santa Barbara Basin/Quaternary/paleoclimatology/algal flora/microfossils/Emiliania huxleyi/Coccolithophoraceae/algae/alkenones/marine sediments/glaciation/offshore/Southern California/dinosterol/GEOREF.

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Address: Union Oil Co., Anchorage, AK, USA; San Diego State Univ.,

Dep. Geol. Sci., USA.
Four families of exotic, purple-red rhyolitic clasts have been recognized in upper Paleocene and Eocene conglomerates in the California continental borderland. Owl Creek clasts have low percentages of phenocrysts that never include quartz; they are primarily found in northern localities such as the Santa Ana Mountains. Poway rhyolites are packed with phenocrysts, including quartz; they dominate conglomerates in San Diego and the northern Channel Islands. Las Palmas clasts have a distinctive micropore-microgranular goundmass; they abound in Baja California. Black rhyodacites are darker and more brittle and were derived from a closer source; they are most abundant in the earlier deposited conglomerates of the San Diego and northern Channel Islands areas. The similarities between San Diego and northern Channel Islands conglomerates demonstrate that they were once part of an integrated, east-west-oriented depositional system that documents major post-Eocene strike slip in the offshore California continental borderland. The sudden appearance. of exotic rhyolitic clasts in mixed suites in upper Paleocene conglomerates, and the subsequent increases in their abundance and decreases in their variety testify to the growth of fewer, longer, and less overlapping rivers through the Eocene. The requisite integration of fluvial drainages followed the eastward-moving front of the Laramide Orogeny, caused by a shallowing angle of Farallon Plate subduction.--Modified journal abstract.
sedimentary rocks/sedimentation/sedimentary petrology/clastic rocks/controls/conglomerate/tectonic controls/Owl Creek Formation/Poway Conglomerate/Las Palmas Formation/Black Rhyodacites/rhyolites/clasts/tectonics/California continental borderland/drainage patterns/Eocene/Paleogene/Tertiary/upper Paleocene/Paleocene/Laramide Orogeny/Farallon Plate/subduction/Peninsular Ranges/provenance/rholite clast/populations Santa Ana Mountains/San Diego/California Channel Islands/Baja California/sedimentary petrology/geology.

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California/environmental geology/pollution/Pacific Ocean/geochemistry/trace elements/Pacific Coast/Western U.S./United States/continental margin/Southern California/Santa Barbara Basin/San Pedro Shelf/North American Pacific/rare earths/metals/human activity/marine sediments/Santa Monica Basin/waste disposal/GEOREF.

2835. Kies RP, Abbott PL, Filewicz M. Sedimentology of late Paleocene through middle Eocene Poway clast-bearing marine depositional system, southern California borderland. AAPG-SEG-SEPM Pacific Section meeting. AAPG Bulletin 1982;66(10):1692-1693
Address: San Diego State Univ., San Diego, CA, USA; Union Oil Co., USA Conference: AAPG-SEG-SEPM Pacific Section meeting. Anaheim, CA, April 14-17, 1982.
sedimentation/sedimentary rocks/stratigraphy/processes/clastic rocks/Paleogene/marine sedimentation/lithofacies/Poway Conglomerate/Mount Soledad Formation/continental borderland/upper

Paleocene/Paleocene/Tertiary/lower Eocene/Eocene/middle Eocene/conglomerate/Cenozoic Santa Barbara County/San Diego County/Santa Cruz Island/San Miguel Island/geology/sedimentary petrology.

2836. Mearns AJ, Pierce KV, Sherwood MJ. Health, abundance and diversity of bottomfish and shellfish populations at proposed and existing offshore drilling sites in the Southern California Bight. 1978;:91. health/abundance/diversity/bottomfish/shellfish/populations/offshore/drilling/T hompson/invertebrates/MINERALS MANAGEMENT SERVICE.

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2839. King CD. The evolution of Chumash society: a comparative study of artifacts used in social system maintenance in the Santa Barbara Channel region before A.D. 1804 [dissertation]. Davis, California, USA: University of California; 1981. 435. Early Spanish explorers and missionaries described the Chumash Indians of the Santa Barbara Channel as having a well developed economic system in which shell beads were used as currency. The Chumash had chieftains who inherited their positions. Chumash tribes were tied together by kinship ties between chiefs and a historical tradition. The most important responsibility of chiefs was the maintenance of stores of food and wealth to be used for festivals, to feed visitors, and to feed the needy. Artifacts found with burials excavated from the Santa Barbara Channel were studied in order to determine the sequence of beads, ornaments, and other artifacts used to maintain social systems. Segments of the discovered sequence were dated by observation of associates of trade items of known age and by use of carbon 14 dating. Changes in artifacts used to maintain social systems allow us to identify changes in social organization. Two major changes in social organization occurred between 5000 B.C. and A.D. 1770 in the Santa Barbara Channel. One was the development of hereditary leadership positions between 2000 and 1000 B.C., and the other was a marked growth in the importance of the economic system after A.D. 1000. The development of a political system organized around hereditary leaders was accompanied by a. decrease in effort spent manufacturing shell beads. This reflects control of the economic system by political leaders. Between 1000 B.C. and A.D. 1000, there was an increase in effort spent manufacturing shell beads as trade relationships between political leaders increased in importance. By A.D. 1100, the economic system had grown so that many people were participating. By this time a

differentiation of two major economic systems had occurred. All people participated in one and the other was restricted to political leaders. After A.D. 1100 both of these economic subsystems continued to grow in importance and complexity until colonization by the Spanish. The development of centralized political systems between 2000 and 1000 B.C. was not unique to the Santa Barbara Channel region. Similar developments occurred at the same time in many parts of North America. The growth of organization and size of societies adjacent to the Chumash made it necessary for Chumash society to grow in size and complexity in order to successfully compete with them.
economic system/shell beads/social systems/hereditary leadership/political system/Homo sapiens/Chumash Indians/California Channel
Islands/anthropology/archaeology.

2840. Herzfeld UC. COVA functions for unevenly and noncorrespondingly spaced processes. Computers and Geosciences. 1990;16(5):p.733-749 Scripps Inst. Oceanogr., La Jolla, CA, United-States Analytic; Serial Includes appendix. B; Bibliography and Index of Geology (1969-present).
California/oceanography/sediments/sedimentation/processes/marine sedimentation/geostatistics/statistical analysis/variograms/variance analysis/Fortran/simulation/El Nino/noise/patterns/signal to noise ratio/Southern California/Pacific Coast/Western U.S./United States/Santa Barbara Basin/COVA/sulfur/precipitation/North American Pacific/Pacific Ocean/GEOREF.

2841. King LB. Madea Creek Cemetery: late inland Chumash patterns of social organization, exchange and warfare [dissertation]. Los Angeles, California, USA: University of California; 1982. 609.
Medea Creek Cemetery (LAn-243) is an island Ventureno Chumash site in the Santa Monica Mountains which contains an estimated 397 primary and secondary burials. Early occupation began in Phase 2A of the Late Period (ca. A.D. 1500); the site was abandoned ca. A.D. 1785. It is assumed that the social personae of the deceased were expressed in discriminations made in mortuary treatment. The overall pattern of interment provides evidence that the population was organized beyond the level of a simple, egalitarian society. Mortuary distinctions between the sexes were made on the bases of (1) kinds of grave goods (but not quantity); (2) orientation (males more southerly); and (3) depth of grave (males deeper). But these distinctions were not marked. A survivorship curve indicated that the population represented an expected range of ages, and mortuary distinctions between adults and sub-adults were made on the basis of placement in the cemetery (sub-adults were placed more to the west); position (sub-adults were more frequently on their right sides); orientation (children were more varied in orientation); and in quantities of goods (greater with sub-adults). The Lorenz curve (a device for describing degree of differentiation of wealth) for sub-adults was more differentiated than for adults. I suggest that adult status tended to be expressed more in non-cemetery context, such. as annual mourning ceremonies or houseburnings; whereas the status of the immature was more typically expressed during burial rites. Cult paraphernalia was evidence for the presence of members of the elite, regional 'antap organization. Canoe parts indicate people with familial ties to access to the use of canoes on the coast. The proportion of local cemetery goods to imported goods was over 70:1. The community was involved in a complex exchange relationship with

the Santa Barbara Channel Islanders, and the exchange was mediated through coastal Malibu. Medea Creek probably exported acorns, islay and other gathered products; and imported primarily luxury goods, i.e. beads, ornaments, and soapstone utensils. . . . (Author's abstract exceeds stipulated maximum length. Discontinued here with permission of school.).
burial sites/graves/Homo sapiens/Chumash Indians/Santa Monica Mountains/California Channel Islands/anthropology/archaeology.

2842. Messersmith JD, Baxter JL, Roedel PM. The anchovy resources of the California Current region off California and Baja California. Calif. Coop. Oceanic Fish. Invest. Rep. 1969;13:32-38.
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Univ. Wash., Sch. Oceanogr., Seattle, WA, United-States SEPM annual midyear meeting, Raleigh, NC, Sept. 26-28, 1986 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present). Pacific Ocean/sedimentary petrology/sedimentation/environment/deep sea environment/biogenic structures/sedimentary structures/deposition/Santa Catalina Basin/North American Pacific/ecology/GEOREF.

2844. Kleppel G, Manzanilla E, Teter B, Petrich S. Santa Monica Bay plankton distribution. W. Baxcom. Coastal Water Research Project, Biennial Report for the years 1981-1982. Long Beach, CA.: Southern California Coastal Water Research Project; 1982. 71-84.
Address: University of Southern California, Los Angeles. Allan Hancock Foundation.
Phytoplankton can be indicative of eutrophication and contamination in estuaries, but is less definitive in open coastal waters. The author's objectives were to determine of phytoplankton abundance and composition near the Hyperion 5-mile outfall differed from that along an onshore-offshore transect in the bay, and to determine if plankton and nutrient distributions were influenced by wastewater discharge. During 1980, monthly samples were taken at nine stations. The results suggest that several nitrogen sources drive phytoplankton growth and distribution in the bay. Nitrate enters the euphotic zone by vertical diffusion and possibly by horizontal advection from the Santa Barbara Channel. Ammonium in the bay may be from discharge from marinas, nearshore outfalls, or recycling by animals and bacteria. Not surprisingly, nitrate and ammonium levels were usually higher near the bottom of the euphotic zone than at the surface, suggesting that light intensity could influence phytoplankton growth. Nitrogen from the 5-mile Hyperion outfall was rarely detectable in the euphotic zone. Nothing unusual was detected in net phytoplankton abundance, distribution, or composition. in the outfall's vicinity. Zooplankton abundance at the outfall station was higher than elsewhere along the transect but defining the process (growth, entrainment, migration) responsible was nearly impossible. Several hypotheses need to be tested regarding the cause of the peak, i.e., that waste discharge causes an elevation in primary production which is grazed down by the zooplankton, and/or that zooplankton feed on materials in the wastefield directly. (Atkins-Omniplan).
Phytoplankton/Zooplankton/Nitroge /Nitrates/Wastewater disposal/Ammonium/Outfall sewers/Water sampling/Ocean circulation/Euphotic zone/Vertical

distribution/Advection/Distribution patterns/Flourescence Phytoplankton/Zooplankton Hyperion 5-mile outfall/Santa Barbara Channel/marine biology/water quality/pollution/resource management.

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Eos,-Transactions,-American-Geophysical-Union. 1990;71(8):p.287 U. S. Geol. Surv., Denver, CO, United-States; Small Syst. Support, Big Water, UT, United-States American Geophysical Union 1989 fall meeting, Loma Prieta sessions, San Francisco, CA, Dec. 4-8, 1989 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present). California/engineering geology/earthquakes/Santa Cruz County California/Pacific Coast/Western U.S./United States/Central California/San Francisco Bay region/geologic hazards/Loma Prieta earthquake 1989/Santa Cruz California/ground motion/aftershocks/marine terraces/shore features/damage/seismic response/GEOREF.

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Address: Univ. Calif., Riverside, Calif.
algae/magnesium crystal chemistry/geochemistry/carbonates/trace elements/modern/calcite/growth/rates/abundance/ratios/temperature /salinity Rhodophyta/red algae/coralline algae/Calliarthron/Santa Catalina Island/Big Fisherman Cove/chemistry/geology/geochemistry.

2847. Widom E, Schmincke HU, Gill JB. Chemical zonation and U series disequilibria in Fogo A, San Miguel, Azores. Anonymous. AGU 1987 fall meeting. Eos,-Transactions,-American-Geophysical-Union. 1987;68(44):p.1522 Univ. Calif., Dep. Earth Sci., Santa Cruz, CA, United-States; Ruhr-Univ., Federal-Republic-of-Germany American Geophysical Union, 1987 fall meeting, San Francisco, CA, Dec. 6-12, 1987 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present). Azores/volcanology/Fogo A/San Miguel Island/Atlantic Ocean Islands/volcanoes/pumice/pyroclastics/volcanic rocks/zoning/chemical composition/magmas/trachytic composition/fractional crystallization/alkali basalts/basalts/eruptions/partial melting/GEOREF.

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Address: Mar. Processes Res., West Covina, CA, USA; Shell Can., CAN. transport/continental shelf/littoral drift/nearshore environment/Holocene/Quaternary/sand/clastic sediments/silt/clay/Holocene/Quaternary/clastic sediments/bathymetry/grain size/physical properties/Santa Barbara Channel/Point Conception/Ventura/oceanography/marine geology.

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margin/Pacific Plate/North American Plate/Santa Maria Basin/Sur Basin/Santa Lucia Basin/Santa Cruz Basin/DNAG/GEOREF.

2850. Kolpack RL, Drake DE. Transport of clays in the eastern part of Santa Barbara Channel, California. Origins, transport, and deposition of fine-grained sediments; 1984 SEPM research conference, Part 1. Geo-Marine Letters 1985;4(3-4):191-196
Address: Mar. Processes Res., West Covina, CA, USA; U. S. Geol. Surv. Conference: Origins, transport, and deposition of fine-grained sediments; 1984 SEPM research conference, Part 1. Los Angeles, CA, Aug. 6-9, 1984.
sedimentation/ocean circulation/sediments/processes/currents/distribution/continental shelf/detrital sedimentation/seasonal variations/clay/clastic sediments/fines/deposition/continental borderland/marine transport/bottom sediments/bottom currents/California Current system/transport/clays Santa Barbara Channel/Santa Clara River/Ventura River/Santa Barbara Basin/Pitas Point/Anacapa Island/Oxnard/Montalvo Ridge/Hueneme Canyon/Santa Cruz Island/Marine geology/oceanography.

2851. Minerals Management Service. Benthic organisms and estuarine communities of the Southern California Bight. POCS Ref. Pap. No. III. U.S. Dep. Interior, Minerals Management Service, Pacific OCS Region, Los Angeles, CA 1978;:221.
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Atlantic Ocean/geochemistry/sediments/marine sediments/uranium/actinides/metals/San Clemente Basin/Cariaco Trench/pore water/Northwest Atlantic/GEOREF.

2853. Kornicker LS, Myers B. Rutidermatidae of Southern California, USA (Ostracoda: Myodocopina). Smithson. Contrib. Zool. 1981;0(334):1-35 Address: DEP. INVERTEBRATE ZOOL., NATL. MUSEUM NATL. HISTORY, SMITHSONIAN INST., WASHINGTON, D.C. 20560.
Four species of Rutiderma that had been described from southern California are more completely described and illustrated: R. rostratum Juday 1907, R. lomae (Juday 1907), R. rotundum Poulsen 1965 and R. judayi McKenzie 1965. A new species, R. chessi, from San Clemente Island, is described from southern California are more completely described and illustrated. A neotype is selected for R. lomae. A key is presented to species of Rutiderma in the study area. new species/description/neotype/key Ostracoda/Myodocopina/Rutidermatidae/Rutiderma rostratum/Rutiderma lomae/Rutiderma judayi/Rutiderma chessi southern California/San Clemente Island/marine biology.

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2855. Yerkes RF, Levine P, Lee WHK. Contemporary tectonics along south boundary of central and western Transverse Ranges, Southern California. Anonymous. AGU 1987 fall meeting. Eos,-Transactions,-American-Geophysical-Union. 1987;68(44):p.1510
U. S. Geol. Surv., Menlo Park, CA, United-States American Geophysical Union, 1987 fall meeting, San Francisco, CA, Dec. 6-12, 1987 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).
California/structural geology/neotectonics/Transverse Ranges/Santa Barbara Channel/Cajon Pass/San Bernardino County California/Pacific Coast/Western U.S./United States/Southern California/faults/displacements/seismicity/seismotectonics/strike slip faults/fault zones/GEOREF.

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Scripps Inst. Oceanogr., Geol. Res. Div., La Jolla, CA, United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present). Pacific Ocean/stratigraphy/Holocene/sedimentary structures/planar bedding structures/varves/paleoclimatology/sedimentation/environment/marine environment/algal flora/diatom flora/mollusks/bivalves/cores/correlation/Santa Barbara Basin/North American Pacific/Quaternary/upper Holocene/microfossils/biostratigraphy/GEOREF.

2858. Minerals Management Service. A risk analysis model for marine mammals and seabirds: A Southern California Bight scenario, final report. PCOS MMS 85-0104 1985;
MINERALS MANAGEMENT SERVICE.

2859. Kozloff P. Fur Seal Investigations, 1983. Technical memo. : National Marine Fisheries Service, Seattle, WA. Northwest and Alaska Fisheries Center. NOAA-TM-NMFS-F/NWC-78; 1985. 84.
note: See also PB85-186047.
Northern fur seal, Callorhinus ursinus, research in 1983 was conducted on the Pribilof Islands and Bogoslof Island in Alaska and on San Miguel Island and nearby Castle Rock, California. Estimates made of the number of pups born in 1983 on the Pribilof Islands indicate a continuing decline in the number of northern fur seals there. Censuses of juvenile males on the hauling grounds of St. George Island from 1978 to 1983 show a general decline in their numbers.
Populations/Breeding/Census/Northern fur seal/Callorhinus ursinus Pribilof Islands/Bogoslof Island/San Miguel Island/Castle Rock, California/marine biology/mammalogy.

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California/oceanography/continental margin/Pacific Ocean/geochemistry/radium/isotopes/Ra 228/thorium/Th 232/sediments/marine sediments/sea water/Pacific Coast/Western U.S./United States/Southern California/continental borderland/radioactive tracers/mixing/marine transport/ocean circulation/alkaline earth metals/metals/radioactive isotopes/actinides/geochemical profiles/sediment water interface/diffusion/San Pedro Basin/San Nicolas Basin/North American Pacific/GEOREF.

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Populations/Nets/Survival/Animal behavior/Growth/Chlorohydrocarbons/Tissues/Bioassay/Spatial distribution/Mortality/Isotopic labeling/Diets/Ecosystems/Tracer studies/population biology/mortality/entanglement/northern fur seal/Callorhinus ursinus/Pribilof Islands/San Miguel Island/Castle Rock/Bering Sea/marine biology/mammalogy.

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The U. S. Navy, in cooperation with the U. S. Coast Guard, is conducting design and feasibility studies for a portable oil sorbent spreader and retriever for use aboard military and commercial vessels-of-opportunity during oil spill clean up operations. As part of this program, the U. S. Navy's Civil Engineering Laboratory (CEL), Port Hueneme, California contracted with the Geography Remote Sensing Unit (GRSU), University of California, Santa Barbara to provide field support and data analysis services in conjunction with sea tests to determine the effects of vessels on surface oil slicks. A total of four sea truth data acquisition cruises were conducted through natural oil seeps in the Santa Barbara Channel, California between December 1977 and February 1978. Coast Guard 82-foot patrol boats served as representative vessels of opportunity for the tests. This report describes the data collection program associated with the sea tests and the results of our analysis of field data.
Oil spills/Oil pollution containment/Coast Guard ships/Environmental protection/Ocean surface/Containment (General)/Air water interactions/Sea testing/Weather/Ocean waves/Santa Barbara Channel/Mechanical/Industrial/Civil/Marine Engineering/water pollution/petroleum.

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Sea water samples were collected 1 meter below the surface from

four stations in the outer Los Angeles Harbor and one station located 1.5 km outside the harbor breakwater upcurrent of the harbor excurrent plume. Additional samples were taken at a station, SPC-15, which is 15 km offshore in the San Pedro Channel and at Station RB, 0.5 km offshore from Santa Catalina Island in Isthmus Cove. A phytoplankton-enriched size fraction was retained on a 1 micrometer pore-size filter and accounted for 83% of the total chlorophyll a but only 18% of the total bacteria. A bacterioplankton enriched size fraction passed the 1 micrometer filter but was retained on a 0.2 micrometer filter and was found to contain 82% of the total bacteria but only 17% of the total chlorophyll a. These two fractions accounted for 91 and 9% of the microbial carbon, respectively. P-33 uptake by both size fractions was inhibited by low concentrations of 2,4-dinitrophenol, N-ethylameimide, carbonyl cyanide and m-chlorophenylhydrazone. Low levels of 3-(3,4-dichlorophenyl)-1,1-dimentylurea selectively inhibited the uptake of P-33 by the plankton-enriched fraction, while valinomycin selectively inhibited P-33 uptake by the bacterioplankton-enriched size fraction.. Consideration of relative surface areas of phytoplankton and bacterioplankton, their P-33 uptake rates in light and dark, and estimates of the population turnover times emphasized the potential importance of bacterioplankton in community phosphorus metabolism. (Baker-FRC).
Plankton/Harbors/Phosphates/Bacteria/Absorption/Phytoplankton/Aquatic plants/Orthophosphates/Seasonal variation
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California/seismology/interior/lateral heterogeneity/crust/upper mantle/mantle/Southern California/Pacific Coast/Western U.S./United States/P waves/body waves/elastic waves/traveltime/velocity/Fourier analysis/variations/statistical analysis/Colorado Desert/San Jacinto Mountains/Riverside County California/San Gabriel Mountains/Mojave Desert/Ventura Basin/Santa Cruz Island/Sierra Nevada/Santa Monica Mountains/isostasy/teleseismic signals/Transverse Ranges/Peninsular Ranges/arrays/GEOREF.

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Islands National Monument belong to California, not the federal government. This holding will have a major impact on the coastal industry around the United States. The Channel Islands National Monument consists of most of the Santa Barbara and Anacapa Islands located west of Los Angeles and lying between Santa Cruz Island and Santa Catalina. The Court's reasoning was based on the Submerged Lands Act of 1953 which gives the states ownership and control of all coastal lands and waters claimed by the federal government under the doctrine of paramount rights. The particular lands and waters in question possess substantial economic value. Actions by California to attempt to lease these lands for oil, gas and mineral exploration led to the case. The instant case involves commercial harvesting of giant kelp, Macrocystis. The decision in this case indicates a policy established by Congress and enforced by the Court of placing highly valued coastal resources under control of the states.. (Iervolino-NC).
Coastal resources/Water rights/Channel Islands National Monument(CA)/Beds/Legal aspects/Court decisions/California/Submerged Lands Act of 1953/Paramount rights/Coasts/Islands/Continental Shelf/Legislation/Judicial decisions/Water/coastal zone management/jurisdiction/resource development California Channel Islands/Santa Barbara Channel/Santa Barbara Island/Anacapa Island/Santa Cruz Island/Santa Catalina Island/resource management/water resources planning/law/petroleum/marine resources/policy.

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OF ICHTHYOPLANKTON/INTERANNUAL VARIABILITY/SEA-SURFACE TEMPERATURE ANOMALIES/SEASONAL PREDICTION/TIDE-GAUGE RECORDS/CANCER-MAGISTER/NORTHERN CALIFORNIA DUNGENESS CRAB/Santa Barbara Channel/marine biology/oceanography.

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of ixodid ticks known from California, only 1 argasid, Ornithodoros talaje (Guerin-Meneville), and 3 ixodids, Ixodes peromysci Augustson, I. pacificus Cooley and Kohls, and I. signatus Birula reportedly occur there. The record of O. talaje from San Clemente Island (Banks, 1908) is of doubtful validity, however. The purpose of this report is to document the geographical, host, and temporal distributions of these ticks. parasites/pests of animals/hosts/seasonal variations/geographical distribution Otobius megnini (Arthropoda) - Cervus canadensis (Host)/Haemaphysalis leporispalustris (Arthropoda) - Oryctolagus cuniculus (Host)/Ixodes pacificus (Arthropoda) - Gerrhonotus multicarinatus (Host) - Urocyon littoralis littoralis (Host) - Homo sapiens (Host)/Ixodes peromysci (Arthropoda) - Gerrhonotus multicarinatus (Host) - Peromyscus maniculatus anacapae (Host) - Peromyscus maniculatus elusus (Host) - Rattus rattus (Host)/Ixodes rugosus (Arthropoda) -Urocyon littoralis santacruzae (Host) - Spilogale gracilis amphialus (Host)/California Channel Islands/terrestrial biology/parasitology/entomology.

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status/methods/plant
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satellite sensing/radar imagery/spawning populations/sampling methods/avoidance behavior/upwelling/oceanographic data/California current/eggs/entrainment/upwelling/avoidance/remote sensing/satellite IR/thermal imagery Osteichthyes/Engraulis mordax/anchovies/Ensenada/Baja California/Santa Catalina Island/north of Point Conception/marine biology/ichthyology/fisheries/resource management.

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Gulf of California/stratigraphy/Quaternary/Mexico/North American Pacific/Pacific Ocean/biostratigraphy/paleo oceanography/foraminifers/microfossils/radiolarians/quantitative analysis/benthonic taxa/cores/distribution/paleoclimatology/glacial environment/environment/interglacial environment/California Current/Northeast Pacific/Antarctic Deep Water/biofacies/changes of

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2942. Ledig FT, Conkle MT. Gene diversity and genetic structure in a narrow endemic torrey pine Pinus torreyana. Evolution 1983;37(1):79-85 Address: INST. OF FOREST GENETICS, PACIFIC SOUTHWEST FOREST AND RANGE EXPERIMENT STN., USDA FOREST SERVICE, P.O. BOX 245, BERKELEY, CALIF. 94701. Early investigations suggested that genetic variability might be associated with longevity and that tree species were the most heterozygous of organisms. However, these ideas may be modified as species representing a wider range of population structure are investigated. Torrey pine, a California [USA], endemic, occurs in only 2 populations, one on the coast at San Diego and one 280 km northwest on Santa Rosa Island. Populations number only .apprx. 7000 and 2000 individuals, respectively. Each population is composed of identical homozygous genotypes at 59 isozyme loci. The island population is fixed for alternate alleles to those in the coastal population at 2 of the 59 loci. These results agree with other lines of evidence that suggest Torrey pine is characterized by minor differences between relatively uniform populations. Drift is the most likely explanation for lack of variability in Torrey pine. It probably experienced one or more reductions in population size, most recently during the Xerothermic period 8500 to 3000 B.P. The founder effect may have operated during colonization of Santa Rosa Island .apprx. 18,000 B.P. Apparently, the northern Channel Islands to which Santa Rosa belongs were not connected to the adjacent mainland in recent geologic history and colonization would require transport across at least a 6- to 7-km channel. Red pine and western redcedar, conifers with greater ranges than Torrey pine, are only slightly. more variable. Thus, despite the presence of mechanisms to maintain high levels of outbreeding, it appears the conifer breeding system can survive inbreeding with its consequence of genetic depauperization. breeding systems/isozyme/loci/longevity/founder effect/genetic drift/inbreeding/endemic species/genetic structure/population genetics/torrey pine/Pinus torreyana San Diego/Santa Rosa Island/terrestrial biology/botany/genetics.

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Ariz. State Univ., Dep. Geol., Tempe, AZ, United-States Geological Society of America, Cordilleran Section, 85th annual meeting and Rocky Mountain Section, 42nd annual meeting, Spokane, WA, May 8-11, 1989 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present). California/geochemistry/isotopes/Santa Barbara County California/Ventura County Califonia/Monterey Formation/Pacific Coast/Western U.S./United States/fractures/Santa Barbara Channel/oxygen/carbon/O 18/O 16/stable isotopes/C 13/C 12/pore water/crystallization/temperature/precipitation/Rufugio Beach/Jalama Beach/Carpinteria Beach/GEOREF.

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plate tectonics/faults/earthquakes/seismic surveys/seismic activity/seismic zones/seismic exploration San Andreas Fault/continental borderland of southern California (USA) and northern Baja California (Mexico)/San Clemente Island/Fortymile Bank/geology/seismology.

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dea/Eutheria/Theria/Mammuthus/Elephantidae/Quaternary/teeth/biome

try/endemic taxa/Siberia/Western U.S./United States/Pacific Coast/San Miguel Island/Mexico/Los Angeles California/Los Angeles County California/Rancho La Brea/GEOREF.

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displacements/style/strike-slip faults/synclines/San Andreas Fault/continental borderland/fault scarps/gouge/normal faults/striations/bedding plane irregularities/sedimentary structures/deformation/erosion surfaces/fault zones/growth faults/patterns/Mesozoic/Phanerozoic/Santa Catalina Island/structural geology.

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flight/wing development/body size/floristic diversity/population genetics/stepping-stone/gene flow/cline/wings/morphology/geographic variations/habitat stability/Coleoptera/Carabidae/tule beetle/Tanystoma maculicolle/California mainland/California Channel Islands/terrestrial biology/entomology.

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Fluidized-bed/Heat-exchanger/Turbines/Desalination/California/Waste-heat-recovery/Scale/Corrosion/Erosion/Rotary-separator turbine/Energy-recovery/San Nicolas Island Conservation/engineering/resource management.

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The taxonomic affinities between the extinct acmaeid C. edmitchelli and Recent California species has been previously studied using highly variable exterior shell characters. Shell structure, a character believed to be more conservative than either shell or radular morphology was used to determine the taxonomic and phylogenetic relationships of this species. The shell structure of C. edmitchelli is identical to that of C. scabra (Gould, 1846). This shell structure group is not known to occur in any other acmaeid species. Although closely related to C. scabra, C. edmitchelli is morphologically distinct and is retained as a valid, extinct species known only from Late Pleistocene deposits on San Nicolas Island, California.
Tertiary/Morphology/Comparative morphology/Extinct species/Shells/shell structure/late Pleistocene/Quaternary/Cenozoic/taxonomy/phylogenetic relationships/phylogeny/fossil animals Mollusca/Gastropoda/Acmaeidae/Collisella edmitchelli/Collisella scabra/Limpets/San Nicolas Island/marine biology/invertebrate paleontology/paleozoology.

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feeding and roosting during winter and spring. Second, they document differential predation on members of a herbivorous limpet guild (primarily Collisella spp.) by a wintering flock that expanded into a previously unexploited portion of the island. The combined phenomena of variation in oystercatcher distribution in space and time and differential predation on members of the patellacean limpet guild may have important implications for the ecology of rocky intertidal communities. predator-prey interactions/food preferences/spatial distribution/abundance/food organisms/community structure/predation/seasonal variations/American black oystercatcher/Haematopus bachmani/Collisella spp./San Nicolas Island/terrestrial biology/terrestrial ecology/marine biology/ornithology.

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In the Californian representatives of the Subsection Oocarpae (Pinus attenuata, P.muricata and P.radiata), there is variability in several cone characters. The cones range from being thin-scaled and attached to branches at relatively right angles, to having very thick scales and prominent apophyses on one side and attached to branches at acute angles. Thick-scaled cones provide more protection for the seeds from the high temperatures of fires than do thin-scaled cones and may deter attacks from the squirrels Tamiasciurus and Sciurus. These cones carry fewer seeds per given weight of cone which is energetically less efficient for the squirrels to harvest. Squirrels are known to selectively feed on cones carrying more seeds per cone. Thin-scaled cones yield more seeds per given cone weight. This is energetically advantageous to reproductive success but may make them favorite targets for squirrel feeding. Consequently, individuals with thin-scaled cones can only be favored in areas where fires are not too hot and where squirrels are rare or absent. Such conditions seem to be met for pine populations on Santa Cruz, Santa Rosa, Guadalupe and Cedros Islands, and San Vicente and. Ensenada, Baja California. It is precisely in these populations where cones with thin scales are most frequent. In areas where fires may be expected to be hotter and squirrels more common, individuals with thick-scaled asymmetric cones predominant.
cones/predation/fires/species diversity/forests/temperature/cone characteristics/fire Rodentia/rodents/Sciuridae/squirrels/Tamiasciurus/Sciurus/Coniferopsida/Oocarpa e/Pinus attenuata/Pinus muricata/Pinus radiata/Santa Cruz Island/Santa Rosa Island/Guadalupe Island/Cedros Islands/San Vicente/Ensenada/Baja California/terrestrial biology/botany.

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A 13-mo. field and laboratory study was conducted at Santa Catalina Island, California, USA to determine some of the effects of water

motion on the shallow water distribution of the sea urchin Centrostephanus coronatus Verrill. The depth distribution of another sea urchin species, Strongylocentrotus franciscanus (A. Agassiz), includes shallow areas of strong water motion (< 2 m depth) from which C. coronatus is absent. Differences in attachment strength and morphology of the 2 spp. were investigated as possible mechanisms affecting the differences in depth distribution. Density of C. coronatus along subtidal transects generally increased with increased depth, ranging from 0 individuals at depths less than 2 m to 1.7/m2 at 16 m depth; the majority of the population occurred deeper than 4.2 m. The shallowest depths of occurrence of C. coronatus are characterized by high levels or sharp increases in water motion. Laboratory wave channel experiments indicate that C. coronatus are dislodged at lower wave amplitudes when exposed to sharp increases in amplitude, than when exposed to more gradual increases. Areas of strong water motion such as noted along the field transects probably directly or indirectly limit the distribution of C. coronatus. The effects of water motion on C. coronatus seem to be relatively direct. C. coronatus are dislodged at lower wave amplitudes than are S. franciscanus. The ability of C. coronatus to withstand. dislodgement during exposure to strong water motion was estimated indirectly by comparing the number of podia used in attachment by C. coronatus and S. franciscanus. Although other factors such as differential predation may contribute to the observed field distributions, C. coronatus is probably not well adapted to conditions of strong water motion, and limitations in attachment strength, relative to S. franciscanus, probably limit the shallow water distribution of this species.
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A manned submersible survey of Tanner and Cortes Banks and Santa Rosa-Cortes Ridge, offshore of southern California, U.S.A., was conducted to characterize the hard-bottom, biological assemblages from 14 m to approximately 150 m depth. Four major assemblages were observed; their dominant taxa were: 1) Eisenia arborea/erect coralline algae from at least 14 to 40 m; 2) Agarum

fimbriatum/Laminaria farlowii from 40 to 60 m; 3) encrusting coralline algae from 60 to 90 m; and 4) Florometra serratissima/ophiuroid from 90 to at least 150 m depth. Subdominate organisms in the shallow assemblage consisted of understory algae (reds and browns) and brittle stars; coralline algae, brown algae, gorgonians and seastars at mid-depth; and seastars, gorgonians and sponges at greater depths. The species and assemblages observed on the banks and ridge are very similar with those occurring in other hard-bottom areas adjacent to the southern California mainland and Channel Islands. However, the depth ranges for these assemblages and several of their species are much greater than observed elsewhere. An exception of this observation is the Florometra/ophiuroid assemblage, which is quite common in some deeper-water (100 m to at least 300 m) areas of the Southern California Bight and the Santa Maria Basin. The increased depth ranges and high abundance of the bank assemblages appear to be influenced by water clarity, probably. related to their isolation from coastal influences including runoff, the potential for a deep mixed layer caused by strong wave and surge activity, and the greater survey are compared with other studies. hard bottom communities/Eisenia arborea/Agarum fimbriatum/Laminaria farlowii/Florometra serratissima/Tanner Bank/Cortes Bank/Santa Rosa-Cortes Ridge/marine biology.

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Sargassum agardhianum, whereas Eisenia arborea and Corallina officinalis var. chilensis had fall maxima and summer minima in cover. Ulva californica and Gelidium pusillum had maximal cover during spring. Pterocladia capillacea was the only species with peak cover in winter while three macrophytes, Lithothrix aspergillum, blue-green algae, and Phyllospadix torreyi displayed little seasonality in standing stocks. Highest net production rates were measured during summer for nine of the 13 species and minimum rates were recorded in spring and to a lesser extent during winter. Correlations between seasonal fluctuations in standing stock and productivity were evident for only eight species. Total daily community production reached a. peak in the fall (1.22 g C fixed/m2 of substratum/day) and declined sharply through winter to a spring low (0.47 g C/m2/day), closely paralleling changes in ambient water temperature. Blue-green algae, C. officinalis var. chilensis, P. capillacea, and E. menziesii contributed 76% of the total community primary productivity for the year. Seasonal patterns of photosynthetic performances were highly variable with a tendency for most species to attain peak daily photosynthetic rates coincident with higher temperatures and longer daylength. photosynthesis/aquatic plants/seasonal variations/seaweeds/algae/intertidal environment/standing stock/primary productivity/temperature/day length Colpomenia sinuosa/Egregia menziesii/Eisenia arborea/Gigartina canaliculata/Halidrys dioica/Sargassum agardhianum/Eisenia arborea/Corallina officinalis/Ulva californica/Gelidium pusillum/Lithothrix aspergillum/Pterocladia capillacea/Cyanophyta/Phaeophyta/Rhodophyta/Chlorophyta/blue-green algae/Phyllospadix torreyi/San Clemente Island/marine biology/botany/phycology.

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The adaptive significance of a life-history strategy, expressed as divergent morphologic forms, was examined for the heteromorphic alga S. lomentaria. Successional studies were performed by physically clearing mature, temporally constant intertidal communities on San Clemente Island, California [USA]. At wk 6, after clearing, complanate thalli dominated the successional plots (mean cover = 23.5%) and began to decline as the cylindrical form became abundant. The latter attained its peak cover (82.3%) at wk 13, at which time it too began a precipitous reduction. The crustose ralfsioid form appeared surprisingly early (4-13 wk) in trace amounts but did not achieve its greatest cover (85.0%) until wk 43. The ranking from high to low primary productivity (cylindrical form = 8.1 mg C .cntdot. g dry wt-1 .cntdot. h-1, complanate form = 6.5 mg, crustose form = 0.5 mg) corresponded closely with the data for photosynthetic vs. structural components (cylindrical = 92.3% pigmented, complanate = 65.3%, crustose =

32.0%). This finding indicates that selection in the crust form, which is more readily accessible to epilithic grazers, has tended to increase allocation of materials to nonpigmented structural tissue at the expense of photosynthetic tissue and reduced production rates. The results for thallus losses to urchin grazing over 48 h were complanate form = 82.7% lost,. cylindrical = 81.4% and crustose = 16.2%, which correlates with the calorific contents of the 3 forms (i.e., complanate = 4.97 kcal .cntdot. ash-free g dry wt-1, cylindrical = 4.46 kcal and crustose = 3.55 kcal). The crustose form had tougher thalli (26 g .cntdot. mm-2 to penetrate thallus) than either the complanate form (12 g) or the cylindrical form (15 g). Apparently opposing selective factors resulted in the evolutionary divergences observed in algae with heteromorphic life histories. Previous work may have overemphasized the selective role of grazing because the crustose form is also adapted to withstand physical forces (sand-scouring, burial and wave-shearing) or as an overwintering stage under physiologically stressful conditions. adaptive significance/evolutionary divergence/primary productivity/sea urchin grazing/thallus form/physical force/resistance/over-wintering/life-history strategy/succession/Sctrosiphon lomentaria/San Clemente Island/marine biology/botany/phycology.

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In the rocky intertidal community of the northwestern America is has been demonstrated that living space on the rock is continually in short supply, and that the mussel Mytilus californianus is the best competitor for this limited resource. Furthermore, for the past two decades it has been widely accepted that unless prevented by the predatory starfish Pisaster ochraceus, this mussel would become abundant enough to occupy all available rock surfaces, thereby eliminating all other space-occupying species from the community. Therefore, predation has been viewed as the mechanism which keeps the number of species in the community high. However, this argument is based on the supposition that the only spaces available for colonization in the rocky intertidal are rock surfaces. An examination of mussel beds at 15 sites along the Californian and Oregonian coastline revealed that this is not true; virtually all of the species that compete for space with M. californianus were also found living on the shells of this mussel. Therefore, these species can so-exist with M. californianus even where it occupies all available surfaces, and the prevailing view of the importance of predation in maintaining the species diversity of this community is incorrect.. To determine if individual performance is affected by living on mussel shells rather than rock, the population dynamics of the three commonest species found on both substrates, the barnacles Balanus glandula and Chthamalus fissus, and the limpet Collisella scabra, were monitored. Recruitment of barnacles was higher on the mussels than on the rock, and the recruitment on mussels was not affected by their filter feeding. Overall growth rates were slightly higher on the

rock, but survivorship was hither on the mussels. In addition, the reproductive status of the adults was the same on both substrates. Therefore, it appears that there are trade-offs involved with living on either substrate. More substrates produce gametes, the propagation of these species is insured even if M. californianus occupied all rock surfaces. There is also evidence suggesting that the population dynamics of M. californianus is affected by the organisms living on their shells. Barnacles have no real effect on the growth rate, biomass of gonads, or attachment strength of this mussel to the rock, but they do offer them protection from predation by P. ochraceus. Algae also have no real effect on the growth rate or biomass of gonads produced by M. californianus, but they do reduce both the attachment strength of the mussels and the liklihood of being preyed upon by P. ochraceus. Therefore, mussels appear to benefit from the presence of barnacles on their shells, while algae have both positive and negative effects on their mussel hosts.
predation/competition/keystone predators/space/rocky intertidal species diversity/recruitment/mortality/survivorship reproduction/ Pisaster ochraceus/sea star/starfish/Balanus glandula/Chthamalus fissus/barnacle/Collisella scabra/limpet/Mytilus californianus/mussels/mussel locations ranging from Carpinteria, CA to Boiler Bay, OR, including sites along the Santa Barbara Channel/marine biology/ecology.

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Address: SIO, Marine Physical Lab., P.O. Box 1529, La Jolla, CA 92093. Submersible exploration 70 km SW of San Diego, California, in the South San Clemente Basin indicated an uneven line of cones, columns, and irregular piles of mineral deposits with an average height of 2-3 cm, and a longitudinal extension of >=100 m. The mineral masses made of barite crystals are interpreted as effects of mineralized thermal springs discharging along the fault line. Photographs of the barite crystals depict dense tangles of tube worms on or near the deposits which were later identified as the vestimentiferan Lamellibrachia barhami. Unidentified bluish-gray organisms formed apparently gelatinous masses draped over some barite surfaces and worm tubes, and large stalkless crinoids were attached to several barite cone tops. The features of these springs are compared with those at other locations such as midocean ridges, Galapagos Islands, East Pacific Rise, and the Red Sea. A mechanism for barium crystal formation is given. Faulting/Barium compounds/Mineral deposits/Thermal discharges/deep-sea hydrothermal

site/barite crystals/mineralized thermal springs/ Lamellibrachia barhami/Polychaeta/Annelida/crinoids/Crinoidea/South San Clemente Basin/marine biology/marine geology.

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3019. Lott DF, Minia S. Home ranges of American bison cows on Santa Catalina Island, California. J. Mammal. 1983;64(1):161-162 Address: Div. Wildl. & Fish. Biol., Univ. California, Davis, CA 95616,. About 400 plains bison (Bison bison) live on Santa Catalina Island, 34 km W Los Angeles (33.DEGREE.22'N, 118.DEGREE.22'W). The area is 200 km2. The elevation range from sea level to 610 m. The bison have free and undisturbed access to 172 km2 of the island. Because part of it is very poor bison habitat, the cows confine their activity to about 150 km2 of the island. Rainfall averages 33 cm plus the equivalent of an additional 20 cm of rain in coastal influence. The plant community is composed primarily of grasses, but also has areas of coastal sage scrub with good stands of scrub oak. This study was designed to describe the long term and seasonal home ranges of bison cows on Santa Catalina Island and their rate of movement during and outside the rut.
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Los Angeles County/Ventura County/Santa Barbara County/California/engineering geology/earthquakes/geologic hazards/aseismic design/Pacific Coast/Western U.S./United States/effects/ground motion/Santa Barbara Island earthquake, 1981/spectral analysis/strong motion/USGS/GEOREF.

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marked calves were essentially random, except for cow-calf bonds. Cow-calf relations were severed abruptly and were random thereafter. Random association between individuals combined with spatial heterogeneity generates a negative binomial model giving a close fit for several equilibrium group size distributions. Random association may occur because it facilitates each cow matching its physiological needs at any moment with the needs of other potential co-group members at the same moment. Random association may have facilitated exploration of the unstable Great Plains environment where modern bison evolved. cow/calf/cluster analysis/probability technique/phyciological need/social interactions/mother-offshring interactions/spatial distribution/American bison/Bison bison/group stability/Santa Catalina Island/terrestrial biology/mammalogy.

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We examined the life history of the California scorpionfish in the Southern California Bight. Based on sportfish creel census data, the species was most abundant in the southern part of the Bight, particularly around Catalina, San Clemente, and the Coronado Islands. Trawl studies from 1974 to 1984 indicated that California scorpionfish populations varied considerably in abundance, with numbers peaking in 1982. Though the species usually associates with hard substrata, it was abundant over mud about the Palos Verdes Peninsula, site of a major sewage outfall. We think that this anomalous abundance was due to the presence of large numbers of a prey species, the ridgeback prawn, Sicyonia ingentis, which was attracted to the nutrient-rich substrata. Female California scorpionfish lived to 21 years, males to 15. Females grew faster than males. Von Bertalanffy age-length parameters for females were L = 44.3, k = 0.13, t0 = -1.9, and for males L = 36.3, k = 0.12, t0 = -3.86. Over 50% of both females and males were mature at 2 years of age. Males tended to mature at a slightly smaller size. Spawning occurred from May through August, peaking in July. California scorpionfish formed large offshore spawning aggregations in waters. deeper than their off-season habitat. Tagging results indicated that fish return to the same spawning area annually. Crabs, primarily juvenile Cancer anthonyi, were the most important food item of fishes inhabiting soft substrata in shallow water.
life history/prey species abundance/spawning/sex difference/growth/temperature/sport fishing statistics/fishery biology/California scorpionfish/Scorpaena guttata/ridgeback prawn/Sicyonia ingentis/Southern California Bight/Santa Catalina Island/San Clemente Island/Coronado Islands/Palos Verdes

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The authors surveyed fishes taken aboard commercial passenger fishing vessels along the four northern Channel Islands (San Miguel, Santa Rosa, Santa Cruz, and Anacapa) within the Southern California Bight. Fourteen species declined in abundance along the Northern Channel Island chain. Colder water forms decreased to the east, while temperate species declined to the west. In the shallowest depth interval (0-36 m), the mean lengths of four rockfish species increased toward the west. In general, the size of these four species also increased with depth. They believe these phenomena are linked to the differences in water temperature between the islands.
spatial distribution/water temperature/marine fish/population dynamics/ecological distribution/species diversity/temperature effects/angling/fish catch statistics/sport fishing statistics/abundance Pisces/rockfish/northern California Channel Islands/San Miguel Island/Santa Rosa Island/Santa Cruz Island/Anacapa Island/marine biology/ichthyology/fisheries/resource management.

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Mining/Natural resources/Continental shelves/Mineral deposits/Government policies/Mineral economics/Sand/Gravel/Phosphate deposits/Sedimentary rocks/California/Limestone/Mineral leases/Outer continental shelves/Phosphorites/San Miguel Island/Santa Rosa Island/Santa Cruz Island/Anacapa Island/San Diego shelf/San Pedro shelf/Santa Monica shelf/Mining/Engineering/Earth Sciences/geology.

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Remote sensing/Mapping/Hazards/Water pollution control/Resources development/Oil and gas/Outer Continental Shelf/Side-scan sonar/maps/geophysical surveys/cartography/acoustical surveys/acoustical methods/conar methods/geophysical methods/digital techniques/imagery/side-scanning methods/Santa Barbara Channel.

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automatic data processing/acoustical surveys/marine methods/geophysical methods/sonar methods/cartography/image analysis/computers/maps/side-scanning sonar/continental shelves/geophysical data/side scan sonar/Santa Barbara Channel/Anacapa Passage/surficial geology/geomorphology.

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California/economic geology/fuel resources/Pacific Ocean/engineering geology/marine installations/Pacific Coast/Western U.S./United States/continental borderland/deep water environment/drilling/feasibility studies/natural gas/North American Pacific/offshore/petroleum/pipelines/production/Southern California/technology/USGS/GEOREF.

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California/economic geology/mineral resources/Pacific Ocean/nodules/manganese composition/composition/barite deposits/Pacific Coast/Western U.S./United States/continental borderland/deep sea environment/deep sea sedimentation/fuel resources/manganese/manganese ores/metal ores/natural gas/North American Pacific/offshore/petroleum/phosphate deposits/Southern California/USGS/GEOREF.

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Address: Oregon State Univ., Mar. Sci. Cent., Newport, OR 97365, USA Conference: Scientific Consult. on the Conservation and Management of Marine Mammals and their Environment Bergen (Norway) 1976 Report ID = ISBN 92-5-100514-1. Three sub-species of Z. californianus have been identified Z. c. californianus is found along the eastern North Pacific coast of North America from British Columbia south to at least Manzanillo, Mexico it breeds in late May and early June from the tip of Baja California north to San Miguel Island and throughout the Sea of Cortez. Z. c. wollebacki breeds in the Galapagos Islands from October to December, Z. c. japonicus was in the past found in the Sea of Japan from 34 to 37 degree N. Z. c. californianus was heavily exploited in the 1800s although estimates of population size are uncertain, there appear to be at least 75000-100000 animals present. Populations of the sub-species and of Z. c. wollenbacki , estimated to include 20 000 animals, are protected and are either growing in size or are stable. iZ. c. japonicus is rare or extinct. population number/population dynamics/protected resources/reproductive biology/Zalophus californianus/Pacific coast of North America/San Miguel Island/Galapagos Islands/marine biology/mammalogy.

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3093. McCulloch DS, Gardner JV, Eittreim SL, Masson DG. GLORIA survey of the morphology of the mid-California continental margin out to 200 n.mi. American Geophysical Union, 1984 Fall Meeting. Eos, Transactions, American Geophysical Union 65(45). ; 1984. 1083. Address: U. S. Geol. Surv., Menlo Park, CA, USA; Inst. Oceanogr. Sci., GBR. Conference: American Geophyscial Union, 1984 Fall meeting. San Francisco, CA, United States, Dec. 3-7 1984. geophysical surveys/oceanography/acoustical surveys/continental margin/ocean floors/Monterey Fan/Delgada Fan/Murray fracture zone/Santa Barbara Channel/Santa Lucia Bank/Arguello Canyon/marine geology/oceanography.

3094. McDermott-Enrlich D, Young DR, Alexander GV, Jan TK, Hershelman GP. Chemical studies of offshore oil platforms in the Santa Barbara Channel. Siva-Lindstedt J. Energy/Environment '78: A symposium on energy development impacts: Proceedings. ; 1978.

133-144.
Address: Southern California Coastal Water Research Project, 1500 E. Imperial Hwy., El Segundo, CA 90245 Conference: Energy/environment '78: A symposium on energy development impacts. Los Angeles, CA. Aug. 22-24, 1978. Sediments collected in the vicinity of and directly below oil platforms Hazel and Hilda in the Santa Barbara Channel, California, were analyzed by AAS for hexane extractable materials, volatile solids, Cu, Zn, and petroleum hydrocarbon content. The levels of the first 4 items appeared normal in most samples; immediately below the platforms, values for all 4 were elevated. The petroleum hydrocarbon content of all samples was higher than values obtained in areas with no natural seeps. Tissues of 2 fish species (Sebastes auriculatus and S. vexillaris) and 2 invertebrates (Cancer anthonyi and Mytilus californianus) were analyzed by optical emission spectrography for trace metals (Ag, Cd, Cr, Cu, Fe, Mo, Ni, Pb, Si, V, and Zn) and petroleum hydrocarbon levels. No enhanced trace element levels were found in the animals collected from the platforms when compared with those from control sites. No detectable amounts of petroleum hydrocarbons were observed in any of the animal specimens analyzed.
Chemical analysis/Offshore operations/Sediments/Marine organisms/Trace elements/Petroleum/Hydrocarbons/Environmental impact/Fish/Sebastes auriculatus/Sebastes vexillaris/Cancer anthonyi/Mytilus californianus/Santa Barbara Channel/petroleum/pollution/water quality/chemistry/resource management.

3095. Hamilton RM, Yerkes RF, Brown RDJ, Burford RO, DeNoyer JM. Seismicity and associated effects, Santa Barbara region. Geology, petroleum development, and seismicity of the Santa Barbara channel region, California. U.-S.-Geological-Survey-Professional-Paper. 1969:p.47-68
U. S. Geological Survey, Reston, VA Analytic; Serial; Report B; Bibliography and Index of Geology (1969-present).
Recent earthquake history, epicentral locations, associated ground motion and failure, tsunamis, seismic effects on oil-field installations and operations.
California/seismology/seismicity/Pacific Ocean/effects/Pacific Coast/Western U.S./United States/oil and gas fields/Santa Barbara/seismic effects/USGS/GEOREF.

3096. McFarland WN, Prescott J. Standing crop, chlorophyll content and in situ metabolism of a giant kelp community in southern California. Publ. Inst. Mar. Sci. Univ. Tex. 1959;6:109-132
photosynthesis/chlorophyll/metabolism/Macrocystis pyrifera/giant kelp/California Channel Islands/marine biology/botany/phycology.

3097. Robinson K, Porath H. Marine studies of San Pedro Bay, California. Part VI. Circulation investigations. Current measurements in the outer Los Angeles harbor. 1974;
COM 74 11558 5/7400/ocean currents/los angeles harbor/water pollution/tides/flowmeters/wind meteorology/velocity measurement Hickey/physical oceanography/MINERALS MANAGEMENT SERVICE.

3098. McCulloh TH. Geologic characteristics of the Dos Cuadras offshore oil field. Geology, petroleum development, and seismicity of the Santa Barbara channel region, California. U.-S.-Geological-Survey-Professional-Paper. 1969:p.29-46 U. S. Geological Survey, Reston, VA Analytic; Serial; Report B; Bibliography and Index of Geology (1969-present).
Anticlinal accumulation in Pliocene sandstone-siltstone sequence,

reservoir characteristics, pressure conditions, well blowout, associated oil seepage, subsidence potential accompanying fluid withdrawal.
petroleum/Pacific Ocean/Dos Cuadras oil field/oil and gas fields/economic geology/structure/USGS/GEOREF.

3099. McKinney CR. Uranium series ages of Columbian mammoth enamel on Santa Rosa Island; implications for low sea stands and man's entry into North America. Geological Society of America, 93rd annual meeting. Abstracts with Programs - Geological Society of America 1980;12(7):481
Address: Fla. State Univ., Dep. Geol., Tallahassee, FL Conference: 93rd annual meeting of the Geological Society of America Atlanta, GA, Nov. 17-20, 1980. absolute age/geochronology/dates/stratigraphy/Pleistocene/teeth/changes of level/paleontology/uranium/archaeology/Th U/Quaternary/Cenozoic/fossilization/uranium-thorium-lead dating/mammoth enamel Mammalia/Elephantoidea/Mammuthus exilis/Mammuthus columbi/California Channel Islands/Santa Rosa Island/geology/paleontology/stratigraphy/mammalogy/terrestrial biology.

3100. Yerkes RF, Wagner HC, Yenne KA. Petroleum development in the region of the Santa Barbara channel. Geology, petroleum development, and seismicity of the Santa Barbara channel region, California.
U.-S.-Geological-Survey-Professional-Paper. 1969:p. 13-27
U. S. Geological Survey, Reston, VA Analytic; Serial; Report B; Bibliography and Index of Geology (1969-present).
Descriptions of onshore and offshore oil and gas fields, Rincon anticlinal trend, Eocene-Pleistocene reservoir rocks, asphalt occurrences.
Pacific Ocean/economic geology/oil and gas fields/California/bitumens/hydrocarbons/organic materials/Pacific Coast/Western U.S./United States/distribution/exploration/natural gas/Santa Barbara Channel/structure/USGS/GEOREF.

3101. McLean H, Howell DG. Miocene Blanca Fan, northern Channel Islands, California: small fans reflecting tectonism and volcanism. Geo-Marine Letters 1984;3(2-4):161-166
Address: U. S. Geol. Surv., Menlo Park, CA.
Blanca Fan is a submarine fan composed of Miocene volcaniclastic strata. Parts of the fan system are exposed on Santa Cruz and Santa Rosa Islands, and possibly correlative strata crop out on San Miguel and Santa Catalina Islands. The Blanca Fan and underlying breccia reflect regional transcurrent faulting in the California Continental Borderland and development of a system of rapidly subsiding basins and uplifted linear ridges during early and middle Miocene time. Erosion of uplifted crystalline basement rocks followed by silicic volcanism created linear sediment sources for the alluvial and submarine fans, respectively.
ocean floors/Blanca Formation/Vaqueros Formation/Blanca Fan/Miocene/Neogene/Tertiary/bottom features/submarine fans/marine geology/transcurrent faults/faults/volcaniclastics/conglomerate/clastic rocks/turbidites/tectonic control of sedimentation/sediments/deposition of clastics/external bedding structures/Miocene Pacific Ocean/Santa Cruz Island/Santa Rosa Island/San Miguel Island/Santa Catalina Island/Miocene/Blanca Fan/marine geology/oceanography.

3102. Roedel PM. The jack mackerel, Trachurus symmetricus:

A review of the California fishery and of current biological knowledge. Calif. Fish Game 1953;39(1):45-68.
Jack mackerel/Trachurus symmetricus/fishery/fishing gear/distribution/age/weight/larvae/spawning/economics/fish/Cross /MINERALS MANAGEMENT SERVICE.

3103. Roedel PM. Report of the CalCOFI committee. Partial review of and proposed program for research toward utilization of the California current fishery resources. Calif. Coop. Oceanic Fish. Invest. Rep. 1968;12:5-9. fisheries/marine resources/california/zooplankton/Pieper/MINERALS MANAGEMENT SERVICE.

3104. Vedder JG, Wagner HC, Schoellhamer JE. Geologic framework of the Santa Barbara channel region. Geology, petroleum development, and seismicity of the Santa Barbara channel region, California.
U.-S.-Geological-Survey-Professional-Paper. 1969:p.1-11
U. S. Geological Survey, Reston, VA Analytic; Serial; Report B; Bibliography and Index of Geology (1969-present).
Cretaceous-Quaternary geologic history, sedimentary-volcanic rocks, structural development.
Pacific Ocean/oceanography/marine geology/stratigraphy/Mesozoic/Cenozoic/California/Pacific Coast/Western U.S./United States/Cretaceous/Jurassic/Quaternary/Santa Barbara Channel/tectonics/Tertiary/Triassic/USGS/GEOREF.

3105. McNeilan TW, Bugno WT. Jackup rig performance in predominantly silty soils, offshore California. Proceedings - Offshore Technology Conference 17 1985;1:395-402
Address: McClelland Eng., San Francisco, CA, USA; Chevron U.S.A., USA Conference: 1985 offshore technology conference. Houston, TX, May 6-9, 1985. In uniform deposits of nonplastic, very silty fine sand or sandy silt, the observed spud can penetrations are small and can be predicted using conventional procedures for sand, assuming fully drained conditions. In contrast, where the subsurface materials are predominantly clayey silts of medium plasticity, the spud can penetrations are larger and can be predicted using conventional procedures for the undrained behavior of clay. For silt deposits that are neither very sandy nor very clayey, observed spud can penetrations suggest that these deposits are partially drained during spud can penetration. For silt deposits of intermediate permeability, the spud can penetrations may depend not only on spud can geometry, leg loads, detailed soil layering, and soil properties, but also on the rate at which the spud cans are loaded. Thus, because of partial drainage effects, computational procedures and experience based on undrained or drained behavior should be used with caution when a site is underlain by silt.
foundations/silt/clastic sediments/soils/case studies/jackup rigs/offshore/sand/permeability/continental shelf/Santa Maria Basin/Santa Barbara Channel/Le Tourneau/engineering geology/environmental geology.

3106. Mendelsohn S. Project execution plan for OTEC (Ocean Thermal Energy Conversion) current study. : Naval Facilities Engineering Command, Washington, DC. Chesapeake Div. CHES/NAVFAC-FPO-7821; 1978. 13. ((Sponsored by the Department of Energy, Deep Oil Technology, Incorporated)).
As part of the Ocean Thermal Energy Conversion (OTEC) project the contractor being sponsored by the Department of Energy, Deep Oil Technology, Incorporated the contractor is conducting a

verification test for the OTEC Cold Water Pipe during November and December 1978. The test is being conducted from the Deep Oil X-1 platform to: 1) test the analytical methods used to design the OTEC Cold Water Pipe; and 2) evaluate the performance of the Cold Water Pipe in the open sea. The work is being carried out off the Coast of California on the seaward side of Santa Catalina Island in about 1,000 feet of water. The Cold Water Pipe tests will consist of supporting an instrumented steel pipe five feet in diameter and up to 800 feet long from the Deep Oil X-1. The dynamic behavior of the pipe will be measured for various sea conditions, platform motions, pipe lengths, and pipe supporting means.
Ocean currents/Low temperature/Test and evaluation/Water/Water pipes/Dynamics/Ocean tides/Coastal regions/Instrumentation/Pipes/Oceans/Steel/Energy conversion/Heat/Data acquisition/Oceanographic data/Open water/Length/Planning/Motion/Platforms/Sea states/Ocean thermal energy conversion/seaward side of Santa Catalina Island/oceanography.

3107. Evenson RE. Suitability of irrigation water and changes in ground water quality in the Lompoc subarea of the Santa Ynez River basin, Santa Barbara County, California. U. S. Geological Survey Water Supply Paper. 1965:p.S1-S20 U. S. Geological Survey, Reston, VA Monographic; Serial; Report N; Bibliography of North American Geology (1785-1970).
Analyses of water samples collected since 1934 from some of the irrigation wells in the Lompoc subarea of the Santa Ynez River valley have shown a gradual deterioration in the chemical quality of the water. . . . The influence of recycled irrigation water is indicated by increased concentrations of chloride and sulfate in a ratio of 1:2. Inflow of high-chloride low-sulfate connate water is indicated by increased chloride concentration correlated with little or no change in sulfate concentration. Peak chloride concentrations in three local areas are probably the result of inflow of connate water. Furthermore, ground-water gradients in each of the local areas are favorable for inflow from the consolidated rocks.
Santa Barbara County/California/hydrogeology/ground water/surveys/Pacific Coast/Western U.S./United States/changes/composition/geochemical/ground water quality/Lompoc subarea/maps/quality/Santa Ynez basin/Santa Ynez River basin/Santa Ynez River valley/USGS/GEOREF.

3108. Menke AS. Maps and place-names of the California Channel Islands. Menke AS, D.R. Miller. Entomology of the California Channel Islands: Proceedings of the first symposium. Santa Barbara, CA: Santa Barbara Museum of Natural History; 1985. 171-178.
Address: Syst. Entomol. Lab., IIBIII, ARS, USDA, c/o U.S. Natl. Mus., MNH, Washington, DC 20560.
Scientific expeditions to the California Channel Islands are often fraught with various problems, one of which is the general lack of adequate maps. It seemed appropriate, therefore, to include definitive island maps with this proceedings publication because entomologists need to precisely indicate on their collection labels where insect material originated. This is because some insects are restricted to narrow habitats such as, for example, canyons where their host plants may still survive the ravages of feral animals, or to areas of moisture such as spring or water course, or to sand dunes.
maps/entomology/California/Channel Islands/geology/terrestrial biology/geography.

3109. Rowe GT. Respiration and chemical composition of Pleuroncodes planipes (Decapoda:Galatheidae) energetic significance in an upwelling system. Can. Fish. Res. Board J. 1975;32(9):1607-1612.
Baja/California Coast/Pleuroncodes/California current/chemical analysis/caloric content/upwelling/respiration rates/energy budget/ecosystems/crabs/P/planipes/Thompson/invertebrates/MINERALS MANAGEMENT SERVICE.

3110. Wilson HDJ. Ground water appraisal of Santa Ynez River basin, Santa Barbara County, California, 1945 52. U. S. Geological Survey Water Supply Paper. 119 p 1959
U. S. Geological Survey, Reston, VA Monographic; Serial; Report N; Bibliography of North American Geology (1785-1970).
Santa Barbara County/California/hydrogeology/ground water/surveys/aquifers/Pacific Coast/Western U.S./United States/cross sections/Geologic formations/geologic maps/maps/historical geology/Lists/Pliocene Recent/Quaternary/Santa Ynez River basin/sections/tables/USGS/GEOREF.

3111. Menke AS. Notes on Channel Island Sphecidae. Menke AS, Miller DR. Entomology of the California Channel Islands: proceedings of the first symposium. Santa Barbara, California, USA: Santa Barbara Museum of Natural History; 1985. 52-58.
Presented at: Symposium on Entomology of the California Channel Islands (at) Annual Meeting of the Entomological Society of America, San Diego, CA (USA), Dec 1981 Address: Syst. Entomol. Lab., IIBIII, Agric. Res. Serv., USDA, c/o U.S. Natl. Mus., Nat. Hist. Build., Washington, DC 20560.
Included here are differences between insular and mainland populations of some species, notes on synonymy, easp habitats, and biological observations. The description of a new subspecies of Bembix americana from San Clemente I. is included and key to the Channel Island subspecies of this wasp is appended. taxonomy/new subspecies/check lists/food organisms/habitat Sphecidae/Bembix americana/wasps/California Channel Islands/terrestrial biology/entomology.

3112. Upson JEI, Thomasson HGJ. Geology and water resources of the Santa Ynez River basin, Santa Barbara County, California. U. S. Geological Survey Water Supply Paper. 194 p 1951
U. S. Geological Survey, Reston, VA Monographic; Serial; Report N; Bibliography of North American Geology (1785-1970).
Santa Barbara County/California/hydrogeology/ground water/surveys/Pacific Coast/Western U.S./United States/Geologic formations/geologic history/geologic maps/maps/historical geology/Jurassic, Recent/Lists/physical geology/Santa Ynez River basin/sections/tables/USGS/GEOREF.

3113. Menke AS. Symposium introduction. Menke AS, Miller DR. Entomology of the California Channel Islands: Proceedings of the first symposium. Santa Barbara, California, USA: Santa Barbara Museum of Natural History; 1985. 1-2. Presented at: Symposium on Entomology of the California Channel Islands (at) Annual Meeting of the Entomological Society of America, San Diego, CA (USA), Dec 1981 Address: Syst. Entomol. Lab., IIBIII, Agric. Res. Serv., USDA, c/o U.S. Natl. Mus., MNH, Washington, DC 20560.
zoogeography/biogeography/Insecta/California Channel Islands/terrestrial biology/entomology.

3114. Reynolds S. A recent turbidity current event, Hueneme Fan, California: Reconstruction of flow properties. Sedimentology 1987;34(1):129-137. text/chemical

oceanography/eganhouse/venkatesan/3/introduction/MINERALS MANAGEMENT SERVICE.

3115. Olmsted FH. Geologic reconnaissance of San Clemente Island, California. U. S. Geological Survey Bulletin. 1958:p.55-68 U. S. Geological Survey, Reston, VA Monographic; Serial; Report N; Bibliography of North American Geology (1785-1970).
Los Angeles County/California/areal geology/maps/Pacific Coast/Western U.S./United States/geologic maps/historical geology/Miocene Recent/petrology/physical geology/physiographic geology/San Clemente Island/volcanic rocks/USGS/GEOREF.

3116. Menke AS, Miller DR(. Entomology of the California Channel Islands: Proceedings of the first symposium. Santa Barbara, California, USA: Santa Barbara Museum of Natural History; 1985. 184.
Presented at: Symposium on Entomology of the California Channel Islands (at) Annual Meeting of the Entomological Society of America, San Diego, CA (USA) Price: $20.00. With eight maps in folder.
Seven papers were presented at the symposium. Six are printed here in revised and augmented form, and three additional papers on Channel Island insects are included in this volume because it seemed appropriate. One of these is an addendum and update of the bibliography published by Miller and Menke, and the others are on the bees of Anacapa I. and the beetles of Santa Barbara I. A fourth non-symposium paper included in this volume presents detailed maps of the 8 California Channel Islands.
island biogeography/entomology/Insecta/California Channel Islands/terrestrial biology/entomology.

3117. Smith WST. Part 2; A geological sketch of San Clemente Island [California]. United States Geological Survey Annual Report. 1898;18(part 2):p.159 U. S. Geological Survey, Washington, DC Analytic; Serial; Report N; Bibliography of North American Geology (1785-1970).
Los Angeles County/California/areal geology/San Clemente Island/Pacific Coast/Western U.S./United States/geologic history/geologic maps/maps/igneous and volcanic rocks/petrology/terraces/Tertiary/USGS/GEOREF.

3118. Michel WC, Case JF. Effects of a water soluble petroleum fraction on the behavior of the hydroid coelenterate Tubularia crocea. Mar. Environ. Res. 1984;13(3):161-176
Address: DEPARTMENT OF BIOLOGICAL SCIENCES, MARINE SCIENCES INSTITUTE, UNIVERSITY California, SANTA BARBARA, CALIF. 93106.
The water-soluble fraction (WSF) of Platform Holly, Monterey formation [Santa Barbara Channel, California, USA] crude oil has sublethal effects on the feeding behavior of Tubularia crocea, a hydroid coelenterate. Dilutions as low as 10% WSF (0.68 ppm benzene) reduced the frequency of concerts, spontaneous concerted oral flexions of the proximal tentacles. Exposure to undiluted WSF and its volatile subfraction caused significant hydranth shedding. Exposure to 100% WSF for 15 min or longer significantly reduced the number of Artemia nauplii ingested, in feeding tests. After a 24 h exposure to 100% WSF, ingestion rates remained depressed during a further 24 h without exposure. The threshold for feeding stimulation by proline increased one log unit after 24 h treatment with 100% WSF and spontaneous activity was reduced to all test stimuli, including filtered seawater (FSW). It is suggested that Tubularia is useful as a test organism for petroleum effects upon behavioral processes significant to survival in coelenterates.
sublethal effects/feeding behavior/crude oil/benzene

proline/hydranth shedding/test organisms/Platform Holly hydroid/Tubularia crocea/Santa Barbara Channel/marine biology/petroleum.

3119. Kemnitzer LE. Geology of the San Nicolas and Santa Barbara islands, Southern California [dissertation]. ; 1933. California Institute of Technology, United-States; Master's Monographic; Thesis B; Bibliography and Index of Geology (1969-present).
unknown p.
California/areal geology/San Nicolas Island/Santa Barbara Island/Pacific Coast/Western U.S./United States/Southern California/GEOREF.

3120. Michel WC. The effects of oil pollution on hydroid behavior and neurophysiology [dissertation]. Santa Barbara, California, USA: University of California; 1985. 161.
The hydroids. Tubularia crocea and Myrionema hargitti are sensitive organisms for assessing the effects of oil pollution. The abilities of these hydroids to capture Artemia nauplii were reduced after 1 h exposure to a water-soluble fraction (WSF) of Monterey Formation crude oil (from Platform Holly, Santa Barbara Channel; 100% WSF = 20 ppm total hydrocarbons). Algal symbionts within Myrionema contribute photosynthetically-fixed carbon to the host hydroid. No significant effects upon these symbionts were noted after 1 or 3 h but significant reductions in the mitotic index, photosynthesis and carbon translocation rates were observed after a 24-48 h exposure to 100% WSF. Myrionema hargitti was less responsive to mechanical stimuli after a brief 100% WSF exposure. The responsiveness to a feeding stimulant (proline) and concert frequency of 100% WSF-treated Tubularia crocea were lower than controls. The cellular basis for the behavioral abnormalities in Tubularia were further examined with electrophysiological techniques. Pulses of 100% WSF evoked rapid increases in the firing frequency of epithelial conducting systems associated with a vigorous tentacle closure response. Significant increases in epithelial activity were also recorded at 1% WSF and the increased firing frequency did not persist beyond the duration of the exposure. Ten min exposures to 0.1% WSF resulted in. significant increases in epithelial activity. 100% WSF also increased epithelial pulse activity but decreased the amplitude of the pulses. During post-treatment in FSW the epithelial activity and amplitude approached pre-treatment levels. Bioaccumulation of ('3)H-toluene (20 ppm) from 100% WSF reached a maximum within 1 min but declined over the next hour. Higher concentrations of ('3)H-toluene evoked increased hydranth shedding within 1 h but these hydranths never accumulated as much ('3)H-toluene as hydranths exposed to lower concentrations. Fluctuations in the content of sodium and calcium occurred within 1-5 min after exposure to 100% WSF. It appears that hydrocarbon bioaccumulation alters membrane permeability properties, upsetting the equilibrium of ions critical for electrical activity. These changes to Tubularia epithelial membranes alter properties of the epithelial conducting systems coordinating the rhythmic behavioral activity.
zooxanthellae/oil pollution/feeding biology/Tubularia crocea/Myrionema hargitti/zooxanthellae/marine biology.

3121. Bailey EH. Mineralogy, petrology, and geology of Santa Catalina Island, California [dissertation]. ; 1941.
Stanford University, United-States; Doctoral Monographic; Thesis B; Bibliography and Index of Geology (1969-present).

unknown p.
California/areal geology/Santa Catalina Island/Pacific Coast/Western U.S./United States/GEOREF.

3122. Miles AK. Turf assemblage of a Macrocystis kelp forest: experiments on competition and herbivory (illumination) [dissertation]. Corvalis, Oregon: Oregon State University; 1986. 152.
Early and later successional stages of the assemblage of turf algae and sessile animals of a Macrocystis kelp forest were studied off San Nicolas Island, California from 1980 through 1981, and 1983 through 1984. Kelps were manipulated to determine if differences in illumination could account for dominance by turf algae or sessile animals. Caging and algal-removal experiments were conducted to determine if the effects of herbivory and competition could account for the low or variable recruitment and abundance of foliose turf algae. Plots were covered for different time intervals up to 1 year to determine if survival of overgrowth could explain the prevalence of competitively subordinate crustose coralline algae. Increased cover and recruitment of turf algae and decreased cover and low recruitment of sessile animals were correlated with the removal of canopy. In the presence of canopy, existing cover of crustose algae and sessile animals changed little over time; sessile animals recruited at significantly higher levels than algae on cleared plots. Patiria (a common invertebrate grazer) removed certain ephemeral algae and appeared to slow recruitment by other algae, but had little effect on mature turf algae. These effects appeared dependent on a high density of Patiria. Algal recruitment on caged and open, near-bare plots was negligible, but. sessile animals recruited heavily to these plots. These results were correlated with low illumination caused by a dense and persistent surface canopy of Macrocystis. Established foliose red algae increased significantly in caged plots compared to open plots implying effects due to herbivory. No changes in cover were associated with turf algal-algal competition on these plots; a major decline in cover of all arborescent turf algae was correlated with low illumination. On covered plots, crustose coralline algae alternately survived, died, and recruited at different sampling points, resulting in only a slight change in abundance after 12 months of coverage. Other sessile organisms also survived while covered, but declined substantially compared to crustose coralline algae. Patterns of distribution and abundance of turf algae and sessile animals were correlated with the Macrocystis canopy, as it affects illumination at the substrate. No pervasive effects were attributed to grazing by large invertebrates. Herbivory, probably by fishes, was a plausible explanation for the low abundance of foliose red algae. The ability of crustose coralline algae to survive and recruit under conditions of overgrowth was shown to be a contributing factor for the prevalence of these algae.
herbivory/competition/succession/illumination/giant kelp/brown algae/crustose coralline algae/Patiria/foliose red algae/marine biology/botany.

3123. Rindsberg AK. Distribution and preservation of biogenic sedimentary structures in the deep sea. [dissertation] ; 1986.
Colorado School of Mines, United-States; Doctoral Monographic; Thesis B; Bibliography and Index of Geology (1969-present).
unknown p.
sedimentary structures/biogenic structures/patterns/Pacific

Ocean/sedimentary petrology/assemblages/Atlantic Ocean/benthonic taxa/bioturbation/burrows/cores/Deep Sea Drilling Project/deep sea environment/depth/distribution/echinoderms/ecology/Eocene/Paleoge ne/Tertiary/fa unal studies/Holocene/Quaternary/interpretation/lebensspuren/North American Pacific/organic carbon/organic materials/preservation/San Clemente Basin/worms /GEOREF.

3124. Miller DJ, Collier RS. Shark attacks in California and Oregon, USA 1926-1979. Calif. Fish Game 1981;67(2):76-104
Address: MARINE RESOURCES BRANCH, CALIF. DEP. FISH GAME, 2201 GARDEN RD., MONTEREY, CALIF. 93940.
mammal population/human/kelp beds/attack pattern/victim activity/location time/seasonality/water visibility/shark attacks/sharks/white shark/Carcharodon carcharias/Point Conception/San Miguel Island northward/Ano Nuevo Island/Bodega Bay/marine biology/ichthyology.

3125. Hollander DJ. Origin of secondary carbonates, diagenesis of organic matter, and source bed evaluation, Tertiary basinal units, La Honda Basin, Santa Cruz Mountains, California. [dissertation] ; 1984.
University of California, Santa Cruz, United-States; Master's Monographic; Thesis B; Bibliography and Index of Geology (1969-present).
unknown p.
California/stratigraphy/Tertiary/diagenesis/materials/organic materials/alteration/Pacific Coast/Western U.S./United States/carbonates/Coast Ranges/La Honda Basin/Santa Cruz Mountains/secondary minerals/GEOREF.

3126. Schacher GE, Davidson KL, Leonard CA, Spiel DE, Fairall CW. Comparison of overwater stability classification schemes with measured wind direction variability: Offshore transport and diffusion in the Los Angeles Bight. NPS-61-82-002. Prep. for U.S. Dep. Interior, Minerals Management Service, Pacific OCS Region, Los Angeles, CA. Prep. by Naval Postgraduate School, Monterey, CA. 1982;:58.
MINERALS MANAGEMENT SERVICE.

3127. Miller DR. Notes on Channel Island mealybugs. Menke AS, Miller DR. Entomology of the California Channel Islands: proceedings of the first symposium. Santa Barbara, California, USA: Santa Barbara Museum of Natural History; 1985. 59.

Presented at: Symposium on Entomology of the California Channel Islands (at) Annual Meeting of the Entomological Society of America, San Diego, CA (USA), Dec 1981 Address: Syst. Entomol. Lab., IIBIII, Agric. Res. Serv., USDA, BARC-West, Beltsville, MD 20705.
This section is written to draw attention to changes in the names of certain mealybugs discussed in previous papers on the pseudococcids of the California Channel Islands.
taxonomy/mealybugs/pseudococcids/Pseudococcidae/California Channel Islands/terrestrial biology/entomology.

3128. Schaefer MB. Some aspects of the biological oceanography of the California Current with particular reference to the vicinity of Point Arguello. Univ. of Calif. Institute of Marine Resources. Ref. No. 65-26 1965;:25. Hardy phytoplankton/MINERALS MANAGEMENT SERVICE.

3129. McGlasson RH. Foraminiferal biofacies around Santa

Catalina Island [dissertation]. ; 1957.
University of Southern California, United-States; Master's
Monographic; Thesis B; Bibliography and Index of Geology (1969-
present).
California/stratigraphy/biostratigraphy/foraminifers/biofacies/Pa
cific Coast/Western U.S./United States/microfossils/marine
sediments/Santa Catalina Island/Southern California/GEOREF.

3130. Miller DR. Symposium conclusions and summation. Menke
AS, Miller DR. Entomology of the California Channel Islands:
proceedings of the first symposium. Santa Barbara, California, USA:
Santa Barbara Museum of Natural History; 1985. 113-117.
Presented at: Symposium on Entomology of the California Channel
Islands (at) Annual Meeting of the Entomological Society of
America, San Diego, CA (USA), Dec 1981.
zoogeography/Insecta/California Channel Islands/terrestrial
biology/entomology.

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(Rhodymeniales, Rhodophyta) on the Pacific coast of North America
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of four species of Rhodymenia (R. californica, R. pacifica, R.
callophyllidoides, and R. arborescens) are described, with
attention to their sympatric occurrence in the California
Channel Islands. Seasonal and latitudinal patterns in
reproduction define different centers of distribution for the
four species; while R. californica and R. pacifica are similar,

the other two species are distinctly different.The ontogeny, anatomy, organography and architecture of the four species emphasizes the similarity between R. californica and R. pacifica, whose thalli comprise a cluster of primary and lateral blades with modified plagiotropic blades (stolons). R. callophyllidoides is sessile, and partially or wholly procumbent. R. arborescens is distinctly stipitate, with a sympodial axis. In all four species, morphological differentiation is independent of anatomical construction.Morphologica l variation in the lamina of R. californica was studied by two methods: a morphometric analysis of field-collected plants and the growth of clones in culture under defined conditions. Morphological variation is superimposed on a basic developmental program, whose expression is affected by the periodicity, extent and rate of growth, which in turn is. influenced by environmental factors. sympatric species/Rhodymeniales/Rhodophyta/Rhodymenia californica/Rhodymenia pacifica/Rhodymenia callophyllidoides/Rhodymenia arborescens/California Channel Islands/terrestrial biology/botany.

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3140. Miller PL. Late cretaceous coccolith bio stratigraphy of San Miguel Island, California, USA. Micropaleontology (N.Y.) 1983;29(2):182-201 Address: CHEVRON U.S.A. INC., BOX 8100, CONCORD, CALIF. 94524. Coccoliths recovered from the northwest

coast of San Miguel Island (latitude 34.degree. N) provide definitive biostratigraphic criteria for subdivision of the Upper Cretaceous strata and for regional correlation with Upper Cretaceous rocks of the southern California mainland and offshore areas. Seven coccolith species zones are recognized [Quadrum gartneri, Eiffellithus eximius, Marthasterites furcatus, Micula staurophora, Broinsonia parca, Q. trifidum, Arkhangelskiella cymbiformis] from the stratigraphic distribution of 38 spp. and suggest an early Turonian to middle Maestrichtian age. More than 500 m of stratigraphic section along the northwest coast previously mapped as Paleogene are Upper Cretaceous. Part of the Upper Cretaceous sequence of San Miguel Island can be correlated with the Jalama, Chatsworth and Ladd formations and the Point Loma Formation of the southern California mainland.
Cretaceous/biostratigraphy/stratigraphic correlation/Coccoliths/Quadrum gargneri/Eiffellithus eximius/Marthasterites furcatus/Micula staurophora/Broinsonia parca/Quadrum trifidum/Arkhangelskiella cymbiformis/San Miguel Island/paleontology/geology/biostratigraphy.

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Hesperioidea) of the 8 California Channel Islands are listed, with
indication of residency status. Generally, the island faunas are
depauperate aggregations of mainland species. The short geologic
duration of isolation and high vagility of most of the species have
limited endemism. A species/area relationship exists, but turnover
in species composition over time (MacArthur-Wilson equilibrium) is
difficult to document with available data.
residency/status/isolation/endenism/species
composition/turnover/island
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of 10. Final report. 1979;:523. crude-oil/ecology/marine
biology/water pollution/Southern California
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impacts/tables data/abundance/seasonal
variations/benthos/invertebrates/distribution property/ocean
tides/ocean
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Santa Barbara County California/California/hydrogeology/ground water/surveys/Pacific Coast/Western U.S./United States/Montecito Basin/GEOREF.

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DR. Entomology of the California Channel Islands: Proceedings of
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Annual Meeting of the Entomological Society of America, San Diego,
CA (USA), Dec 1981 Address: Mus. Comp. Zool., Harvard Univ.,
Cambridge, MA 02138. The California Channel islands are a group of
8 islands located off of the coast of southern California. These
islands lie in a geologically complex region known as the
California Continental Borderland, which extends northwest to
Point Arguello, southeast to Cedros Island and west to the
Patton Escarpment and Cedros Deep. In this introductory paper,
the author presents an overview of island geology, climate,
human impact, and give a synopsis of the flora and fauna,
emphasizing insects. General information for each island is
presented, and an appendix lists the known endemic terrestrial
arthropod species. human impact/flora/fauna/check lists/island
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Entomologist 1982;58(2):96-104 taxonomy/biogeography
Acari/Argasidae/Ixodidae/Ticks/California Channel
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In: Santa Barbara Mus. Nat. Hist. Occ. Pap. $5.
This bibliography includes references to insects, arachnids and myriopods of the California islands. Annotations list taxa and islands from which they are recorded, order and family when these are not obvious from the title, and references to related papers. The authors have included references on the Channel Islands (San Miguel, Santa Rosa, Santa Cruz, Anacapa, Santa Barbara, Santa Catalina, San Clemente and San Nicolas); Los Coronados Islands (politically part of Mexico); and the islands in the San Francisco Bay Region (the Farallons, Angel Island, for example). They have excluded islands off the coast of Lower California. In cases of taxa originally described from the islands, they have included only papers which contribute to knowledge of the island populations (e. g., not checklist entries or papers dealing with the species in part of its range other than these islands).
bibliographies/entomology Arthropoda/insects/arachnids/myriopods California Channel Islands/San Miguel Island/Santa Rosa Island/Santa Cruz Island/Anacapa Island/Santa Barbara Island/Santa Catalina Island/San Clemente Island/San Nicolas Island/Los Coronados Islands/San Francisco Bay Region/Farallons Islands/Angel Island/terrestrial biology.

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Previous studies of the Isla Vista petroleum seep in the Santa Barbara Channel found much higher abundances of macrofauna and concentrations of adenosine phosphate (ATP) in sediments near petroleum seepage compared to those from nonseep areas. To further assess the possible effect of petroleum on organisms at the base of benthic food webs, population abundances of meiobenthos and their suspected microbial food (bacteria and diatoms) were measured biweekly at three stations with differing petroleum exposure. Determinations of suspended particulate matter and the abundance and gut contents of juvenile fishes were also made at seep and nonseep stations. Nematodes and bacteria had higher abundances in areas of active petroleum seepage than in areas of moderate seepage (within 20 m) or no seepage (1.4 km away). Bacterial productivity (based on frequency of dividing cells) was 340% greater in sediments from areas of active seepage compared to those from a nonseep station. Sediments within the seep, but away from active seepage, had rates of bacterial productivity 15. Petroleum seeps/Oil pollution/Water pollution/Benthic fauna/Population density/Population exposure/Aquatic animals/Benthos/Fauna/benthic food webs/meiofauna/meiobenthos/population dynamics/oil seepages/temporal variations/biomass/abundance/density/sediment/gut analysis/ATP/oil/Nematodes/Bacteria/Copepods/diatoms/fish/Santa Barbara Channel/Isla Vista/petroleum seep/petroleum/pollution/marine biology.

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Address: Univ. of California, Dept. of Biological Sciences, Santa Barbara, CA 93106.
A convenient and reliable assay is described for prostaglandin-endoperoxide (PGEP) synthetase, the rate-limiting enzyme determining the total capacity for biosynthesis of prostaglandin-related compounds (PGRCs). Results of such assays, performed with numerous fresh specimens under both field and laboratory conditions, newly identify several marine coelenterate species as potentially important resources of PGRCs for research and possible development. Allopora porphyra is a species especially rich in PGEP. Similar properties were found for the PGEP synthetases in extracts of Plexaura homomalla, Millepora spp., Sertularia turgida, and Hydractinia milleri. Properties of the typical marine coelenterate PGEP synthetase, and the reaction which this enzyme catalyzes, have been further characterized.
Enzymes/Biosynthesis/Fatty acids/prostaglandin-related compounds/prostaglandin-endoperoxide synthetase Cnidaria/Anthozoa/Corals/Allopora porphyra/Plexaura homomalla/Hydrozoa/Millepora spp./Sertularia turgida/Hydractinia milleri/Caribbean Sea/Pacific Ocean Northeast/Santa Barbara Channel/marine biology.

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high stands of the sea. Weakly cemented calcareous dune sands (eolianites) on northern San Clemente Island appear to represent low stands of the sea, since calcareous shelf sands were the most likely source. A radiocarbon date of about 22,000 yr suggests that the youngest eolianite was deposited during the last glacial maximum. An older eolianite is estimated to be about 140,000-195,000 yr old based on. stratigraphic relations and degree of soil development. The suggested ages for the eolianites also correlate well with oxygen-isotope estimates of low sea levels.--Modified journal abstract.
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3232. Muhs DR, Szabo GJ. Uranium-series age of the Eel Point terrace San Clemente Island, California. Geology 1982;10(1):23-26
Address: Dept. of Geography, Univ. of Wisconsin, Madison, Wisconsin 53706. Uranium-series analysis of the coral Allopora californica Verrill from the 2nd, 32m Eel Point terrace on San Clemente Island, California, has yielded an age of 127 000 yr. The Eel Point terrace is thus correlative with numerous terrace localities on the southern California mainland, with coral reefs on Barbados and New Guinea and with substage 5e of the marine oxygen-isotope record. A tectonic uplift rate of about 0.20m/1000 yr has been calculated assuming a sea level slightly higher than the present one at the time of terrace formation. terraces/absolute age/geomorphology/geochronology/applications/shore features/structural geology/pleistocene/changes of level/terraces/neotectonics/uranium disequilibrium/uplifts/Quaternary/Cenozoic/upper Pleistocene/calibration/dates/plated tectonics/rates coral/Allopora californica Eel Point terrace/San Clemente Island/Los Angeles County/terrestrial geology/surficial geology/Quaternary geology.

3233. Muhs DR. Quaternary stratigraphy and soil development, San Clemente Island, California [dissertation]. Boulder, Colorado, USA: University of Colorado; 1980. 255.
Marine terraces are the most prominent geomorphic surfaces on San Clemente Island. Eight well developed terraces and two less distinct terraces have been mapped on the northern end of the island. The 1st, 2nd and 5th terraces have fossil mollusks which can be used for relative age assignments when amino acid ratios are compared. The 2nd terrace also has hydrocoralline material which has been dated using U-series techniques at 127 ka. This date, the amino acid ratios and an assumed rate of isoleucine epimerization derived from deep-sea foraminifera studies can be used to assign absolute ages to the 1st and 5th terraces; these are 60-107 ka and 345-475 ka, respectively. These terraces thus correlate with high sea level stands in the

oxygen isotope record and with terraces near San Diego and on Barbados and New Guinea. The dates and estimates of sea level derived from other areas yield uplift rates on San Clemente Island of 0.19 to 0.26 m/1,000 yr, similar to other locations in southern California with strike-slip tectonics. Radiocarbon dating of fossil land snails in a paleosol underlying a cemented calcareous dune deposit suggests major dune deposition. shortly after ca. 21,000 yr BP. Well-developed soils on dunes farther inland suggest major dune formation much earlier. All dunes probably developed during sea level minima, when calcareous shelf sands were freshly exposed. Evidence from filed observations, dust traps and mineralogy suggest that all soils on San Clemente Island have been influenced by airborne dustfall to one degree or another. Satellite imagery and field observations indicate that dust is blown offshore from the Mojave Desert during Santa Ana wind conditions. The combination of eolian additions and sea spray influx results in rapid soil profile development. Typic Natrixeralfs can develop on andesitic alluvial fan deposits in less than 3,000 yr; these soils are also found on surfaces with ages of 60-107 ka and 127 ka, but are beginning to show vertic characteristics. On surfaces about 200 ka or older, Typic Chromoxererts are dominant. These observations suggest that Natrixeralfs develop into Chromoxererts after sufficient smectite clay has accumulated. The dominant minerals in the clay fraction of both the Natrixeralfs and the Chromoxererts are smectite and mica. Mica is apparently of eolian origin and smectite accumulates by weathering of plagioclase and pyroxenes derived from the andesitic parent material and alteration of mica under neutral to akaline conditions. Decreasing internal drainage in Vertisols over time creates conditions especially favorable for the formation of trioctahedral smectite, and with time and deeper in the profiles, mica peaks on X-ray diffractograms become progressively broader and smectite peaks become progressively sharper. Soils on gently sloping andesite bedrock exhibit. differences related to slope position. Crest and shoulder soils are Lithic Haploxeralfs; the toeslope soil is a proto-Pelloxerert with higher clay content. The dominant processes appear to be controlled by movement of material downslope by overland flow and movement of basic cations in solution downslope by throughflow. These data suggest that the stead condition exhibited by Vertisols on marine terraces ranging in age from about 200 ka to greater than 1,000 ka may cease if uplift of the island block continues, which would result in downcutting, stream integration and better drainage of the marine terraces.
quaternary stratigraphy/soil development/marine terraces/dune deposition/soils/geochronology/clay mineralogy/geomorphology/sedimentation/racemization/areal studies/shore features/surveys/wind transport/shells/Cenozoic/biostratigraphy/C-14/absolute age/Paleosols Mollusca/molluscs/Foraminifera/foraminiferans/San Clemente Island/physical geography/surficial geology/quaternary geology.

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planktonic foraminifera/globigerina/zooplankton/Pieper/globigerinoides/globo quadrina/produ ctivity/california current/MINERALS MANAGEMENT SERVICE.

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of the western Transverse Ranges. [dissertation] ; 1984. University of California, Santa Barbara, United-States; Doctoral Monographic; Thesis B; Bibliography and Index of Geology (1969-present) Univ. Microfilms. 108 p.
California/tectonophysics/crust/geophysical surveys/surveys/isostasy/anomalies/observations/Pacific Coast/Western U.S./United States/Channel Islands/Coast Ranges/continental crust/continental margin/East Pacific Rise/East Santa Cruz Basin Fault/gravity surveys/Mohorovicic discontinuity/Neogene/Tertiary/P waves/body waves/elastic waves/Santa Barbara Channel/Santa Ynez Range/seismic surveys/Southern California/teleseismic signals/Transverse Ranges/velocity structure/GEOREF.

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Address: 804 Anacapa St., Santa Barbara, CA 93101.
An annotated checklist of the species on Punta Banda is given, with a description of the vegetation, physical environment, and a brief discussion of floristic and biogeographic considerations. Species richness is roughly comparable with that on the California Channel Islands. The treeless, shrubby vegetation, characteristic of coastal areas in northwestern Baja California, is marked by the conspicuous presence of succulent species (Agave shawii, Dudleya brittonii, 6 genera of cacti), particularly in steep or rocky areas and on slopes with a southerly exposure. Typical chaparral-coastal sage scrub taxa make up about half of the native flora with another 15% of the species endemic to the coastal sage scrub-chaparral transition zone centered in northwestern Baja California. About 11% of the native flora are desert taxa and about 17% are widespread Pacific Coast taxa. Two species (Dudleya campanulata and Astragalus sanctorum) are endemic to the peninsula and 4 species (Eriogonum grande, D. anomala, Hemizonia greeneana ssp. peninsularis, and Ribes viburnifolium) represent limited mainland occurrences of otherwise insular taxa. species richness/phytogeography/vegetation/community composition endemic/check lists/flora/biogeography/chaparral-coastal sage/scrub/Agave/shawii/Dudleya brittonii/Dudleya campanulata/Astragalus sanctorum/Eriogonum grande/Dudleya anomala/Hemizonia greeneana peninsularis/Ribes/viburnifolium/Punta Banda/Baja California Norte/Mexico/California Channel Islands/terrestrial biology/botany.

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NPS/Fishes/vertebrates/zoology/Schroeter Dixon Anderson/anthropogenic inputs/benthic/invertebrates/TEXT/phytoplankton/waste/discharge/sediment/metals /chlorinated/hydrocarbons/disease/stress/coliform concentration/benthic community/microbiology/hickey/physical oceanography/fish/cross allen/MINERALS MANAGEMENT SERVICE.

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Mexico/stratigraphy/Neogene/sedimentary

rocks/lithostratigraphy/paleogeography/algal flora/diatom flora/paleoecology/Miocene/new names/microfossils/Baja California Norte/Canon las Cuevitas Mudstone Member/geologic maps/maps/Llano el Moreno Formation/Tertiary/paleoenvironment/Salada Formation/San Felipe Diatomite Member/San Felipe marine sequence/sedimentary basins/Sierra San Felipe Sierra Santa Rosa Basin/structure contour maps/volcanic rocks/GEOREF.

3239. Murray KG, Winnett-Murray K, Eppley ZA, Hunt GL,, Schwartz DB. Breeding biology of the Xantus' murrelet. Condor 1983;85(1):12-21 Address: Dep. Zool., Univ. Florida, Gainesville, FL 32611, USA. Xantus' Murrelets (Synthliboramphus (Endomychura) hypoleucus) were studied on Santa Barbara Island, California from 1975-1979. Clutch initiation occurred from March to June and usually peaked in April. The two-egg clutch was 45% of the female's weight. Eggs were laid eight days apart. Both sexes shared duties during a 34-day incubation period partners relieved one another every three or four days. Eggs were typically left unattended in the interval between laying of successive eggs, immediately after clutch completion, and sporadically during incubation. Breeders and non-breeders of both sexes followed similar patterns of weight change, reflecting similar patterns of colony attendance: murrelets lost weight after the egg-laying period., then gradually gained weight through the rest of the breeding season. The downy young left the nest only two nights after hatching, unfed and weighing less than 30 g. Chicks and their parents apparently moved well offshore their first night at sea. Even though most murrelets on Santa Barbara nested in concealed rock crevices, irregular nest attendance patterns left eggs vulnerable to predation, resulting in the loss of 44% of the eggs laid. Predation by deer mice (Peromyscus maniculatus) is currently the greatest risk to the breeding of these murrelets on Santa Barbara Island. breeding/predation/clutch/incubation/reproductive biology/reproductive behavior/chicks Synthliboramphus hypoleucus/Xantus' Murrelets/Peromyscus maniculatus/deer mice Santa Barbara Island terrestrial biology/ornithology.

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Santa Barbara County/California/seismology/earthquakes/aftershocks/faults/displacements/reverse faults/arrays/Pacific Coast/Western U.S./United States/continental shelf/decollement/focal mechanism/mechanics/Santa Barbara Channel/Santa Barbara earthquake, 1978/Southern California/Transverse Ranges/GEOREF.

3241. Murray SN, Littler MM. Patterns of algal succession in a perturbated marine intertidal community. Journal of Phycology 1978;14(4):506-512 Address: California State Univ., Fullerton. Dept. of Biological Science Note: California Water Resources Center Project UCAL-WRC-W-491. OWRT A-054-CAL(8). Patterns of algal succession for a sewage-polluted and an unpolluted habitat near Wilson Cove, San Clemente Island, California, were studied from December 1974 to June 1977. Resident populations were analyzed for 56 fully denuded and 34 undisturbed control quadrats during 11 assessment periods. The denuded quadrats in the perturbated (polluted) habitat showed recovery within 1.0 mo as determined by cover, percent similarity and species diversity comparisons with control plots. The short recovery times of the algal populations dominating the perturbated habitat

indicate that these species maintain relatively constant overall abundances due to their potential for rapid recruitment and growth. Denuded quadrats in an unpolluted habitat did not show recovery even after 30.0 mo. These quadrats were dominated during the first 1.3 mo by algae characteristic of the perturbated area, including filamentous Ectocarpaceae, colonial diatoms and bluegreen algae. The similarity between the species occupying the sterilized plots during the first few months and those that provide the majority of cover in the perturbated area supports the hypothesis that the. dominant algae of the upper and mid-intertidal regions of this habitat consist largely of early successional or opportunistic species with high capacities for growth and reproduction. Additionally, these experiments suggest that algal populations described for other perturbated epilithic systems also represent resilient subclimax associations. (Snyder-Calif., Davis).
Aquatic algae/Biological communities/Environmental effects/Intertidal areas/Water pollution/Water pollution effects/Succession/Sewage/Marine algae/Marine microorganisms/Microenvironment/littoral zones/colonization/marine pollution/denudation/recovery time/opportunistic species/growth/reproduction/filamentous/Ectocarpaceae/colonial diatoms/bluegreen algae/San Clemente Island/Wilson Cove/marine biology/botany/phycology/pollution/water quality/resource management.

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University of Alabama, United-States; Master's Monographic; Thesis B; Bibliography and Index of Geology (1969-present).
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Santa Rosa County/sedimentation/environment/nearshore environment/Florida/stratigraphy/Holocene/sedimentary structures/environmental analysis/economic geology/petroleum/burrows/concretions/secondary structures/cross bedding/planar bedding structures/dunes/Southeastern U.S./Eastern U.S./United States/Gulf Coastal Plain/North America/Quaternary/lagoonal environment/northwestern Florida/paludal environment/possibilities/Santa Rosa Island/sedimentary petrology/stratification/GEOREF.

3243. Nagano C, Miller SE, Hogue CL. Castaways of California; the origin of animal life of the Channel Islands. Terra (Los Angeles) 1983;21(4):23-26 paleontology/faunal studies/paleontology/faunal studies/life origin/diversity Vertebrata/Invertebrata/invertebrates/vertebrates/California Channel Islands/invertebrate paleontology.

3244. Sorensen SS. Petrology of basement rocks of the California continental borderland and the Los Angeles Basin. [dissertation] ; 1984. University of California, Los Angeles, United-States; Doctoral Monographic; Thesis B; Bibliography and Index of Geology (1969-present) Univ. Microfilms,. 447 p.
Catalina Schist/Santa Cruz Island Schist/Willows Plutonic Complex/Santa Monica Formation/California/petrology/metamorphic rocks/schists/mineral assemblages/inclusions/xenoliths/basalts/metamorphism/migration of elements/processes/amphibolite facies/aureoles/volcanic rocks/basement/Pacific Coast/Western U.S./United States/California continental borderland/continental margin/greenschist facies/Los Angeles Basin/melange/overprinting/Santa Monica Mountains/Southern California/zoning /GEOREF.

3245. Nagano CD. Population status of the tiger beetles of the genus Cicindela (Coleoptera: Cicindelidae) inhabiting the marine shoreline of southern California. Atala 1980;8(2):33-42
Address: Entomol. Sect., Nat. Hist. Mus. Los Angeles Cty., 900 Exposition Blvd., Los Angeles, CA 90007, USA.
Information about the population status of the tiger beetles (Cicindela) inhabiting the seashore of southern California gathered during field work in 1979 is given. The area of study extends from the San Luis Obispo/Santa Barbara County line south along the marine shoreline to the Mexican border. The Channel Islands are included. Seven species are recorded as definitely living along the sea coast one is a doubtful inhabitant and two species are eliminated as possible seashore tiger beetles. Ecological notes, habitat and behavioral data are included.
habitat/ecology/behavior/biogeography/distribution/population status/Coleoptera/Cicindelidae/Cicindela/tiger beetles/San Luis Obispo/Santa Barbara County/Mexican border/California Channel Islands/terrestrial biology/entomology.

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sewage outfalls/chlorinated hydrocarbons/organic matter/Hood/ecosystem/benthic environment/pelagicenvironment/environmental monitoring/sewage/marine ecology/trophic structure/bioaccumulation/food webs/benthos/INE/Southern California Bight/ecosystem impact/outfalls/hickey/physical oceanography/Pieper/zooplankton/trophic step magnification/cesium potassium ratio/polychaete crustacea/abundance/distribution/Microstomus pacificus/Algae spermatophytes/Bray/Murray/sewage/marine ecosystems/Eganhouse/chemical oceanography/sicyonia ingentis distribution/PCB/DDE/anderson/anthropogenic/Thompson/invertebrates/MINERALS MANAGEMENT SERVICE.

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Santa Barbara County/Santa Barbara Formation/Pico Formation/Vaqueros Formation/California/areal geology/faults/displacements/reverse faults/seismology/earthquakes/focal mechanism/aftershocks/Pacific Coast/Western U.S./United States/Coal Oil Point fault/Elwood oil field/Goleta/Goleta Basin/La Goleta gas field/More Ranch Fault/Oligocene/Paleogene/Tertiary/Pleistocene/Quaternary/Santa Barbara/Santa Barbara earthquake, 1978/Santa Barbara Montecito Basin/scarps/Southern California/terraces/unconformities /GEOREF.

3248. Nagano CD. Distributional notes on the tiger beetles of the California Channel Islands (Coleoptera: Cicindelidae). Menke AS, Miller DR. Entomology of the California Channel Islands. Santa Barbara, California, USA: Santa Barbara Museum of Natural History; 1985. 105-112.
Presented at: Symposium on Entomology of the California Channel Islands (at) Annual Meeting of the Entomological Society of America, San Diego, CA (USA), Dec 1981 Address: Nat. Hist. Mus. Los Angeles Cty., 900 Exposition Blvd., Los Angeles, CA 90007.
Tiger beetles are widespread and often abundant predatory insects in littoral habitats. Cicindela is the only one of the four North American genera in the family Cicindelidae inhabiting the sea

coast and Channel Islands of southern California. The first island record of Cicindela was made by Fall (1897) in a treatment of the Coleoptera of the Channel Islands. Freitag (1965) listed a species from Santa Cruz Island in his revision of the Nearctic members of the Cicindela maritima complex. However, a comprehensive survey for island tiger beetles has only been completed recently (Nagano, 1982) in which seven of the islands are reported to harbor five species of Cicindela . The present paper is a review and update of Nagano (1982) with new records and discussions. geographical distribution/check lists/predatory insects/Coleoptera/Cicindelidae/tiger beetles/Cicindela/California Channel Islands/Santa Cruz Island/terrestrial biology/entomology.

3249. Natenstedt CJ. Sedimentology and paleogeographic implications of the Eocene South Point and Cozy Dell formations, Santa Rosa Island, southern California [dissertation]. San Diego, CA: San Diego State University; 1983. 216. paleogeography/sedimentary rocks/sedimentation/stratigraphy ocene/provenance/environment/protoliths/nearshore environment/South Point Formation/Cozy Dellfluvial environment/submarine fans Formation/Poway Rhyolites/sedimentary petrology/lithofacies Paleogene/Tertiary/continental margin/source rocks San Diego/California Channel Islands/San Diego/Santa Rosa Island/Santa Cruz Island/San Miguel Island/geology/sedimentary petrology.

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presented in this report.
Offshore structures/Tanker ships/Hazards/Risk/Collision avoidance/Water traffic/Marine terminals/Traffic surveys/Navigational aids/Computerized simulation/Risk analysis/Santa Barbara Channel/Mechanical engineering/ Industrial engineering/Civil engineering/Marine Engineering/petroleum.

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Santa Barbara County/Monterey Formation/Vaqueros Sandstone/California/oceanography/marine geology/continental shelf/stratigraphy/Cenozoic/geophysical surveys/seismic surveys/faults/displacements/active faults/bathymetric maps/maps/boundary/Pacific Coast/Western U.S./United States/Coast Ranges Province/geologic maps/Neogene/Tertiary/Paleogene/physiographic provinces/Point Arguello/Point Conception/Santa Barbara Basin/Santa Maria Basin/Santa Ynez Mountains/site location maps/Southern California/Transverse Ranges Province/GEOREF.

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Note: Supersedes PB-271 311.
Navigational aids/Coasts/Waterways (Transportation)/Navigation/Regulations/Water traffic/Marine meteorology/Weather communication/Climate/Anchorages/Seaports/Tables(Data)/Harbors/Rivers/Coast pilots/Intercoastal waterways/Pacific Coast (United States)/San Diego/Point Arguello/California Channel Islands/Santa Barbara Channel Islands/San Francisco Bay/Point St. George, California/Chetco River/Columbia River/Oregon/Washington/Strait of Juan de Fuca/Straits of Juan de Fuca/ Georgia, Washington/Puget Sound/Hawaii/Navigation/Communications Detection/Meteorology/Transportation/atmospheric sciences/military.

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Orange County/San Onofre Breccia/Catalina Schist/California/oceanography/maps/geophysical surveys/acoustical surveys/stratigraphy/changes of level/sedimentation/processes/marine sedimentation/basement/bathymetric maps/Pacific Coast/Western U.S./United States/continental margin/Dana Point/geologic maps/isopach maps/Peninsular Range Province/Quaternary/rates/San Mateo Point/San Onofre/Southern California/Southern California continental borderland/terraces/transgression/uplifts/GEOREF.

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navigational aids/coasts/West Coast/California Channel Islands/navigation.

3257. Natenstedt CJ. Sedimentology and paleogeographic implications of the Eocene South Point and Cozy Dell formations,

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South Point Formation/Cozy Dell Formation/Poway Rhyolites/California/stratigraphy/Eocene/paleogeography/sedimentary rocks/provenance/protoliths/sedimentation/environment/nearshore environment/Pacific Coast/Western U.S./United States/Channel Islands/continental margin/Paleogene/Tertiary/fluvial environment/lithofacies/San Diego/San Miguel Island/Santa Cruz Island/Santa Rosa Island/sedimentary petrology/source rocks/Southern California/submarine fans/GEOREF.

3258. National Ocean Survey RM. United States Coast Pilot 7. Pacific Coast: California, Oregon, Washington, and Hawaii. : NOAA-79080906; 1979. 465. The National Ocean Survey Coast Pilots are a series of nine nautical books that cover a wide variety of information important to navigators of U.S. coastal and intracoastal waters, and the waters of the Great Lakes. Most of this book information cannot be shown graphically on the standard nautical charts and is not readily available elsewhere. Coast Pilot subjects include navigation regulation, outstanding landmarks, channel and anchorage peculiarities, dangers, weather, ice, freshets, routes, pilotage, and port facilities. This volume of Coast Pilot 7 has information on the following areas: California, Oregon, and Washington; San Diego to Point Arguello, California; Channel Islands, California; Point Arguello to San Francisco Bay, California; San Francisco Bay, California; San Francisco Bay to Point St. George, California, Chetco River to Columbia River, Oregon; Columbia River, Oregon and Washington; Columbia River to Strait of Juan de Fuca, Washington; Straits of Juan de Fuca and Georgia, Washington; Puget Sound, Washington; and Hawaii.
Navigational aids/Coasts/Waterways (Transportation)/Navigation/Ice/Regulations/Water traffic/Marine meteorology/Weather communication/Climate/Anchorages/Seaports/Tables(Data)/Harbors/Rivers/Coasts pilots/Intercoastal waterways/California/California Channel Islands/Oregon/Washington (State)/Hawaii/San Francisco Bay/Puget Sound/Pacific Coast Navigation/Communications Detection/Meteorology/atmospheric science/military.

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Blanca Formation/Catalina Schist/San Onofre Breccia/California/stratigraphy/Miocene/sedimentary rocks/lithofacies/environmental analysis/sedimentation/environment/deltaic environment/ichnofossils/occurrence/burrows/Pacific Coast/Western U.S./United States/Catalina Schist terrain/clastic rocks/conglomerate/continental shelf/Neogene/Tertiary/provenance/pyroclastics/volcanic rocks/sandstone/Santa Cruz Island/sedimentary petrology/Southern California/tuff/turbidity currents/GEOREF.

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The National Ocean Survey Coast Pilots are a series of nine nautical books that cover a wide variety of information important

to navigators of U.S. coastal and intracoastal waters, and the water of the Great Lakes. Most of this book information cannot be shown graphically on the standard nautical charts and it not readily available elsewhere. Coast Pilot subjects included navigation regulation, outstanding landmarks, channel and anchorage peculiarities, dangers, weather, ice, freshets, routes, pilotage, and port facilities. This volume of Coast Pilot 7, cancels the Fifteenth (June 1979) edition. It includes information on: San Diego to point Arguello, California, Channel Islands, California; Point Arguello to San Francisco Bay, California; San Francisco Bay, California; San Francisco Bay to Point St. George, California; Chetco River to Columbia River, Oregon; Columbia River Oregon; and Washington; Columbia River to Strait of Juan de Fuca, Washington; Straits of Juan de Fuca and Georgia, Washington; Puget Sound, Washington; and Hawaii.
Navigation aids/Surface navigation/San Diego to point Arguello/California Channel Islands/California/Point Arguello/San Francisco Bay/Point St. George, California/Chetco River/Columbia River/Oregon/Strait of Juan de Fuca/Washington/Puget Sound/Hawaii/Navigation/Communications Detection/Transportation/military.

3261. Crandall GJ. A marine seismic refraction study of the Santa Barbara Channel. 132 p.43 Refs. 1982
University of California, Santa Barbara, United-States; Master's Monographic; Thesis B; Bibliography and Index of Geology (1969-present). Coast Range Ophiolite/California/geophysical surveys/seismic surveys/structural geology/tectonics/basement/Pacific Coast/Western U.S./United States/California Borderland/Cenozoic/continental margin/continental shelf/evolution/Mesozoic/oceanic crust/crust/Santa Barbara Channel/Southern California/thickness/traveltime /GEOREF.

3262. National Ocean Survey RM. United States Coast Pilot 7. Pacific Coast: California, Oregon, Washington, and Hawaii. : NOAA-81062613; 1981. 487. Coast Pilot subjects include navigation regulation, outstanding landmarks, channel and anchorage peculiarities, dangers, weather, ice, freshets, routes, pilotage, and port facilities. This volume of Coast Pilot 7 gives information on San Diego to Point Arguello, California; Channel Islands, California; Point Arguello to San Francisco Bay, California; San Francisco Bay, California; San Francisco Bay to Point St. George, California; Chetco River to Columbia River, Oregon; Columbia River, Oregon and Washington; Columbia River to Strait of Juan de fuca, Washington; Straits of Juan de Fuca and Georgia, Washington; Puget Sound, Washington; and Hawaii.
Navigational aids/Weather/Ice/Warning systems/Port facilities/Anchorage/Regulations/Pacific Coast/California Channel Islands/Navigation/Transportation.

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studies/Pacific Coast/Western U.S./United States/clay mineralogy/claystone/clastic rocks/continental margin/cyclic processes/faults/Luisian/middle Miocene/Miocene/Neogene/Tertiary/marine sedimentation/ocean floors/Relizian/San Nicolas Bank/San Nicolas Island/Saucesian/lower Miocene/sedimentary basins/sedimentation/siltstone/Southern California/tectonic controls/unconformities/GEOREF.

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The National Ocean Survey Coast Pilots are a series of nine nautical books that cover a wide variety of information important to navigators of U.S. coastal and intracoastal waters, and the waters of the Great Lakes. Most of this book information cannot be shown graphically on the standard nautical charts and is not readily available elsewhere. Coast Pilot subjects include navigation regulation, outstanding landmarks, channel and anchorage peculiarities, dangers, weather, ice, freshets, routes, pilotage, and port facilities. This volume of Coast Pilot 7, cancels the Sixteenth (June 1980) Edition, and gives information on: San Diego to Point Arguello, California Channel Islands, California Point Arguello to San Francisco Bay, California San Francisco Bay, California San Francisco Bay to Point St. George, California Chetco River to Columbia River, Oregon Columbia River, Oregon and Washington Columbia River to Strait of Juan de Fuca, Washington Straits of Juan de Fuca and Georgia, Washington Puget Sound, Washington and Hawaii. navigational aids/California Channel Islands/geology/navigation/geography.

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Report ID = USCP-7.
This volume of Coast Pilot 7, Pacific Coast, California, Oregon, Washington, and Hawaii, cancels the Thirteenth (June 1977) Edition. Descriptive information supplements the navigational information shown on nautical charts for the following sections: San Diego to Point Arguello, California Channel Islands, California Point Arguello to San Francisco Bay, California San Francisco Bay, California San Francisco Bay to Point St. George, California Chetco River to Columbia River, Oregon Columbia River, Oregon and Washington Columbia River to Strait of Juan de Fuca, Washington Straits of Juan de Fuca and Georgia, Washington Puget Sound, Washington and Hawaii.

navigational charts/West Coast/Pacific Coast/California/Oregon/Washington/Hawaii/(see summary for more)/aviation/maps/navigation.

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577 p.170 Refs.
San Diego County/Mount Soledad Conglomerate/California/stratigraphy/Paleogene/Mexico/sedimentary rocks/clastic rocks/provenance/paleogeography/sedimentation/environment/deltaic environment/faults/orientation/strike faults/Pacific Coast/Western U.S./United States/composition/conglomerate/East Santa Cruz Basin Fault/lithofacies/Malibu Coast Fault System/metavolcanic rocks/Mount Soledad Fault/Northern Channel Islands/northern Mexico/Tertiary/San Diego/San Miguel Island/Santa Ana Mountains/Santa Cruz Island/Southern California/Valle de Las Palmas/GEOREF.

3269. National Oceanic and Atmospheric Administration WD, Office of Coastal Zone Management. Final environmental impact statement on the proposed Channel Islands Marine Sanctuary. ; 1980.
508.
The National Oceanic and Atmospheric Administration proposes the designation of the waters surrounding the four northern Channel Islands and Santa Barbara Island as a marine sanctuary. The proposed sanctuary would extend six nautical miles seaward from the mean high tide line. If these waters are designated as a marine sanctuary, the following activities would be subject to the proposed regulations described in this document: oil and gas operations, discharging or depositing any substance, alteration of or construction on the seabed, navigation and operation within one nautical mile of the Islands of vessels not engaged in fishing. All regulations shall only be applied consistent with international law. Environmental impact statements-final/Construction/Regulations/Economic impact/Navigation/Law enforcement/Natural gas/Crude oil/Marine sanctuary/ Fishes/Birds/Mammals/Cetacea/Aquatic plants/Invertebrates/Shellfish/northern California Channel Islands/Santa Barbara Island/Environmental Impact Statement/.

3270. Matherne AM. Paleoceanography of the Gulf of California; a 350 year diatom record [dissertation]. ; 1982.
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3271. National Park Service WD. Proceedings of the Conference on Scientific Research in the National Parks (2nd) Held at San Francisco, California on November 26-30, 1979. Volume 7: Ecosystem Studies/Interdisciplinary Approach, Resource Management

and Planning, Information Technology. : NPS/ST-80/02-7; 1980. 478.
Note: See also Volume 6, PB81-100075 and Volume 8, PB81-100091.
Sponsored in part by American Inst. of Biological Sciences,
Arlington, VA.
Volume 7 contains 37 papers distributed among three sections. The
Ecosystem Studies/Interdisciplinary Approach section contains eight
papers concerned with ecologic studies in Olympic National Park.
Topics include, valley floor ecosystems, fluvial processes, forest
vegetation and aquatic ecosystem interactions. Several papers deal
with habitat requirements of fish populations, invertebrate
communities, and elk. Another paper discusses forest structure,
composition, and reproduction. Within the Resource Management and
Planning section several papers deal with single species management
problems, bighorn sheep, and coyotes in Joshua Tree National
Monument, wolves of Isle Royale National Park, and white-tailed
deer in Pictured Rocks National Lakeshore. Another group of papers
discusses resource management plans for Channel Islands National
Monument Voyageurs and Glacier Bay National Parks, and Indiana
Dunes National lakeshore. Procedures and techniques used in the
development of resource management plans are discussed in several
papers.
Ecology/National parks/Vegetation/Forest
trees/Invertebrates/Fishes/Deer/Mammals/Sheep/Management/resource
management/terrestrial biology/environmental biology.

3272. Donegan DP. Modern and ancient marine rhythmites from
the Sea of Cortez and California continental borderland; a
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Monterey Formation/Gulf of California/sedimentary
petrology/sedimentary structures/planar bedding
structures/varves/sedimentation/cyclic
processes/paleoenvironment/paleoclimatology/Cenozoic/sediments/ma
rine
sediments/composition/Protista/Silicoflagellata/California/diatom
s/algae/algal flora/microfossils/assemblages/Pacific Coast/Western
U.S./United States/continental margin/continental slope/North
American Pacific/Pacific
Ocean/Miocene/Neogene/Tertiary/paleoecology/Santa Barbara Basin/Sea
of Cortez/Southern California/trace metals/GEOREF.

3273. National Park Service WD. Proceedings of the
Conference on Scientific Research in the National Parks (2nd) Held
at San Francisco, California on November 26-30, 1979. Volume 12:
Terrestrial Biology: Zoology. : NPS/ST-80/02-12; 1980. 411.
note: See also Volume 11, PB81-100125.; Sponsored in part by
American Inst. of Biological Sciences, Arlington, VA.
Volume 12, Terrestrial Biology: Zoology, contains 26 papers,
divided into four sections. The Animal Ecology section covers
water levels and alligator nesting in Everglades national Park;
Fowler toad population ecology and structure in Indiana Dunes
National Lakeshore; oxygen relations and winter-kill at high
elevations of Rana muscosa; and a chemical record of plants and
insects in the bat ecosystem in caves near Carlsbad, New Mexico.
Several aspects of avian ecology are discussed in the Avian Studies
section. Topics include impacts of fire and fox predation upon
breeding bird populations; woodpecker numerical response effects on
mountain pine beetles; community relationships; distribution of
birds; and management of seabird resources in the Channel Islands
National Monument. seabirds/California Channel Islands/terrestrial
biology/environmental biology/resource management.

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3275. Naval Facilities Engineering Command WDCD. San Nicolas Island barge landing site survey. : CHES/NAVFAC-FPO-1-79(3); 1978. 93.
note: Original contains color plates: All DTIC and NTIS reproductions will be in black and white. Includes envelope with 2 charts. Microfiche copies only. A bathymetric survey of the YFU, barge landing site area on San Nicolas Island, California, has shown that a narrow channel of sufficient width and clear of bottom obstacles exists into the beach to permit safe operation of the vessel under wind and sea conditions which are tolerable during cargo transfers. Obstacles on both sides of the channel have been identified and charted. The geology suggests that the clear channel has no hidden rocky features which may become exposed as the beach sand is removed by storm seas. Probing at the beach area confirms this hypothesis. A recommendation is made to install a new set of approach markers to the beach to identify a dog leg track close to the center of the newly charted channel. A secondary recommendation is to pursue bathymetric surveys of adjacent beach sites in order to find a wider approach channel to the beach, if such exists.
bathymetry/Barges/Landing/Sites/ocean bottom/Approach/Channels/Surveys/Beaches/Cargo/Barriers/Cargo/Channels/Sea states/Hypotheses/Safety/Channels (Waterways)/Oceans/Storms/Sides/California Channel Islands/San Nicolas Island/marine engineering/mechanical engineering/industrial engineering/civil engineering.

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California/geochemistry/isotopes/carbon/C 13/C 12/oxygen/O 18/O 16/paleoecology/indicators/stable isotopes/foraminifers/benthonic taxa/ecology/marine environment/Pacific Coast/Western U.S./United States/continental borderland/microfossils/living taxa/Southern California/GEOREF.

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This data report consists of a six part statistical summary of surface weather observations. The six parts are: Part A - Weather Conditions/Atmospheric Phenomena, Part B - Precipitation/Snowfall/Snow Depth, Part C - Surface Winds, Part D - Ceiling versus Visibility/Sky Cover, Part E - Psychrometric Summaries, Part F - Station Pressure/Sea Level Pressure.
Climatology/surface

wind/temperature/precipitation/ceiling/visibility/relative humidity/station pressure/extreme temperatures/sea level pressure/daily temperature/weather conditions/monthly climatology/coastal region/snow depth/cloud cover/San Nicolas Island/meteorology/atmospheric sciences.

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Meteorological data/Meteorological charts/Temperature/Humidity/Precipitation/Clouds/Wind/Barometric pressure/Visibility Psychrometric tables/Weather observations/Atmospheric temperature/Snowfall/Cloud cover/Ceilings/Meteorology/San Nicolas Islands/Atmospheric Sciences/Meteorology.

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The sessile snail Serpulorbis squamigerus occurs most commonly in aggregations of 2 to thousands of individuals, although solitary individuals can also be found. This presents the opportunity to investigate the adaptive value of aggregation to individuals. Snails found in aggregations have the same mortality rate as solitary snails, probably because they are not preferred prey of their major predators. Animals in aggregations forage more efficiently than solitary individuals. And most significant is the fact that aggregated females have a far greater fecundity than solitary females. This is because aggregated females have greater access to the water-borne spermatophores than do the solitary females Both protandrous and protogynous sex changes occur, but protandry is more common. Some animals changed sex more than once. Sex ratios of animals living in aggregtations were usually close to 1:1, while the sex ratios of solitary individuals in the same area were often skewed. Manipulations of sex ratio in aggregations demonstrated that sex change is facultative.
aggregation/hermaphroditism/predation/population/biology/mortality/fecundity/re production/dispersion patterns/protandry protogyny/feeding biology/spatial patterns/Serpulorbis squamigerus/scaled worm/snail/Santa Catalina Island/marine biology/malacology/ecology.

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Greenland/geochemistry/lead/Antarctica/abundance/ice/barium/marine sediments/sediments/California/environmental geology/pollution/Pacific Ocean/air/Polar regions/arctic environment/Arctic region/atmosphere/Pacific Coast/Western U.S./United States/ice sheets/industrial waste/isotopes/marginal basins/marine environment/North American Pacific/pollutants/San Nicolas Basin/San Pedro Basin/Santa Barbara Basin/Santa Monica Basin/Southern California/toxic materials/GEOREF.

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unknown p.
Santa Barbara County/San Louis Obispo County/Franciscan Formation/California/areal geology/Santa Maria Basin/tectonophysics/plate tectonics/paleogeography/Tertiary/basement/Pacific Coast/Western U.S./United States/environment/marine environment/plate boundaries/sedimentation/spreading centers/subduction/submarine fans/trenches/Upper Cretaceous/Cretaceous /GEOREF.

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Address: Santa Catalina Mar. Biol. Lab., Univ. California, Los Angeles, CA 90007, USA Conference: 8. Int. Seaweed Symposium Bangor (UK) 18 Aug 1974. The purpose of this investigation was to determine the spring distribution and abundance of S. muticum at Fourth of July Cove, Santa Catalina Island. It was also hoped that this study would offer insights into the recent rapid spread of this Japanese species into new habitats. Reproductive behavior of S. muticum was of particular interest in this regard, as was its ability to endure adverse conditions as a small perennial. The association of this species with selected native California algae was also examined, because a possibility exists that the invading seaweed may compete with them for space. Finally, the extensive underwater "forests" of S. muticum are potential habitats for the invertebrates on which fish feed.
population dynamics/geographical distribution/Phaeophyta/Sargassum muticum/Santa Catalina Island/Fourth of July Cove/marine biology/botany/phycology.

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3291. Nielsen C. Morphology and reproduction of Hippodiplosia insculpta and Fenestrulina malusii (Bryozoa: Cheilostomata). Ophelia 1981;20(1):91-126 Address: MARINE BIOL. LAB., DK-3000 HELSINGOR, DENMARK.
Osburn's (1952) H. insculpta and F. malusii were studied at Santa Catalina Island, California [USA]. In H. insculpta the protruded

lophophores form a continuous incurrent area, and the growing edges are the only excurrent areas. The hydrodynamics of this pattern apparently sets a maximum to the size of the colonies. Female zooids can be recognized already at the growing edge; later on they induce their distal neighbor to form an ovicell. Whereas the 1st oocyte develops the maternal polypide degenerates and a small, non-feeding polypide develops. These non-feeding zooids develop a series of eggs, the nutrients of which must be supplied by the neighboring zooids. This is made possible through a pattern of zooids in which more than 99% of the female zooids have 4 or more male neighbors. Larvae which were prevented from settling for 12 h or more were not able to settle or the metamorphosis/ancestrula formation was unsuccessful. The ancestrula is composite with 3 buds which cover the primary zooid except its basal side and orifice. In F. malusii almost all zooids produce eggs and the individual polypides are feeding during several cycles of oocyte development and embryogenesis. When 2 colonies meet and fuse, a maternal zooid from one colony may induce a zooid from the other colony to form an ovicell. In both species the ovicell consists of an uncalcified. ectooecium and a calcified entooecium which are outgrowths from the frontal wall of the zooid distal to the maternal zooid. The development in the ovicell lasts 11-12 days and the next egg enters the ovicell shortly after the liberation of the larva.
feeding/development/calcification/lophophore/larva/metamorphosis/ancestrula/sexual reproduction/life history/colonial characteristics/colony fusion/morphology Bryozoa/Cheilostomata/Hippodiplosia insculpta/Fenestrulina malusii/Santa Catalina Island/marine biology.

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eganhouse/geochemistry/chemical oceanography/sedimentation/organic materials/stratigraphy/clastic rocks/glaciation/Neogene shale/Monterey Formation/Miocene/Tertiary/Deep Sea Drilling Project/DSDP/anoxic environment/Pliocene/Cenozoic/borderland/phosphate/rocks/MINERALS MANAGEMENT SERVICE.

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Address: Ship Analytics, Centerport, NY.
A Simulation study was performed at the National Maritime Research Center's shiphandling simulator to determine the effects of oil production and exploration structures on the navigation of large vessels using the routing scheme in the Santa Barbara Channel. As part of a risk management program being completed on behalf of the

California Coastal Commission, data was collected on the responses of ship masters navigating a computer-modelled vessel through the Santa Barbara Channel in the presence of a variety of platform and drillship siting configurations. The results of the study will be incorporated in the risk management program to help in establishing guidelines for siting of exploratory drilling and oil production facilities near the shipping lanes. Navigation/Channel navigation/Ship routing/Computer simulation/offshore structures/Site selection/risk management/Santa Barbara Channel/petroleum/navigation.

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Pacific Ocean/oceanography/ocean circulation/California/sedimentation/processes/bioclastic sedimentation/paleoclimatology/Holocene/paleoecology/foraminifers /biostratigrap hy/isotopes/ratios/stable isotopes/carbon/C 13/C 12/oxygen/O 18/O 16/sediments/environmental analysis/marine environment/biochemical sedimentation/Pacific Coast/Western U.S./United States/carbonate sediments/Costa Rica/Central America/deglaciation/microfossils/Gulf of Papagayo/Quaternary/marine sedimentation/marine sediments/North American Pacific/paleo oceanography/Panama Basin/planktonic taxa/Santa Barbara Basin/upwelling /GEOREF.

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Note: Report 86-MGG-08.
Well logs and auxiliary information for 4 privately drilled test wells are now available for purchase from the National Geophysical Data Center. These data were generated by private companies that drilled exploratory oil and gas wells in areas for which the proprietary terms of the leases have terminated. These wells are in addition to 86 previously advertised wells released to NGDC by the Minerals Management Service, U.S. Department of Interior, for public dissemination. A summary of the types of well logs and auxiliary information now available for these wells is given.
oil exploration/gas exploration/offshore operations/oil wells/continental shelves/well/logging/Santa Barbara Channel/petroleum/geology.

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the pier, the total plutonium (238 Pu + 239+240 Pu) in the surface 3.0-cm layer of sediment is within the range of total fallout plutonium reported in Atlantic and Pacific surface deposits from overlying water depths less than 100 m. More 238 Pu was released during testing than the amounts accountable in the local surface sediments. Some of this 238 Pu has undoubtedly migrated outside the region sampled, and dilution of the 238 Pu with fallout levels in the environment has effectively obscured its detection elsewhere. Subsurface sediment deposits in the region may have inventories of excess 238 Pu. Analysis. of 238 Pu concentrations in core samples is still in progress.
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problem of extracting accurate estimates of the onshore flux of longshore directed momentum, Syx, from linear array data is addressed. A window shaping technique is developed and compared to the integration of the directional spectrum estimates. Using field data, the linear array methods are compared with a biaxial current meter and a 'slope'. array.
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A variety of gaseous transport problems were investigated through the use of a sensitive tracer technique employing sulfur hexafluoride. Sulfur hexafluoride is an inert, non-toxic gas that can be detected at concentrations as low as 1 part in a trillion by electron capture gas chromatography. An experimental means of estimating gaseous diffusivities in porous media was developed and employed to compare diffusivities in dry and moist soils. Tracer techniques were also employed to analyze the infiltration of building exhaust air (e.g. from a laboratory fumehood) back into the building. The primary objective of the research program, however, was the development of a better understanding of the mechanisms by which pollutants are transported in large mountain-valley or coastal air basins. Mountain-valley and coastal environments both exhibit diurnal wind reversals due to differential heating between the land and sea surface or between the surfaces of higher elevation and those below. Studies in the Central Valley and the Santa Barbara Channel areas of California indicated that extensive lateral mixing and pollutant carryover into days subsequent to their release can result from the diurnal wind reversals. Diurnal wind. reversals also resulted in tracer and/or pollutant plume bifurcation due to significant wind directional shear with altitude. Temporal and spatial variations in the surface layer mixing height resulted in significant interaction with the air aloft. A model was developed to illustrate the implications of significant interaction between the surface layer and the air aloft. In addition to elucidating the basic behavior of pollutants in a mountain-valley or coastal environment, the tracer experiments provided a detailed view of the pollutant transport into, within, and out of the regions studied. These regions included the San Joaquin and Sacramento Valley's of California (the Central Valley), and the Santa Barbara Channel area, off the southern California coastline. In addition, the impact of the Central Valley on the Sierra Nevada slopes and the western Mojave Desert was analyzed.
gaseous transport/pollutant transport/air basins/wind reversals/ Santa Barbara Channel/air quality/pollution/chemistry/engineering/chemical energy.

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Pacific Ocean/oceanography/sedimentation/North American Pacific/Santa Catalina Basin/deep sea sedimentation/bioturbation/biogenic structures/sedimentary structures/sedimentation rates/radioactive tracers/isotopes/thorium/lead/Pb 210/Th 228/Th 234/marine sediments/GEOREF.

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geophysical surveys/stratigraphy/oceanography/seismic surveys Cenozoic/marine geology/Vaqueros Formation/Rincon Formation

Monterey Formation/ocean floors/continental margin/Phanerozoic sedimentation/cyclic processes/marine sedimentation/clay mineralogy/areal studies/claystone/clastic rocks/unconformities faults/Saucesian/lower Miocene/Miocene/Neogene/Tertiary Relizian/Luisian/tectonic controls/sedimentary basins/siltstone/San Nicolas Bank/San Nicolas Island/marine geology/oceanography.

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Orthoptera/Insects/California Channel Islands/ terrestrial biology/entomology.

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Pacific Ocean East/California Coast/coastal waters/waste waters/marine pollution/monitoring methods/environmental impact/sollutant analysis/sediments/tissues/trawls/species diversity/sampling methods/surveys/fish/Invertebrata/benthic organisms/water
column/abundance/Southern California Bight/municipal wastewater discharges/control conditions/control stations/60-metersurvey/trawl samples/sediment chemistry samples/grab samples/algae/spermatophytes/Bray/anthropogenic/Anderson/MINERALS MANAGEMENT SERVICE.

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Pacific Ocean/geochemistry/trace elements/Southern California/North American Pacific/sea water/trace metals/metals/marine sediments/pollution/GEOREF.

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This monograph is the culmination of ten years of research on the Orthoptera of the California Channel Islands and adjacent coast of southern California between the Palos Verdes Peninsula and Point Conception. This is the first extensive

treatment of any insect group on these islands. The first section of this study deals with the species of Orthoptera on the eight islands, and the adjacent mainland sites of the Santa Monica Mountains, Point Conception, and the Palos Verdes Peninsula. Within each island or mainland study area all collection sites are described ecologically and the species occurring there are listed. For most Acrididae (grasshoppers), estimates of population density are given permitting comparison in future years.
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California/economic geology/fuel resources/Monterey Formation/Pacific Coast/Western U.S./United States/exploration/Northern California/sedimentary basins/drilling/reservoir rocks/Eel River basin/Bodega Basin/Santa Cruz Basin/Point Arena Basin/GEOREF.

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Three unnamed buckwheats listed by the USA Fish and Wildlife Service in Dec. 1980 as potentially endangered or threatened plants as formally proposed: E. crosbyae sp. nov. from Lake County, Oregon; E. grande var. dunklei var. nov. from San Miguel Island, Santa Barbara County, California and E. ovalifolium var. williamsiae var. nov. from Washoe County, Nevada. Several other species proposed by the Fish and Wildlife Serve as potentially endangered or threatened (E. allenii, E. correllii, E. eremicum, E. floridanum, E. lemmonii, E. sp./sp. nov. ined. [= E. libertini], E. tumulosum, E. umbellatum var./var. nov. ined., E. umbellatum var. minus, E. vestitum and E. zionis var. coccineum) are discussed and evidence is given why they cannot be considered endangered or threatened under the present Endangered Species Act of 1973, as amended.
new species/new variety/endangered species/buckwheats/Polygonaceae/Eriogonum crosbyae sp. nov./Eriogonum grande var./dunklei var./nov./Eriogonum ovalifolium var./williamsiae var. nov./Lake County/Oregon/San Miguel Island/Washoe County/Nevada/terrestrial biology/botany.

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ecosystem interrelationships/text/chemical oceanography/bacterioplankton/assimilation/turnover/chlorophyll a/silicate/amino acid/phosphorus/carbon/atp/nitrogen/dissolved oxygen/metals/water/chemistry/southern california

bight/microbiology/hickey/physical oceanography/hardy/phytoplankton/geesey/algae/marine spermatophytes/bray/murray/MINERALS MANAGEMENT SERVICE.

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Univ. Wis., Madison, Dep. Geogr., Sci. Hall, Madison, WI 53706, United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present). California/geomorphology/shore features/marine terraces/geochronology/Quaternary/cliffs/altitude/slopes/angular unconformities/chronostratigraphy/age/corals/mollusks/absolute age/uranium/Channel Islands/San Clemente Island/+ geochronology/+ dates/+ geochemistry/Pacific Coast/Western U.S./United States/GEOREF.

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Identified low-temperature (< 90 degree C) geothermal systems in the United States contain an estimated beneficial heat of 36.9 x 10 super(15) J. These systems are separated into conduction-dominated systems and hydrothermal convection systems. Substantial research has been conducted on the utilization of thermal effluents from power generating stations for aquaculture however, only limited information is available on efforts to develop extensive geothermal water resources for aquatic food production in the U.S. There are several firms in the Western states using geothermal well water to commercially produce the channel catfish Ictalurus punctatus . Additionally, some private research and development projects are examining the application of geothermal water for the culture of various warm water species including Tilapia and ornamental species. The freshwater prawn Macrobrachium rosenbergii is a target species for a number of geothermal aquaculture research and

development projects in California, Nevada, South Carolina, and Texas. Current geothermal aquaculture technology involves the direct use of hydrothermal well water as a culturing medium. Water temperatures are usually < 55 degree C. The use of geothermal water by aquaculture firms offers a number of advantages. Indigenous and nonindigenous species, and development of local specialty markets. thermal aquaculture/aquaculture systems/aquaculture development/fish culture/prawn culture channel catfish/Ictalurus punctatus/Tilapia/freshwater prawn/Macrobrachium rosenbergii/California/USA/marine biology/aquaculture/resource management.

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3473. Richardson SL. Pelagic eggs and larvae of the deepsea

sole, Embassichthys bathybius (Pisces: Pleuronectidae), with comments on generic affinities. Fish. Bull. 1981;79(1):163-170 Address: Gulf Coast Res. Lab., Ocean Springs, MS 39564, USA. The deepsea sole, Embassichthys bathybius (Gilbert), occurs in the northeast Pacific Ocean from Santa Catalina Island, southern California, to Pratt Seamount, Gulf of Alaska, in depths from 320 to 1,432 m. It grows to 47 cm and is reportedly uncommon. Life history data are minimal and nothing is known about its reproduction or early life. Pelagic eggs and larvae of this species are described here for the first time based on collections taken off the Oregon coast. Knowledge of these early stages provides some insight into reproductive strategy as well as information on larval morphology which may be useful for examining systematic relationships.
fish larvae/taxonomy/morphology (organisms)/sexual reproduction/fish eggs Embassichthys bathybius/deepsea sole/Santa Catalina Island/southern California/Pratt Seamount/Gulf of Alaska/Oregon coast/marine biology.

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California/stratigraphy/Miocene/foraminifers/biostratigraphy/Santa Barbara/Monterey Formation/Pacific Coast/Western U.S./United States/Santa Barbara County/Neogene/Tertiary/outcrops/field trips/guidebook/Southern California/Point Conception/Santa Barbara Basin/Santa Maria Basin/Pismo Basin/SEM data/petrography/shale/clastic rocks/mudstone/chert/chemically precipitated rocks/dolostone/carbonate rocks/Lions Head/lithostratigraphy/correlation/Sisquoc Formation/sandstone/microfossils/laminations/planar bedding structures/sedimentary structures/GEOREF.

3475. Ridgway SH, Robison CC. Homing by released captive California sea lions, Zalophus californianus, following release on distant islands. Can. J. Zool. 1985;63(9):2162-2164 Address: Biosci. Div., Nav. Ocean Syst. Cent., San Diego, CA 92152. Captive male California sea lions were twice flown to offshore breeding islands and released. Three animals returned to their pen in San Diego Bay after discharge on San Clemente Island, about 115 km away. Two of four returned to the same facility from San Nicolas Island, about 240 km away. The fastest sea lion returned in 2 days from San Clemente and in 4 days from San Nicolas. This is the first evidence for such specific east--west navigation by sea lions and suggests that these animals are good navigators.
homing behavior/navigation behavior/animal navigation marine mammals/California sea lions/Zalophus californianus/San Nicolas Island/San Clemente Island/San Diego/marine biology/mammalogy.

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3480. Horvitz L. A geochemical survey in the Santa Barbara Channel and its relationship to subsurface heavy oil deposits. Meyer, Richard F. Exploration for heavy crude oil and natural bitumen. U. S. Geol. Surv., Tulsa, OK, United-States. AAPG-Studies-in-Geology. Sponsored in coop. with U.N. Inst. Train. and Res./U.N. Dev. Programme Inf. Cent. Heavy Crude and Tar Sands 1987;25:p.365-375 Horvitz Res. Lab., Houston, TX, United-States; U. S. Geol. Surv., Tulsa, OK, United-States Exploration for heavy crude oil and natural bitumen, Santa Maria, CA, Oct. 29-Nov. 2, 1984 Analytic; Serial; Conference publication B; Bibliography and Index of Geology (1969-present). carbon/isotopes/C 13/C 12/California/economic geology/fuel resources/geochemistry/surveys/Monterey Formation/Santa Barbara Channel/Pacific Coast/Western U.S./United States/heavy oil/oil and gas fields/Hondo Field/Pescado Field/Sacate Field/middle Miocene/Miocene/Neogene/Tertiary/hydrocarbons/organic materials/C 13/stable isotopes/geochemical methods/GEOREF.

3481. Rintoul B. New sales may awaken U.S. West coast. Offshore 1978;38(7):116, 118, 120, 124, 126 Address: Offshore Mag., 1200 South Post Rd., Houston TX 77056, USA. Offshore oil plays a significant role in the production picture in California and Alaska. In both states, operators hope to enhance the offshore contribution. In California, companies are moving to bring on stream new sources of oil in San Pedro Bay and the Santa Barbara Channel and to increase production from existing

wells in the Channel. In Alaska, wildcatters are at the starting post with a campaign which is expected to prove up important reserves in Lower Cook Inlet. Three lease sales are tentatively scheduled, including two for the Outer Continental Shelf waters off California and one for state and federal waters in Alaska's Beaufort Sea.
leases/oil exploration/gas exploration/San Pedro Bay/Santa Barbara Channel/Alaska/Lower Cook Inlet/Beaufort Sea/petroleum/.

3482. Rintoul B. Worldwide drilling and production: United States West Coast. Offshore 1978;38(7):116-126
Address: Offshore, 1200 S. Post Oak Rd., Suite 106, Houston, TX 77056. Offshore California in the San Pedro Bay, Shell was in the permitting process with plans to position a 2-platform complex, including a drilling platform with slots for more wells, and a production platform. Production was set to begin in 1980 at a rate of 20,000-25,000 BPD. Pipelines were planned between the platforms and to shore. Partners in the 50% owned Shell project included Occidental and Aminoil. In the Santa Barbara channel, Exxon planned to begin production of 25,000-30,000 BPD from the Hondo Field before the end of 1978. A tanker was being converted to process and store crude offshore. Unless an agreement is reached to pipe gas ashore, it will be reinjected. Depending on subsequent tests, Exxon could begin construction of new platforms or subsea systems to develop the Pescado and Sacate offshore fields by 1980. Estimated reserves for the 3 fields is 1 billion bbl. In other developments, Chevron planned to install a platform with slots for 48 wells 12 mi SW of Ventura; production was expected to increase from various outlying fields; Texaco announced a gas discovery in the Pitas Point Unit of the Santa Barbara Channel; and no discoveries were made in San Pedro Bay (aside from Shell's well), Tanner Bank, or the Santa. Rosa Island and Santa Barbara Island sectors. Exploratory drilling, platform drilling, offshore production statistics, and offshore lease sales are also cited. The Prudhoe Bay Field production reached 200 million bbl in Apr. 1978.
Offshore construction/Offshore drilling/Offshore exploitation/Offshore exploration/Offshore leases/Offshore operations/Offshore wells/Offshore structures/Petroleum industry/Oil and gas operations/Fixed platforms/Shell/Exxon/Pescado Field/Sacate Field/Chevron/Texaco/California Coast/San Pedro Bay/Santa Barbara Channel/Tanner Bank/Santa Rosa Island/Prudhoe Bay/Alaska Coast/petroleum.

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California/structural geology/faults/Santa Barbara/Hosgri fault zone/San Gregorio Fault/San Simeon fault zone/Santa Barbara Channel/right lateral faults/common depth point method/Pacific Coast/Western U.S./United States/thrust faults/seismic surveys/geophysical surveys/displacements/Point Arguello/Point Conception/Santa Barbara County/GEOREF.

3484. Rintoul B. West Coast production hits red tape.

Offshore 1979;39(7):132-142
Off California, offshore oil accounts for 15.3% of the state's present production, or j149,000 BPD out of the state's total of 976,000 BPD. In Alaska, offshore oil accounts for 8.5% of the state's present production of 1,344,000 BPD. In San Pedro Bay, California, Shell Oil Co. plans to position a 2-platform complex to begin development of a giant oil field which lies 9 mi offshore from Huntington Beach. The Beta field is estimated to contain producible reserves of 150 million bbl. In the Santa Barbara Channel, Exxon Co. and Chevron are bringing oil fields on stream. Exxon began development in Hondo Offshore field from Petroleum Hondo in 1977 and is drilling its eighth well in 850 ft of water, 5.5 mi offshore. Exxon hopes to produce 1,000 BPD of oil from its 28 planned wells in the Hondo field. Pacific Offshore Pipeline Co. plans to purchase natural gas from Exxon's Hondo field. Development of the Beta field, protest to the Beta field development, EPA protests with Exxon's development in Hondo field, platform installation, upcoming sales, and operational safety are discussed.
Offshore production/Oil and gas/Gas fields/Offshore operations/Exxon/Shell Oil Co/oil fields/California Coast/San Pedro Bay/Huntington Beach/Alaska Coast/Santa Barbara Channel/petroleum.

3485. Steritz JW, Luyendyk BP. Hosgri fault zone, offshore Santa Maria Basin, California. Anonymous. Geological Society of America, Cordilleran Section, 83rd annual meeting. Abstracts-with-Programs-Geological-Society-of-America. 1987;19(6):p.454
Univ. Calif., Dep. Geol. Sci., Santa Barbara, CA, United-States Geological Society of America, Cordilleran Section, 83rd annual meeting; with the Paleontological Society of America, Pacific Coast Section, Hilo, HI, May 20-22, 1987 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).
California/structural geology/faults/Santa Barbara/Hosgri fault zone/Central California/Pacific Coast/Western U.S./United States/Transverse Ranges/upper Miocene/Miocene/Neogene/Tertiary/offshore/Point Sal/Point Conception/Santa Barbara Channel/right lateral faults/displacements/Santa Barbara County/GEOREF.

3486. Rintoul B. California is hopeful for oil increase.
Offshore 1980;40(7):112-116
California in 1979 was characterized by 5 active rigs, 9 multi-well production platforms, 120 wells drilled, and a daily average offshore crude production of 114,600 bopd. California's offshore production has been declining, but 2 significant developments could result in increased output in the future. Exxon has cleared a key obstacle in the path toward producing Hondo Offshore field in the Santa Barbara Channel. Also, there is an increase in the platform population which represents the capability for production increase. Though production was declining, offshore oil still accounted for 15% of California's daily production. Other items detailed include pollution control, Beta Field development, and platform installation.
Petroleum industry/Offshore production/Offshore drilling/Offshore wells/Offshore structures/Platforms/Exxon/Hondo Offshore field/Beta Field/Santa Barbara Channel/petroleum/pollution/.

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Claremont McKenna Coll., Sci. Dep., Claremont, CA, United-States Society of Vertebrate Paleontology, Forty-seventh annual meeting,

Tucson, AZ, Oct. 22-24, 1987 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).
California/paleontology/Mammalia/Pacific Coast/Western U.S./United States/San Miguel Island/Quaternary/Rodentia/Northern Channel Island/Peromyscus maniculatus/GEOREF.

3488. Risotto SP, Rudolph RW. Pacific summary report/index, November 1984-May 1986; outer continental shelf oil and gas activities in the Pacific and their onshore impacts. : U. S. Miner. Manage. Serv., Offshore Inf. and Publ., Vienna, VA. MMS 86-0060; 1986. 115.
Prep. for: Outer Continental Shelf Oil and Gas Inf. Program Contract no. 14-12-0001-30042. Address: Rogers, Golden, & Halpern, Reston, VA, USA. fuel resources/impact statements/continental shelf/petroleum/natural gas/Santa Maria Basin/Santa Barbara Channel/Point Arena Basin/engineering/environmental geology/economic geology/petroleum.

3489. Robison BH. Reconnaissance survey of Santa Cruz Island. : California State Water Resources Control Board, Water Quality Monitoring Report 79-8; 1978. 109.
Conducted terrestrial, subtidal and aerial surveys of Santa Cruz Island for state program on areas of special biological significance.
site surveys/Santa Cruz Island/terrestrial biology/marine biology.

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Address: Mar. Sci. Inst., Univ. California, Santa Barbara, CA, USA. In the late summer of 1982, a pilot project was conducted in the Santa Barbara Channel to test the feasibility of using the WASP Atmospheric Diving Suit for biological research in midwater. The pilot project had two primary goals: to test the WASP's potential as a tool for oceanographic research, and to see if the kinds of information we are lacking can be obtained through in situ research. The results of the pilot project clearly demonstrate that: (1) the use of small, ADS submersibles like WASP is a practical means for providing researchers with direct access to the midwater environment; and (2) there are many, highly significant aspects of midwater biology that can now be studied using in situ methods. diving suits/performance assessment/biological surveys/environmental surveys/diving surveys/WASP/diving surveys/Santa Barbara Channel/marine technology/engineering/marine biology.

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Used one-person subs to study the ecology of the mesopelagic community of the Santa Barbara Basin, at depths between the surface and 600 m. midwater/research/submersibles/mesopelagic ecology/Santa Barbara Basin/marine biology.

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California/stratigraphy/Pleistocene/clay mineralogy/areal studies/iron/geochemistry/bones/manganese/Mammalia/Elephantoidea/ Pacific Coast/Western U.S./United States/Channel Islands/Quaternary/fire areas/ground water/X ray data/smectite/clay minerals/sheet silicates/silicates/illite/carbonization/C 14/Santa Rosa Island/Santa Cruz Island/magnetic properties/wood/Mammuthus/Elephantidae/Proboscidea/color/tusks/GEOREF.

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California/oceanography/continental margin/Pacific Ocean/geochemistry/carbon/sediments/marine sediments/pore water/sea water/processes/diffusion/organic materials/sedimentation/biochemical sedimentation/silicon/geochemical cycle/Pacific Coast/Western U.S./United States/Southern California/continental borderland/North American Pacific/biogenic effects/silica/sediment water interface/San Pedro Basin/San Nicolas Basin/organic carbon/solution/diagenesis/GEOREF.

3497. Robles C. Predator foraging characteristics and prey population structure on a sheltered shore. Ecology 1987;68(5):1502-1514 Address: Biol. Dep., California State Univ., Los Angeles, CA 90032. The author investigated predation on mussels occurring at upper levels of a sheltered rocky shore on Santa Catalina Island, USA. Despite continuous recruitment, the mussels Mytilus californianus, M. edulis , and Septifer bifurcatus seldom survived to lengths > 1.5 cm, and they remained inconspicuous beneath a canopy of perennial algae. Surveys using scuba at high tide and gut-content analyses showed that intertidal mussels were preyed upon by whelks (Ceratostoma nuttali and Maxwellia gemma), diurnal fishes (Halichoeres semisinctus and Semicossyphus pulcher), and nocturnal spiny lobsters (Panulirus interruptus). Whelks and fishes foraged primarily on mid to low shore levels, the lower half of the mussels' vertical range.
predation/ecological zonation/recruitment/Mytilus californianus/Mytilus edulis/Septifer bifurcatus/Ceratostoma

nuttali/Maxwellia gemma/Halichoeres semisinctus/Semicossyphus pulcher/Panulirus interruptus/Santa Catalina Island/marine biology/ecology.

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California/structural geology/tectonics/Santa Barbara County/Santa Maria River/offshore/Central California/Pacific Coast/Western U.S./United States/Point Arguello/Hosgri fault zone/faults/Lompoc Solvang Fault/Santa Ynez River Fault/Lions Head Fault/folds/focal mechanism/earthquakes/Santa Barbara Channel/Monterey/San Andreas Fault/GEOREF.

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This report is a compilation of the projects undertaken at the Pacific Missile Test Center to conserve energy, develop and apply alternative energy sources, and develop, in the 1980s, basic capability (BACADE) projects for applying energy-saving technology to the needs of the Pacific Missile Test Center. Energy conservation/Test facilities/Naval shore facilities/Photovoltaic effect/Solar collectors/Turbines/Wind machines/Heat recovery/California Channel Islands/geology/Energy Conversion.

3500. Kolpack RL. Sedimentology of the mainland nearshore region of Santa Barbara Channel, California. Knight, R. John, McLean, J. Ross. Shelf sands and sandstones. Petro-Can., Calgary, AB, Canada.
Memoir-Canadian-Society-of-Petroleum-Geologists. 1986;11:p.57-72 Mar. Processes Res., West Covina, CA, United-States; Petro-Can., Calgary, AB, Canada; Shell Can., Canada Shelf sands and sandstones, Calgary, AB, Jun. 15-17, 1984 Analytic; Serial; Conference publication B; Bibliography and Index of Geology (1969-present).
California/oceanography/continental shelf/sedimentation/transport/littoral drift/Santa Barbara Channel/Pacific Coast/Western U.S./United States/Point Conception/nearshore environment/Holocene/Quaternary/sand/clastic sediments/silt/clay/Ventura/bathymetry/grain size/physical properties/GEOREF.

3501. Rossi SS, Rommel GW, Benson AA. Hydrocarbons in sand crabs (Emerita analoga) from southern California (U.S.A.). Chemosphere: Chemistry, Physics, and Biology as Focused on Environmental Problems 1978;7(2):131-141 Address: SIO, Marine Biology Research Div., La Jolla, CA 92093. E. analoga (Crustacea: Hippidae) collected from 3 beaches-Dutch Harbor (San Nicolas Island), Corona del Mar, and Coil Oil Point-contained 0.9-24.1 lg/g dry wt saturated hydrocarbons, and 3.6-21.4 lg/g dry wt unsaturated hydrocarbons. Major constituents were (in wt % total): n-alkanes (13.1%), heneicosapentaene plus heneicosahexaene (1.0%), squalene

(5.1%), and unidentified polyenes (7.8%). Crabs from beaches exposed to small boat traffic (Corona del Mar) and natural oil seepage (Coal Oil Point) were slightly and severely tainted, respectively, with petroleum hydrocarbons. Crabs from presumably uncontaminated San Nicolas Island (85 km offshore) contained only biogenic compounds.
Hydrocarbons/Marine pollution/Petroleum/Chemical analysis/Environmental impact/Oil contamination/Hydrocarbons/small boat traffic/natural oil seepage/petroleum wastes/oil pollution/pollution surveys/residues/pollution levels/pollution monitoring/Arthropoda/Crustacea/Hippidae/Emerita analoga/sand crabs/Dutch Harbor/San Nicolas Island/Corona del Mar/Santa Barbara Channel/Coil Oil Point/marine biology/petroleum/water quality/pollution/resource management.

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Ogle Pet., Santa Barbara, CA, United-States Prentice-Hall, Englewood Cliffs, NJ Rubey cColloquium on Cenozoic basin development of coastal California, Los Angeles, CA, Oct. 1984 Analytic; Book; Conference publication B; Bibliography and Index of Geology (1969-present).
California/economic geology/oil and gas fields/Monterey Formation/Miocene/Neogene/Tertiary/Pacific Coast/Western U.S./United States/Southern California/reserves/Santa Maria Basin/Santa Barbara Channel/phosphate rocks/chemically precipitated rocks/shale/clastic rocks/anticlines/folds/fractures/structural traps/traps/Point Arguello Field/Conception Field/Los Angeles Basin/production/exploration/evaluation/GEOREF.

3503. Roth VL. Dwarf mammoths from the Santa Barbara, California Channel Islands: size, shape, development, and evolution [dissertation]. : Yale University; 1982. 291.
This study is an analysis of the morphological changes accompanying dwarfism in Mammuthus exilis, a small mammoth from Pleistocene deposits of Santa Rosa Island, California. To establish a philosophical framework for the act of comparison, two methodological issues, homology and measurement, are examined first. Growth series of mammoths from island and mainland populations are then compared, in order to determine in what manner ancestral patterns of ontogeny have been altered during the evolutionary change of body size. Patterns of variation in size, shape and ontogenetic stage of dental and osteological specimens of living analogues, Elephas manimus and Loxodonta africana, provide a basis for inferences on the nature of heterochronic and allometric variation in the dwarf mammoths. Similarities in the patterns of ontogenetic variation in teeth of L. africana, E. maximus, M. columbi and M. exilis suggest homologous features in the developmental programs of these species, while differences in dental ontogeny can be correlated with differences in jaw morphology. Some variability (e.g. L. africana vs E. maximus) is heterochronic in nature, whereas some is fabricational. A study of morphological variation provides evidence that, in elephants, size and shape of the jaw can directly affect the morphology of the teeth. Some aspects of postcranial morphology in the dwarf. mammoths may be related to a greater angulation of the limbs in these small forms. Growth (size increase), epiphyseal fusion and dental progression proceed on independent time scales in different individuals of E. maximus, and within a single elephant species, a wide variety of

shapes is expressed at any given size or ontogenetic stage. As a result, it is not generally possible to distinguish ontogenetic from geometric scaling in bivariate comparisons of measurements on long bones of M. columbi, M. exilis, E. maximus, and E. falconeri. Maternal effects and genetic assimilation of stunting may have been responsible for size reduction in the island mammoths.
dwarfism/morphological changes/ontogeny/Mammuthus exilis/dwarf mammoth/Santa Rosa Island/paleontology/biology.

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California/stratigraphy/Miocene/sedimentary rocks/chemically precipitated rocks/phosphate rocks/sedimentation/environment/shelf environment/organic materials/geochemistry/Monterey Formation/Sisquoc Formation/Pacific Coast/Western U.S./United States/Neogene/Tertiary/marl/clastic rocks/laminations/planar bedding structures/sedimentary structures/organic carbon/distribution/Transverse Ranges/Coast Ranges/Salinas Basin/Cuyama Basin/Sespe Creek/Ventura Basin/Pismo Basin/Huasna Basin/Santa Maria Basin/Santa Barbara Basin/sedimentary basins/SEM data/concretions/secondary structures/turbidite/paleo oceanography/GEOREF.

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California/structural geology/tectonics/stratigraphy/Cenozoic/paleogeography/foraminifers/biostratigr aphy/sedimentation/environment/coastal environment/Vaqueros Formation/Monterey Formation/Santa Margarita Formation/Pacific Coast/Western U.S./United States/Cuyama Basin/subsidence/sedimentary basins/Oligocene/Paleogene/Tertiary/Miocene/Neogene/microfossils/Santa Maria Basin/Santa Barbara Basin/GEOREF.

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Vegas, NV.
Catalina Schist/Franciscan Formation/San Onofre Breccia/guidebook/subduction zones/Farallon Plate/North American Plate/Mesozoic/Cenozoic/melange/blueschist/greenschist/amphibolites/serpentinit e/volcanic rocks/limestone/landslides/marine terraces/alluvium/thrust faults/Santa Catalina Island/areal geology.

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California/stratigraphy/Tertiary/structural geology/tectonics/sedimentation/sedimentation rates/coastal environment/Great Valley Sequence/Pacific Coast/Western U.S./United States/subsidence/sedimentary basins/uplifts/Cuyama Basin/Caliente Range/Sacramento Valley/Ventura Basin/Gaviota Pass/Santa Barbara/Santa Cruz Basin/San Joaquin Valley/San Andreas Fault/GEOREF.

3509. Rowland SM. Geology of Santa Catalina Island.
California Geology 1984;37(11):239-251
Address: Univ. Nev., Dep. Geosci., Las Vegas, NV.
Santa Catalina Island is one of several exposed ridge crests in the California continental borderland geomorphic province. This province is a 250-km-wide region of NW-SE trending basins and ridges off the coast of S California and Baja California. The geology of the continental borderland is complex. Catalina Schist/Farallon-North American Subduction Zone/Franciscan Complex/graywacke/clastic rocks/greenstone/schists/structural geology/Miocene/Neogene/Tertiary/Cretaceous/Mesozoic/paleogeography/volcanic rocks/sedimentary rocks/stratigraphy/drest ridges/greenschist/glaucophane-lausonite facies/Santa Catalina Island/Southern California/Baja California/areal geology.

3510. Hauksson E. Constraints on the velocity structure of the crust in the Los Angeles Basin and the central Transverse Ranges, Southern California. AGU 1985 fall meeting. Eos,-Transactions,-American-Geophysical-Union. 1985;66(46):p.973 Univ. South. Calif., Dep. Geol. Sci., Los Angeles, CA, United-States AGU 1985 fall meeting, San Francisco, CA, Dec. 9-13, 1985 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).
California/tectonophysics/crust/geophysical surveys/seismic surveys/Los Angeles Basin/Santa Catalina Island/Southern California/Pacific Coast/Western U.S./United States/velocity structure/elastic waves/Mohorovicic discontinuity/GEOREF.

3511. Russell AG, Cass GR, Seinfeld JH. On some aspects of nighttime atmospheric chemistry. Environ. Sci. Technol. 1986;20(11):1167-1172 Address: ENVIRON. QUALITY LAB., California INST. TECHNOL., PASADENA, CALIF. 91125.
Nighttime atmospheric chemistry is simulated in two different situations: an offshore oceanic environment, the Santa Barbara Channel region of the south central cost of California [USA] and a dry environment, the Mojave Desert of California. In the marine case, conversion of NOx to peroxyacetyl nitrate (PAN) and HNO3 is

rapid; HNO3 is formed by homogeneous hydrolysis of N2O5 and by nitrate radical reactions with organic gases, and the rate of HNO3 production is limited by the abundance of O3. Even in the desert case, predictions indicate that homogeneous hydrolysis of N2O5 dominates HNO3 formation at night. The implications of recent studies concerning the unimolecular decomposition of NO3 are discussed. nitrogen oxides/peroxyacetyl nitrate/nitric acid/nitrogen pentoxide ozone/nitrate/air pollution/atmosphere/chemical analysis/nitrogen oxides/monitoring/Santa Barbara Channel/Mojave Desert chemistry/atmospheric chemistry/pollution.

3512. Russell BJ, Meltzer AS, Kieckhefer RM. Refraction surveys in Santa Cruz Basin and on Patton Ridge, California borderlands. AGU 1985 fall meeting. Eos,-Transactions,-American-Geophysical-Union. 1985;66(46):p.973 Chevron Oil Field Res. Co., La Habra, CA, United-States AGU 1985 fall meeting, San Francisco, CA, Dec. 9-13, 1985 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present). California/tectonophysics/crust/geophysical surveys/seismic surveys/Patton Ridge/Santa Cruz Basin/Pacific Coast/Western U.S./United States/velocity structure/oceanic crust/Cenozoic/sedimentary cover/continental borderland/GEOREF.

3513. Rust RW. Synonymy in California Channel Island Epeolini bees (Hymenoptera: Anthophoridae). Pan-Pac. Entomol 1984;60(2):119-121 Address: Dep. Biol., Univ. Nevada, Reno, NV 89557.
A recent review of the endemic insect fauna of the California Channel Islands (Miller, 1984) indicated 16 taxa of bees (Apoidea). Earlier revisions of bee taxa containing California Channel Island endemics have shown that the island endemics are synonyms of mainland taxa: Anthidium Grigarick and Stange, 1968; Dioxys Hurd, 1958; Melissodes LaBerge, 1961; Andrena LeBerge and Ribble, 1975, Ribble, 1968; Bombus Milliron, 1971; Coelioxys Mitchell, 1973; Agapostemon Roberts, 1972; Osmia, Halictus Sandhouse, 1927, 1941; Hylaeus Snelling, 1970; and Colletes, Bombus Stephen, 1954, 1957. The author presents two additional synonyms of California Channel Island Epeolini bees in the genera Epeolus and Triepeolus .
taxonomic revision/synonymy/endemic species/taxonomy Epeolini bees/Hymenoptera/Anthophoridae/Epeolus eastwoodae/Epeolus minimus/Epeolus piscatoris Cockerell 1939/Triepeolus heterurus/Cockerell and Sandhouse, 1924/Triepeolus/California Channel/terrestrial biology/entomology.

3514. Chang SK, Douglas RG. Translated title: Holocene turbidites of Santa Catalina Basin, California continental borderland. Jijirhag Hoiji = Journal of the Geological Society of Korea. 1987;23(1):p.16-31
Korea Ocean Res. and Dev. Inst., Seoul, South-Korea; Univ. Calif., United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
California/stratigraphy/Holocene/sediments/clastic sediments/turbidite/algal flora/biostratigraphy/foraminifers/sedimentation/environment/hemi pelagic environment/Pacific Coast/Western U.S./United States/Quaternary/continental borderland/Santa Catalina Island/Santa Catalina Basin/microfossils/biogenic structures/sedimentary structures/Neogloboquadrina pachyderma/cores/GEOREF.

3515. Rust RW. Bees of Anacapa Island, California

(Hymenoptera: Apoidea). Menke AS, Miller DR. Entomology of the California Channel Islands: Proceedings of the first symposium. Santa Barbara, California: Santa Barbara Museum of Natural History; 1985. 117-119.
Address: Biol. Dep., Univ. Nevada, Reno NV 89557.
Twenty-eight species of bees in six families are known from Anacapa Island and none are endemic. Four species are parasitic on other bee species. bees/Hymenoptera/Apoidea/Anacapa Island/terrestrial biology/entomology.

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Univ. Buenos Aires, Dep. Cien. Biol., Buenos Aires, Argentina; Univ. Calif. at San Diego, United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
California/stratigraphy/Holocene/paleoclimatology/radiolarians/biostratigraphy/ Pacific Coast/Western U.S./United States/Quaternary/seasonal variations/SEM data/Collosphaeridae/Actinommidae/Spongodiscidae/Coccodiscidae/Phacodiscidae/Py loniidae/Litheliidae/Spyrida/Plagoniidae/Theoperidae/Carpocaniida e/Pterocoryida e/Artostrobiidae/Cannobotryidae/microfossils/GEOREF.

3517. Rust R, Menke A, Miller D. A biogeographic comparison of the bees, sphecid wasps, and mealybugs of the California Channel islands (Hymenoptera, Homoptera). Menke AS, Miller DR. Entomology of the California Channel Islands: proceedings of the first symposium. Santa Barbara, California, USA: Santa Barbara Museum of Natural History; 1985. 29-51.
Presented at: Symposium on Entomology of the California Channel Islands (at) Annual Meeting of the Entomological Society of America, San Diego, CA (USA), Dec 1981 Address: Dep. Biol., Univ. Nevada, Reno, NV 89557.
There are three main goals in this paper: 1) to describe the distribution patterns of three diverse groups of insects, 2) to compare these patterns and determine if there are general statements that apply to all three groups, and 3) to test the hypothesis that certain inter-island similarity relationships can be predicted based on Knowledge of geological and climatological history. Bees, sphecid wasps (Hymenoptera: Apoidea and Sphecidae) and mealybugs (Homoptera: Pseudococcidae) have different biologies and species dispersal patterns, and they have an array of life-history strategies. On the islands these insects display a diversity of distribution patterns from widespread taxa that occur on each island and on the mainland, to island endemics restricted to one or a few of the islands.
zoogeography/biogeography/dispersal patterns/life history strategies/endemic species/Pseudococcidae/Apoidea/Sphecidae/bees/sphecid wasps/Hymenoptera Homoptera/California Channel Islands/terrestrial biology/entomology.

3518. Horvitz SA. Processing near surface hydrocarbon data to yield improved interpretations; a case study. Oil and Gas Journal. 1987;85(17):p.95-96, 98, 100
Tex. South. Univ., Houston, TX, United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
California/economic geology/fuel resources/Pacific Coast/Western U.S./United States/Santa Ynez Mountains/case studies/mathematical models/models/Santa Barbara Channel/reservoir rocks/oil water interface/statistical analysis/sampling/standard deviation/GEOREF.

3519. Sackinger PA, Reible DD, Shair FH. Uncertainties associated with estimation of mass balances and gaussian parameters from atmospheric tracer studies. J. Air Pollut. Control Assoc. 1982;32(7):720-724
Address: DEP. CHEMICAL ENGINEERING, LOUISIANA STATE UNIV.,. BATON ROUGE, LA. 70803.
Data resulting from 2 atmospheric tracer experiments in the land-sea breeze winds in Los Angeles, California [USA], were used to compare the observed and released amounts of tracer (a mass balance). The mass balance calculation indicated that essentially all of the tracer transported to sea during the land breeze was transported back across the shore during the subsequent sea breeze. A methodology for calculating a mass balance and the associated uncertainties was presented. The experimental and calculation procedures allowed mass balance estimates with less uncertainty than was present in individual measurements of concentration or mixing height. A methodology for calculating dispersion parameters for the Gaussian plume model from tracer data was discussed and applied to the results of 2 atmospheric tracer studies conducted during the afternoon sea breeze in the Santa Barbara Channel of California. The method involved the integral definitions of the statistical quantities. By considering only tracer concentrations > 10% of the maximum concentration and at sufficiently many data points, the uncertainty associated with the parameter estimation was less than the relative uncertainties in any individual data point. These studies were primarily designed to relate the uncertainties in estimates of mass balances and in estimations of Gaussian parameters to the uncertainties inherent within field data. air pollution model/wind/sea breeze/Santa Barbara Channel/Los Angeles/air pollution.

3520. Weinheimer AL, Carso TL, Wigley CR, Casey RE. Radiolarian responses to Holocene and Neogene California, El Nino and anti El Nino events. 2nd workshop on climate variability of the eastern North Pacific and western North America. ; 1985. p. p. 18. PACLIM 2nd workshop on climate variability of the eastern North Pacific and western North America, Pacific Grove, CA, May 19-23, 1985 Analytic; Book; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present). radiolarians/biostratigraphy/Neogene/California/stratigraphy/Holocene/Pacific Ocean/paleoclimatology/Cenozoic/Pacific Coast/Western U.S./United States/El Nino/Tertiary/Quaternary/microfossils/Santa Barbara Basin/Monterey/North Pacific/GEOREF.

3521. Salzman AG. The selective importance of heat stress in gull nest location. Ecology 1982;63(3):742-751
Address: DEP. BIOL., UNIV. CHICAGO, CHICAGO, ILLINOIS 60637. A brief but intense heat wave on June 9, 1979 caused catastrophic chick mortality in a population of western gulls [Larus occidentalis] on Santa Barbara Island, California, USA. Mortality ranged from 0-90% in different areas of the colony. Mortality was not a function of the amount of vegetation cover available to chicks, nor did chick age or size affect the probability of mortality during the heat wave. In the absence of a heat wave, chick mortality due to heat stress is rare in this population. Microclimate analysis in 1980 showed that the area of high chick heat stress mortality in 1979 was characterized by higher ground and air temperatures and lower wind velocities than the area of low mortality. Taxidermic thin metal chick models had a higher integrated thermal load or operative environmental temperature, in the area of previous high mortality. The persistent nesting by gulls in areas of high potential chick mortality cannot be

explained by habitat shortage or by the competitive inferiority of those birds. Enhanced access to food resources may explain the persistence of 1 area, but not of several others. Analysis of long-term weather records for the southern Channel Islands region showed that heat waves during the breeding season are rare: of 9 possible heat waves in 62 yr of data, 5 have occurred since 1973. The present nesting. distribution of gulls on the island has probably not evolved in a regime of frequent heat waves, but rather in response to a long period of highly equable climatic conditions.
heat stress/nesting/heat wave/mortality/food resource/ground temperature/air temperature/climatic condition model/wind velocity/colonies/juveniles/biological stress/temperature effects/mortality causes/Charadriiformes/western gulls/Larus occidentalis/Santa Barbara Island/terrestrial biology/ornithology.

3522. Emery KO. Holocene temperature depth curves of the eastern North Pacific. 2nd workshop on climate variability of the eastern North Pacific and western North America. ; 1985. p. p.17. Woods Hole Oceanogr. Inst., Woods Hole, MA, United-States PACLIM 2nd workshop on climate variability of the eastern North Pacific and western North America, Pacific Grove, CA, May 19-23, 1985 Analytic; Book; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).
paleoclimatology/Holocene/Pacific Ocean/stratigraphy/foraminifers/biostratigraphy/North Pacific/Quaternary/paleotemperature/microfossils/Santa Barbara Basin/Santa Rosa Cortes Ridge/GEOREF.

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wildlife management/culling/environmental protection/feral populations/erosion/Bambi syndrome/National Environmental Policy Act/Resource Management/legislation/endangered species/wildlife management/burros/San Miguel Island/terrestrial biology/mammalogy/resource management.

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California/petrology/metamorphism/prograde metamorphism/P T conditions/Catalina Schist/subduction zones/terranes/Santa Catalina Island/Pacific Coast/Western U.S./United States/blueschist facies/greenschist facies/amphibolite facies/veins/metagabbro/metaigneous rocks/eclogite facies/538/GEOREF.

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The interaction between the preferences of predators and defenses of prey and the role it plays in shaping distribution and abundance patterns of 2 gastropod species in a subtidal marine community were investigated. The snails Tegula eiseni and T. aureotincta are patchily distributed on horizontal rocky substrata at depths of 2-10 m off Santa Catalina Island, California, USA. the dominant invertebrate predators in these habitats are the sea stars Pisaster giganteus and Astrometis sertulifera, the whelk Kelletia kelletii, the cephalopod Octopus bimaculatus and the lobster Panulirus interruptus. Their preferred prey include sea urchins, crabs and sessile bivalves; the Tegula spp. are less-favored prey. A positive correlation was found between the abundance of the 5 predators and that of their preferred nongastropod prey. A negative association was detected between predator density and abundance of the motile gastropods, prey that tend to rank lower on the preference hierarchies of the predators. The 2 most common snail species were the Tegula congeners, which comprise 83% of the gastropod group by number. The spatial distributions of the 2 Tegula spp. are not identical. T. eiseni, but not T. aureotincta, is abundant in areas. supporting moderate densities of predators. Both species are rare in habitats with high predator densities and common where few predators occur. The 2 Tegula spp. have defenses against predation that differ from one another. T. aureotincta displays a flight behavior presence of Pisaster, Astrometis and Kelletia. No such reaction is elicited when the snail is exposed to rapidly moving unavoidable predators such as Octopus and Panulirus. T. eiseni does

not employ flight defenses but, instead, has morphological features that reduce its acceptability as food. Such features are not characteristic of T. aureotincta. These differences in defense probably account for the marked preference for T. aureotincta over T. eiseni by invertebrate predators. Field experiments involving predator prey manipulations on patch reefs indicate that both emigration and death by predation account for the lack of T. aureotincta in areas with high and intermediate densities of predators. As a consequence of its relatively more effective defense, T. eiseni can persist in habitats that contain moderate numbers of predators. The absence of T. eiseni in high predator density areas is the result of direct predation. The dissimilarity in defense mechanisms of the snails accounts for the observed difference in distribution and abundance of the Tegula spp. The distribution of predators is correlated with that of their preferred prey. The defenses of the favored prey appear to be superior to those of motile gastropods, and, as a consequence, the less-preferred gastropod prey are heavily consumed when they occur in the same areas. Although there might be little direct interaction between prey groups, the spatial distribution of preferred prey can thus influence the distribution and abundance of motile gastropods.
flight behavior/morphological features/prey preferences/predation/predatory behavior/defensive behavior/community structure/habitat utilization/spatial distribution/Mollusca/Gastropoda/Tegula eiseni/Tegula aureotincta/Kelletia kelletii/Cephalopoda/Octopus bimaculatus/Echinodermata/Pisaster giganteus/Astrometis sertulifera/star fish/sea stars/Crustacea/Panulirus/spiny lobster/interruptus/Santa Catalina Island/marine biology/ecology.

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California/geochemistry/isotopes/sediments/radium/Ra 228/sedimentation/environment/marine environment/San Pedro Basin/San Nicolas Basin/Southern California/Pacific Coast/Western U.S./United States/mathematical models/models/GEOREF.

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Address: MARINE SCI. INST., UNIV. CALIF., SANTA BARBARA, CALIF. 93106. Field experiments were performed to explore the nature of indirect interactions between two groups of ecologically distinct prey that occur on subtidal rocky reefs at Santa Catalina Island, California [USA]. Mobile gastropods (Tegula aureotincta, Tegula eiseni, and Astraea undosa) and sessile bivalves (mostly Chama arcana) share a common set of invertebrate predators (lobster Panulirus interruptus, cephalopod Octopus bimaculatus, and whelk Keletia kelletii). the gastropods, which are secondarily preferred prey, principally occur on cobble reefs and less commonly on high-relief boulder reefs. Sessile bivalves and other species of favored prey are common on high-relief reefs and are rare or absent in cobble areas. The density of each predator species is greatest in high-relief areas containing abundant favored prey. Addition of bivalves to replicate cobble plots resulted in marked increases in predator density, relative to controls, because predators

aggregated to areas containing favored prey. Greater densities of predators in the presence of experimentally added bivalves resulted in greater mortality and lower population densities of gastropods relative to controls. Conversely, mortality of Chama was higher where gastropods. were common compared with cobble areas containing fewer gastropods. This occurred because the density compared with cobble reef, although low overall, was positively correlated with density of gastropods. Thus each group of prey was negatively affected by the presence of the other because each alternative prey increased the local density of predators. Such a doubly negative indirect interaction between prey, mediated by a shared predator, is known as "apparent competition"; this is the first experimental demonstration of its existence. Because gastropods and bivalves are superior at withstanding predation in different habitats, shared predation and apparent competition may be sufficient mechanisms to maintain the pattern of habitat segregation displayed by these prey groups.
predator density/subtidal rocky reef/field manipulation/indirect interactions/predator-prey relationships/predator-prey interactions/competition/aggregation/habitat utilization/predation/interspecific relationships/population density/Tegula aureotincta/Tegula eiseni/Astraea undosa/Chama arcana/Panulirus interruptus/Octopus bimaculatus/Keletia kelletii/Santa Catalina Island/marine biology/ecology.

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Two locally sympatric temperate marine reef fishes have high taxonomic similarity in diets. Subdivision of gammarid amphipods, their principal prey, was found. The principal interspecific difference in fish diets concerned the sizes of prey items taken. Disparate foraging behaviors was a much better indicator of the relative differences in diets of these two fishes than was external fish morphology.
sympatric/foraging behavior/prey size selection Embiotoca jacksoni/black surfperch/Embiotoca lateralis/striped surfperch/Santa Cruz Island/marine biology/ecology.

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Net and bottle sampling programs were used to test the hypotheses that Langmuir circulations can influence the small-scale distribution of marine phytoplankton and zooplankton. Phytoplankton were concentrated in Langmuir cell convergences in densities which were two to four times those measured in divergences. An index of chorophyll a patchiness indicated that patchiness of phytoplankton was greatest over the windspeed range, 3 to 5 m/s, which is the lower range of windspeeds over which Langmuir circulations can occur. Net tows indicated the presence of near surface zooplankton patches oriented parallel to the wind direction over the windspeed range of 5 to 7 m/s. Selected zooplankton taxa were concentrated in Langmuir cell divergences in densities which were two to five times those in convergences. An analysis of windspeeds over a one year period in the Santa Barbara Channel indicated that concentration of phytoplankton and zooplankton can occur regularly on an hourly, daily and monthly basis.
zooplankton/phytoplankton/Langmuir circulation/biological oceanography/ marine biology.

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Washover sand bodies commonly develop along microtidal coastlines in beach/barrier island or spit settings. Wave runup, usually in conjunction with an abnormally high water level, may overtop the most landward berm of the beach and the foredune crest, if one exists, to produce overwash and subsequent runoff across the more landward subaerial surface. Two main elements of the resulting deposition are the washover fan and runoff channel. Newly formed, small-scale washover deposits were examined along the Outer Banks, North Carolina, Near Pt Mugu, California, and at Presque Isle (Lake Erie), Pennsylvania. High velocity discontinuous surges moving across the fan surface resulted in the development of a plane bed and subhorizontal to low-angle (landward dipping) planar stratification which comprised the major part of the fan. Similarly, rhomboid forms were produced by high velocity sheet flow across the fan surface. Where flow carried into a standing body of water, delta-type foreset strata developed. The sets of sedimentary structures comprising modern washover sand bodies provide criteria for the identification of similar deposits in ancient sediments and for more specific interpretation of the environment.
Washover sand bodies/beach barrier island/micro tidal coastline/barrier island/plane bed/foreset strata/sedimentary

structures/bedforms/stratification/fans/sediment transport/North Carolina/Lake Erie/Pennsylvania/Pt. Mugu/marine geology/sedimentology/sedimentary geology.

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Santa Barbara Channel; Santa Maria Basin;.
The anticipated development and production of significant oil reserves in the area generated the need to develop baseline information on the biological, chemical, and geological characteristics of the area. A survey of soft-bottom habitats was conducted at 107 stations along 16 transects, with bottom depths ranging from 165 to 3000 feet. A total of 142 sediment (box) cores were collected for analysis of benthic infauna, total organic carbon, petroleum hydrocarbons, chromium, barium and various sediment parameters. Selected hard-bottom areas were surveyed using a manned submersible along 23 transects over bottom depths of 180 to 790 feet. Hard-bottom assemblages are expected to be more sensitive than soft bottom assemblages to impacts from oil and gas operations.
Water pollution/Crude oil/Marine biology/Metals/Hydrocarbons/Chromium/Barium/Sediments/Offshore drilling/Benthos/Environmental impacts/Substrates/Ocean

bottom/Natural gas/Monitoring/Habitats/biological oceanography/marine biology/petroleum.

3558. Science Applications International Corp. LJ,C. Assessment of long-term changes in biological communities of the Santa Maria Basin and Western Santa Barbara Channel - Phase 1. Volume 2. Synthesis of findings. Final Report 1984-1986. : MMS-86/0012-VOL-2; 1986. 714. ((Sponsored by Minerals Management Service, Los Angeles, CA. Pacific OCS Region)).
The anticipated development and production of significant oil reserves in the area generated the need to develop baseline information on the biological, chemical, and geological characteristics. A survey of soft-bottom habitats was conducted at 107 stations along 16 transects, with bottom depths ranging from 165 to 3000 feet. A total of 142 sediment (box) cores were collected for analysis of benthic infauna, total organic carbon petroleum hydrocarbons, chromium, barium and various sediment parameters. Selected hard-bottom areas were surveyed along 23 transects over bottom depths of 180 to 790 feet. Depth was a major factor influencing the distribution of infaunal organisms. Hard-bottom assemblages are expected to be more sensitive than soft bottom assemblages to impacts from oil and gas operations.
Water pollution/Crude oil/Marine biology/Santa Maria Basin/Ecology/Metals/Hydrocarbons/Chromium/Barium/Sediments/Depth /Substrates/Ocean bottom/Shellfish/Worms/Habitats/benthic infauna/Santa Barbara Channel/Outer continental shelf/Biological Oceanography/petroleum/marine biology.

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Pacific Ocean/oceanography/sedimentation/ecology/observations/deep sea environment/diagenesis/bioturbation/sediments/marine sediments/processes/North American Pacific/Santa Catalina Basin/biogenic structures/sedimentary structures/mounds/bedding plane irregularities/communities/biogenic effects/geochemistry/GEOREF.

3560. Science Applications ILJC. Intertidal study of the Southern California Bight, 1976/1977. Volume III. Principal investigators' reports, report sections 1.1.8-1.1.13. Final rept. : BLM/YN/SR-78/17-VOL-3-3; 1978. 635. ((Sponsored by Bureau of Land Management, Washington, DC.)). Note: See also PB-290 740, Volume 3, Sections 1.1.1-1.1.7, PB-300 344, and Volume 3, Sections 1.1.14-1.1.17, PB-300 346.
Rocky intertidal, sandy beach, slough, and subtidal biological habitats were studied to determine community composition, biogeographical and seasonal variation, and community recovery. Kelp bed distribution and their seasonal variation are delineated for the shallow areas along the mainland coast and around the offshore islands. Rocky intertidal investigation show there is a north-south biogeographical pattern with island sites lusher than mainland counterparts. Sandy beach and slough communities appear to be controlled by physiographic factors and physical variables rather than geographic pattern. Sediment and biota samples from mainland, island and subtidal sites were analyzed for selected trace metal and hydrocarbon characteristics. Geographical pattern, seasonal variations, and intro-site variations are presented. Crude oil/Ecology/Marine biology/Oil pollution/Continental

shelves/Hydrocarbons/Intertidal zone/Invertebrates/Metals/Trace elements/Environmental impacts/Acidity/Distribution (Property)/Concentration (Composition)/Atomic spectroscopy/Neutron activation analysis/Aquatic animals/Outer continental shelves/Baseline studies/Trace metals/Standing crop/Dutch Harbor/giant kelp/Macrocystis pyrifera/San Nicolas Island/Southern California Bight/marine biology/petroleum.

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California/stratigraphy/Cretaceous/Eocene/Mexico/tectonophysics/plate tectonics/North America/paleomagnetism/Santa Barbara County/Pacific Coast/Western U.S./United States/Southern California/San Miguel Island/Paleogene/Tertiary/continental borderland/Baja California/sedimentary rocks/movement/natural remanent magnetization/remanent magnetization/demagnetization/reversals/terranes/allochthons/GEOREF.

3562. Scott TA. San Clemente Loggerhead Shrike: natural history and management of an endangered population (California) [dissertation]. Berkeley, California, USA: University of California; 1987. 165.
This study assesses the population status and factors contributing to the perceived decline of the San Clemente Loggerhead Shrike (Lanius ludovicianus mearnsi), a subspecies of predatory bird endemic to San Clemente Island and representative of bird populations on near-shore islands. On San Clemente Island, the major factors affecting shrike distribution appear to be caused by habitat alteration and predation caused by the introduction of exotic species and domestic livestock, which have altered or destroyed the majority of shrike nest locations on the island.^The minimum estimate of breeding adults was 22 (11 pairs) in 1985 and in 1986; the maximum estimate was 15 pairs in 1985 and 12 pairs in 1986. Breeding pairs were concentrated in the southwestern drainages of the island, with 94% of nests occurring within 30 m of streambeds. Shrike nests only occurred in Rhus integrifolia, Prunus lyonii, Heteromeles arbutifolia, primarily because of the canopy height ($>$1.6 m) used by shrikes for nesting substrate. Nest locations were used over consecutive years, averaging 2.1 years of occupancy over the 3 years of the study. Mortality primarily occurred as a result of predation. Approximately 45% of the young that left shrike nests died within two weeks. Predators destroyed 45% of all nests prior to fledging of young, and herbivores have altered the. vegetation on the island.^Shrikes on the island are limited by heavy predation of young, the limited number of suitable nest locations over the northern half of the island and the amount of foraging areas required by shrike pairs. The most predictable aspect of shrike activity on the island is their use of nest sites. The most effective management goals are to protect shrike pairs during the breeding season, maintain existing nest locations, and to restore suitable nesting shrubs in the northern half of the island. The management recommendations for nest protection are (1) completely remove predators from a portion of the nest locations and (2) protect the remaining nests with antipredator fencing. The

recommendation for nest maintenance is to remove feral goats from the island. Finally, the recommendation for restoration of nesting habitat is the planting and irrigation of Rhus integrifolia. (Abstract shortened with permission of author.).
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It is generally presumed that the short-finned pilot whale (Globicephala macrorhynchus) of the Pacific preferentially consumes squid. However, squid beaks in the stomach of this delphinid have been reported only twice and neither account identified the species of squid. Norris and Prescott (1961) described group behavior in "feeding schools" of short-finned pilot whales among schools of squid but did not identify the species. This note provides the first identification of squid beaks from the stomach of a short-finned pilot whale collected dead from the Pacific Ocean.
diets/stomach content/marine mammals/feeding biology/feeding behavior/predation/short-finned pilot whale/Globicephala macrorhynchus/Cephalopoda/squid/Santa Catalina Island/marine biology/mammalogy.

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California/sedimentary petrology/diagenesis/sediments/marine sediments/indicators/radiolarians/paleoecology/Cenozoic/Monterey Formation/Pacific Coast/Western U.S./United States/microfossils/maturity/thermal history/Orca Basin/pyrolysis/Phaeodarina/Radiolaria/Santa Barbara Basin/Neogene/Tertiary/Holocene/Quaternary/anaerobic environment/organic materials/geochemistry/GEOREF.

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Transmission lines/Electric cables/West(Direction)/Construction/Environments/Hydrography/Offshore/Profiles/ Armor/Landing fields/Costs/Savings/Hydraulic equipment/Range (Distance)/Underwater/Storms/Topography/Depth/Water/Inlets/Waterways/Sites/Surf /Waves/North pacific ocean/Naval shore facilities/Acoustic ranges/Underwater equipment/Inshore areas/Bays/Sand/SOAR/Southern California Acoustic Range/San Clements Island/marine engineering/civil engineering.

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Mexico/stratigraphy/Miocene/radiolarians/biostratigraphy/paleoecology/Neogene/T ertiary/microfossils/paleoceanography/paleocirculation/upwelling/Gulf of California/North American Pacific/Pacific Ocean/Didymocyrtis antepenultima/El Nino/California Current/faunal list/Maria Madre Island/Maria Cleofas Island/Arroyo Hondo/Tortugas/GEOREF.

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Marine atmospheres/Meteorological data/Acoustics/Boundary layer/California/Coastal regions/Doppler systems/Layers/Measurement/Piers/Radiosondes/Sites/Surfaces/Wind velocity/Atmospheric sounding/Doppler Acoustic Sounder/Rawinsonde/Ellwood pier/Goleta, California/physical oceanography/physical meteorology/atmospheric sciences/.

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parasites/morphology/new species/scanning electron microscopy/bothridial surface spines/villi/microtriches Cestoda/Trypanorhyncha/tapeworm/Sphyrna lewini/hammerhead shark/Santa Barbara Channel/marine biology/parasitology.

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3591. Orians KJ, Bruland KW. The biogeochemistry of aluminum in the Pacific Ocean. Earth and Planetary Science Letters. 1986;78(4):p.397 Univ. Calif., Inst. Mar. Sci., Santa Cruz, CA, United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
Pacific Ocean/geochemistry/aluminum/sea water/biogeochemistry/sediment water interface/California Current/North Pacific/South Pacific gyre/bottom water/GEOREF.

3592. Shipley CO. Development of vocalization in northern elephant seal bulls [dissertation]. Los Angeles, California, USA: University of California; 1981. 107.
Northern elephant seals breed on a number of islands off the coast of California and Baja. This species is polygynous and during the breeding season, which lasts from mid-December until early March, bulls spend much of their time in disputes over access to females. These disputes involve stylized threat displays in which the bulls emit a highly segmented vocalization. This threat vocalization has been studied by a number of authors, virtually all of whom have noted extensive variation in the form of the call either between individual bulls in a colony or between colonies. This has led to suggestions that differences between individual threat calls may convey information about dominance or that differences between groups of seals might reflect regional dialects in this species. The present series of studies was designed to evaluate these hypotheses and to document the course of development of male elephant seal threats. The first

study was conducted during the 1977-1978 breeding season and was designed to assess the range of vocal behavior among San Nicolas bulls and to test previous hypotheses about this behavior. It was found that these animals displayed all of the call types previously reported for this species. In addition, a new call type termed a patterned threat was observed. Individual bulls appeared to be very consistent in their vocalizations but considerable variation. was seen between the calls of different animals. It was found that call parameters tended to covary with dominance but differences between call parameters of dominant versus subordinate groups generally did not reach significance and there was considerable overlap between the groups. The data did not support the proposed existence of regional dialects in this species as the average pulse rate for the San Nicolas colony was 1.36, very close to values found on all other islands in recent years. The second study was conducted during both the 1978-1979 and 1979-1980 breeding seasons and was designed to document the stability of individual vocal styles in San Nicolas Bulls. During 1978-1979, an attempt was made to identify individual bulls across the breeding season on the basis of distinctive physical features such as scars but this was not generally successful. During the 1979-1980 season bulls were marked with a solution of peroxide and hair dye so that they could be reliably re-identified. For 16 bulls calls were recorded on more than one day. While some variability was noted, bulls were generally quite consistent in the use of a particular call pattern. It was concluded that adult animals have consistent individual vocal patterns and that differences in these patterns between animals may function to facilitate recognition within the male dominance hierarchy. The third study was conducted during the 1978-1979 breeding season and during observation periods in the summer and fall of 1979. The purpose of this study was to observe the developmental sequence of threat vocalizations. The calls of 79 juvenile bulls were studied in detail. It was found that the calls. of juveniles are, on average, much more variable than those of adults and that they contain call elements not generally found in the calls of adults. This developmental effect did not appear to be a passive reflection of physical maturation since some juveniles of all ages were observed to emit calls that closely resembled those of adults.
polygyny/breeding biology/vocalization/dominance/Northern elephant seal/Mirounga angustirostris/marine mammal/San Nicolas Island/psychology/ psychobiology.

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California/stratigraphy/Quaternary/paleomagnetism/sediments/properties/magnetic properties/Santa Barbara Basin/Pacific Coast/Western U.S./United States/geochemistry/bacteria/magnetotactic bacteria/magnetite/oxides/magnetic minerals/TEM data/depositional remanent magnetization/remanent magnetization/GEOREF.

3594. Greene HG, Wong FL, Blubaugh B, Carter A, Collot JY, Crawford A, Dadisman S., Exon NF, Fisher M, Goodfellow G et al. Hydrocarbon potential of an island arc summit basin, New Hebrides

Arc, Southwest Pacific. Proceedings Offshore Technology Conference. 1986;18(2):p.261-266
U. S. Geol. Surv., Menlo Park, CA, United-States; Univ. N.S.W., Australia; ORSTOM, New-Caledonia; Univ. Tasmania, Australia; Bur. Miner. Resour., Australia; Vanuatu Geol. Surv., Vanuatu; James Cook Univ., Australia; Br. Geol. Surv., United-Kingdom; Univ. N. Engl., Australia; ProVideo, United-States; San Francisco Chron., United-States; N.Z. Geol. Surv., Australia Offshore technology conference; eighteenth annual meeting, Houston, TX, May 5-8, 1986 Analytic; Serial; Conference publication B; Bibliography and Index of Geology (1969-present).
Vanuatu/geophysical surveys/seismic surveys/economic geology/petroleum/Vanikolo Basin/New Hebrides Arc/Melanesia/island arcs/reflection/refraction/exploration/Torres Island/Santa Cruz Island/sedimentary basins/GEOREF.

3595. Sim CJ, Bakus GJ. Marine sponges of Santa Catalina Island, California, USA. Allan Hancock Found. Occas. Pap. (New Ser.) 1986;0(5):1-23 Address: DEP. BIOL., HAN NAM UNIV., TAEJON, KOREA.
Forty-five species of marine sponges are described from Santa Catalina Island, California. Three of the species are new to science, including Oxeostilon fernaldi, Cyamon koltuni, and Cyamon catalina. New distribution records include Callyspongia californica, Rhizochalina oleracea, Adocia ambrosia, Hymedesmia cf. levis, Cliona viridis, Axinella mexicana, and Geodia gibberosa. new species/new record/distribution/taxonomy/morphology/description/biogeography/zoogeography sponges/Oxeostilon fernaldi/Cyamon koltuni/Cyamon catalina/Callyspongia californica/Rhizochalina oleracea/Adocia ambrosia/Hymedesmia cf. levis/Cliona viridis/Axinella mexicana/Geodia gibberosa/Santa Catalina Island/marine biology.

3596. Orr WL. Sulfur and sulfur isotope ratios in Monterey oils of the Santa Maria Basin and Santa Barbara Channel area. Society of Economic Paleontologists and Mineralogists First annual midyear meeting. Abstracts-Society-of-Economic-Paleontologists-and-Mineralogists,-Annual-Midyear -Meeting. 1984;1:p.62
Mobil Resour. and Dev. Corp., Dallas, TX, United-States Society of Economic Paleontologists and Mineralogists First annual midyear meeting, San Jose, CA, Aug. 10-13, 1984 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).
California/geochemistry/sulfur/organic materials/isotopes/S 34/S 32/Santa Barbara County/San Luis Obispo County/Santa Barbara Channel/Santa Maria Basin/Pacific Coast/Western U.S./United States/petroleum/nitrogen/stable isotopes/Monterey/kerogen/deposition/reduction/ratios/GEOREF.

3597. Skupniewicz CE, Schacher GE. Measured plume dispersion parameters over water. Volume 1. Final report, Oct 83-Oct 84. : Naval Postgraduate School, Monterey, CA. NPS-61-84-012; 1984. 108.

The Minerals Management Service sponsored a series of four atmospheric tracer experiments at California coastal locations over a two-year span, 1980-1982. These experiments were designed to assess air pollution impact from proposed oil exploration and drilling activities along the continental shelf. Two experiments (winter and summer) at each of two sites (open coast and Santa Barbara Channel) were funded in order to investigate air quality impact under a range of meteorological conditions and sites. The basic designs of all four experiments were similar. A tracer gas, 100% SF6, was continuously released from a stationary, sea surface

platform located, for the majority of the experiments approximately 3 miles from shore. During parts of the last experiment, the platform was moved to distances up to 5 miles from shore. This volume analyzes the collected data. The tracer plume is characterized by a variety of parameters, including the conventional hourly averaged sigma-y and sigma-z values widely used in Gaussian plume dispersion formulae. Gaseous dispersion is parameterized for the over-water case by classifying the tracer results by stability in a Pasquill-Gifford equivalent scheme, and analytically describing horizontal and vertical plume growth as a function of plume travel. distance. Several other over-water data sets are used in this parameterization. Comparisons are made to the over land case.
Environmental impact/Air pollution/Plumes/Tracer studies/Sulfur compounds/Fluorides/Offshore drilling/Oil fields/Meteorological phenomena/Coastal regions/Dispersions/Air quality/Continental shelves/Trace gases/open coast/Santa Barbara Channel/air pollution/petroleum/mechanical/ industrial/civil/marine/engineering.

3598. Schrader H, Muehlhausen L. Carbonate dissolution in an euxinic slope depositional environment; Gulf of California; a foraminiferal study. The Geological Society of America, 97th annual meeting.
Abstracts-with-Programs-Geological-Society-of-America. 1984;16(6):p.648 Oreg. State Univ., Coll. Oceanogr., Corvallis, OR, United-States The Geological Society of America, 97th annual meeting, Reno, NV, November 5-8, 1984 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).
sedimentation/deposition/slope environment/California/oceanography/foraminifers/ecology/euxinic environment/carbonate rocks/solution/Gulf of California/North American Pacific/Pacific Ocean/Pacific Coast/Western U.S./United States/foraminifera/microfossils/Protista/benthonic taxa/sediment water interface/planktonic taxa/oxygen minimum zone/Santa Barbara Basin/GEOREF.

3599. Skupniewicz CE, Borrmann S, Fellbaum C, Shaw WJ, Vaucher CA. Shipboard observations of mean and turbulent atmospheric surface layer quantities. SCCCAMP (South Central Coast Cooperative Monitoring Program) Data Report, Part 1. Rept. for Jul 85-Jan 86. : Naval Postgraduate School, Monterey, CA..
NPS-61-86-012; 1986. 71.
Address: Naval Postgrad. Sch., Monterey, CA.
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Turbulence/Wind/Aeronomy/Diffusion/Dissipation/Estimates/Flux(Rate)/Layers/Mean /Moisture/Momentum/Observation/Offshore/Operation/Platforms/Quantity/Scale/Ship motion/Shipboard/Surfaces/Heat flux/North pacific ocean/Santa Barbara islands/Measurement/Shipboard/Ground level/Atmospheric surface layer/momentum transfer/heat exchange/moisture transfer/turbulent diffustion/oceanic boundary layer/Santa Barbara Channel/physical oceanography/meteorology/atmospheric sciences/engineering/air pollution/petroleum.

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Gulf of California/oceanography/ocean circulation/stratigraphy/Quaternary/North American Pacific/Pacific Ocean/water/California Current/Baja California/upwelling/paleo oceanography/upper Quaternary/GEOREF.

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San Miguel sea lion.
serology/viruses/serotypes/vesicular lesions/San Miguel sea lion virus/MSV/Calicivirus/San Miguel sea lion/marine mammals/Pribilof/Islands of Alaska/Southern California/marine biology/mammalogy/parasitology.

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Serum-neutralizing antibodies to both vesicular exanthema of swine virus (VESV) and San Miguel sea lion virus (SMSV) were found in a number of animal species having an association with the southern California coastal zones. California sea lions (Zalophus californianus) had antibodies to 9 VESV types (A48, C52, D53, E54, F54, G55, I55, J56, and K56). Fur seals (Callorhinus ursinus) and elephant seal pups (Mirounga angustirostris) were tested for antibodies to 6 VESV types and all were negative. California gray whales (Eschrichtius robustus) were tested for antibodies to 9 VESV types, and sperm whale (Physeter catodon), finback whale (Balaenoptera physalus), and sei whale (Balaenoptera borealis) were tested for 6 VESV types. Among the last 4 species, antibodies were present for each VESV type except C52, and all species were positive for antibodies to 2 or more VESV types. Feral swine from both Santa Cruz Island and Santa Catalina Island were tested and antibodies were present for 8

of. 9 VESV types and all SMSV types except SMSV-4. One donkey from San Miguel Island was positive for VESV I55 and 2 were positive for SMSV-2. vesicular exanthema virus/antibody/incidence/serum-neutralizing antibodies/California sea lions/Zalophus californianus/fur seals/Callorhinus ursinus/elephant seal/Mirounga angustirostris/California gray whales/Eschrichtus robustus/sperm whale/Physeter catodon/Balaenoptera physalus/finback whale/sei whale/Balaenoptera borealis/feral swine feral pigs/donkey/swine virus/VESV/San Miguel/sea lion virus/SMSV/Santa Cruz Island/Santa Catalina Island/San Miguel Island/Santa Barbara Channel marine biology/mammalogy/virology/parasitology/terrestrial biology/pathology.

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viral diseases/serology/infection Callorhinus ursinus/northern fur seals/Zalophus californianus/California sea lion/sea lion virus/viruses/picornavirus/southern California/Pribilof/Islands of Alaska/marine biology/mammalogy/pathology/parasitology.

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California/stratigraphy/Holocene/radiolarians/paleoecology/Pacific Coast/Western U.S./United States/Quaternary/microfossils/paleo oceanography/El Nino/paleocirculation/paleocurrents/Santa Barbara

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California/stratigraphy/Quaternary/sedimentation/environment/continental margin/geophysical surveys/seismic surveys/Pacific Coast/Western U.S./United States/Santa Barbara Basin/submarine fans/Flandrian/Holocene/Conception Fan/Point Conception/Gaviota Canyon/Sacate Canyon/GEOREF.

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metamorphic rocks/petrology/composition/Catalina Schist/Pelona Schist/metamorphism/P-T conditions/greenschist/schists/blueschist/amphibolites/protoliths /genesis/Santa Catalina Island/geology/igneous petrology/metamorphic petrology.

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California/oceanography/ocean circulation/ecology/foraminifers/marine environment/Monterey Formation/Southern California/Pacific Coast/Western U.S./United States/Santa Barbara Basin/El Nino Gringo/plankton/radiolarians/microfossils/ocean currents/microplankton/diatoms/algae/dinoflagellates/GEOREF.

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California/areal geology/Santa Catalina Island/maps/Los Angeles County/Catalina Schist/Pacific Coast/Western U.S./United States/guidebook/geologic maps/Mesozoic/Cenozoic/thrust faults/faults/GEOREF.

3627. Spies RB. Effects of Natural Petroleum Seeps. : Lawrence Livermore National Lab., CA. UCID-19071; 1981. 28. ((Sponsored by Department of Energy, Washington, DC.)).
Note: ERA citation 07:003258.
This paper summarizes what has been learned about how petroleum affects biological processes in the oceans. Unless otherwise

indicated, all references are to seeps near Coal Oil Point in the Santa Barbara channel. Also, to make this summary as timely as possible, some unpublished information will be discussed.
Petroleum/Anoxia/Aquatic organisms/Bacteria/Benthos/Biological accumulation/Biological adaptation/Biological availability/Biological effects/Communities/Hydrocarbons/Seawater/Sediments/Seeps/Toxicity/Weathering/b ioaccumulation/oil pollution/oil seeps/Santa Barbara Channel/Coal Oil Point/marine biology/environmental biology/petroleum/water pollution/geology/resource management.

3628. Cann LR. Slide mudflow, Fishermans Cove area, Santa Catalina Island. Gath EM, Bottoms MM. Geology of Santa Catalina Island. Leighton & Assoc., Irvine, CA, United-States. ; 1985. p. p.73-81.
Leighton & Assoc., Irvine, CA, United-States South Coast Geol. Soc., Santa Ana, CA Analytic; Book B; Bibliography and Index of Geology (1969-present). California/geomorphology/mass movements/landslides/Los Angeles County/Pacific Coast/Western U.S./United States/mudflows/Santa Catalina Island/guidebook/Fishermans Cove/morphometry/schists/rhyolite/rhyolites/volcanic rocks/andesite/andesites/breccia/clastic rocks/colluvium/clastic sediments/alluvium/slumping/GEOREF.

3629. Spies RB, Davis PH. The infaunal benthos of a natural oil seep in the Santa Barbara Channel. Marine Biology 1979;50(3):227-237
Address: California Univ., Livermore. Lawrence Livermore Lab. A diverse infaunal benthic community that exists in the fine sand sediments of a shallow natural oil seep near Santa Barbara, California was studied. The study area and sampling methods are described in this introductory paper. Data presented indicate the adequacy of sampling in revealing horizontal patchiness and vertical faunal distributions. The infauna of the seep and of a nearby comparison area, without seepage but of similar depth and sediment type, are compared. The data indicate a consistently larger but fluctuating density of organisms at the seep station. However, Shannon-Weaver diversity, Peilou's evenness, and measures of dominance-diversity with estimates of graphical skewness and kurtosis are all similar for the two stations. The rank correlation of common species at the stations is significant according to Spearman's rho. Species common to both stations account for 85 to 95% of the individuals, further indicating the. high degree of similarity between stations. Denser populations of oligochaetes and the maldanid polychaete Praxillella affinis pacifica suggest some advantages for deposit feeders at the seep station. Mats of the bacterium Beggiatoa sp. are associated with localized intense oil seepage. Hypotheses suggesting trophic enrichment and biochemical adaptation at the seep are presented. (Deal-EIS).
Oil/Toxicity/Benthic fauna/Diversity/Diversity indices/Bioaccumulation/Biological communities/Aquatic populations/Oil pollution/Organic compounds/Statistical methods/Adaptation/Methane/Aromatic compounds/Bottom sediments/Chemical analysis/spatial distribution/infauna/petroleum/marine organisms/natural oil seep trophic enrichment/Shannon-Weaver diversity/feeding/interstitial environment/vertical distribution/sediment analysis/hydrocarbons/community composition/population density/oil seepages/mats/bacterium/Beggiatoa/Polychaetes/maldanid polychaete - Praxillella affinis pacifica/Oligochaetes/Santa Barbara Channel/marine biology/petroleum/water quality/pollution/resource

management.

3630. Spies RB, Felton JS, Dillard L. Hepatic mixed-function oxidases in California flatfishes are increased in contaminated environments and by oil and PCB ingestion. Marine Biology 1982;70(2):117-127
Address: Lawrence Livermore National Lab., CA. Note: DOE contract W-7405-Eng-48 and EPA contract EPA-IAG-D6-E681-CF.
J
Hepatic mixed-function oxidases (MFOs) were measured in the bothid flatfishes Citharicthys sordidus and C. stigmaeus from relatively uncontaminated and from polluted coastal populations of California, USA, at various times of the year during 1979-1980 and in individuals fed crude oil and polychlorinated biphenyl-augmented food in the laboratory. For C. sordidus, aryl hydrocarbon hydrocylase (AHH) specific activity was generally highest around the Los Angeles County sewage outfall on the Palos Verdes Shelf, intermediate near the 7-mile Hyperion sewage outfall in Santa Monica Bay and around a petroleum seep in the Santa Barbara Channel, the lowest in relatively unpolluted Monterey Bay. For C. stigmaeus, which had about ten times less specific activity than the foregoing species, specimens from the Santa Barbara petroleum seep had significantly greater AHH specific activity than those from Monterey Bay. Fishes from contaminated environments also showed increases of microsomal proteins with molecular weights of 56, 54, 57, and 46 x 10 to the 3rd; moreover, the content of cytochrome P-450 was elevated in specimens of C. sordidus from such environments. Augmentation of. food with seep oil or polychlorinated biphenyls (PCBs) induced significant increases in the specific activity of AHH and amounts of microsomal proteins in C. stigmaeus. Thus, these two species of flatfishes are good candidates for monitoring biologically meaningful levels of petroleum and polychlorinated biphenyls in contaminated environments. Moreover, the mixed function oxidase pattern in fish populations from the Santa Barbara petroleum seep is evidently a functional adaptation to chronic intake of petroleum hydrocarbons. (Author's abstract).
Oil pollution/Polychlorinated biphenyls Monitoring/Mixed-function oxidases/Water pollution effects/Adaptation/Coastal areas/Enzymes/Effluents/Fish/bothid flatfish/Citharicthys sordidus/Citharicthys stigmaeus/Palos Verdes Shelf/Hyperion sewage outfall in Santa Monica Bay/Santa Barbara Channel/petroleum/marine biology/pollution/water quality/resource management.

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1985. p. p. 39-46.
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California/economic geology/metal ores/mining geology/history/practice/Los Angeles County/Catalina Schist/Pacific Coast/Western U.S./United States/silver ores/gold ores/lead zinc deposits/production/Santa Catalina Island/guidebook/basement/recovery/GEOREF.

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The isotopic ratios of S and C in the tissues of infaunal organisms collected from a natural petroleum seep in the Santa Barbara Channel, California, USA were examined to see if petroleum is utilized by the benthic community. S isotope data were consistent with a pathway of petroleum energy from sulfate reducers .fwdarw. H2S .fwdarw. Beggiatoa sp. .fwdarw. nematodes and other infauna. The C of infaunal organisms was isotopically lighter at the seep than at a comparison station; the mean .delta.13C for 12 spp. [Axiothella rubrocincta, Beggiatoa sp., Praxillella affinis pacifica, Mediomastus californiensis, Tellina modesta, Tharyx tesselata, Pista disjuncta, Nereis procera, Paraphoxus spp. Nepthys caecoides, Glycera branchiopoda on a hemichordate] was -1.32 .permill. towards the petroleum .delta.13C value. The shifts were largest in 2 spp. of deep-feeding maldanid polychaetes. The tissues of 1 of the species, P. a. pacifica, were also analyzed for 14C content and .delta.14S, and the biomass produced by the populations over 26 mo. was estimated. For the seep population it was estimated that there was 15.6% more fossil C, chemoautotrophic bacteria contributed 13.6% more C and 19% more C was produced by the population over 26 mo. In spite of the possible sources of error, these values are in reasonable agreement. Although petroleum utilization by the benthic food web proceeds both directly through heterotrophs and indirectly.
chemoautotroph/carbon 14/biomass/petroleum seepage/oil seepages/zoobenthos/food webs/sulfur isotopes/Beggiatoa/Praxillella affins/Santa Barbara Channel.

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California/petrology/metamorphic rocks/genesis/P T conditions/metamorphism/regional metamorphism/Los Angeles County/Catalina Schist/Santa Cruz Island Schist/Willows Plutonic Complex/Santa Monica Formation/Pacific Coast/Western U.S./United States/Santa Catalina Island/guidebook/California Continental Borderland/Los Angeles Basin/amphibolites/terranes/blueschist/schists/greenschist/thrust faults/faults/basement/metabasite/metaigneous rocks/serpentinite/metasomatic rocks/melange/island arcs/saussurite/mineral assemblages/GEOREF.

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Macrocystis pyrifera (Phaeophyta: Laminariales. Bull. South. Calif. Acad. Sci. 1986;85(2):69-73 Address: DEP. BIOL. SCI., UNIV. SOUTHERN CALIF., LOS ANGELES, CALIF. 90089. Grazing by the snail Norrisia norrisi on Macrocystis pyrifera was studied off Santa Catalina Island, California [USA]. Snails occurred on all parts of M. pyrifera plants and averaged 8.7 individuals/plant. Laboratory feeding experiments indicated that N. norrisi consumed significantly more sporophyll tissue (53%) than either mature (23%) or apical (24%) laminae. Snails consumed approximately 1-3% of the estimated daily M. pyrifera production. Consequently, grazing by these snails may not be significant under normal conditions. However, the strong preference for sporophyll tissue suggests that N. norrisi could have significant effects on the reproductive capacity of M. pyrifera, especially in kelp beds damaged by storms or other disturbances.
sporophyll consumption/kelp population reduction/kelp snail/Norrisia norrisi/giant kelp/Macrocystis pyrifera/Santa Catalina Island/marine biology/malacology.

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California/structural geology/tectonics/sedimentation/controls/tectonic controls/Los Angeles County/Franciscan Formation/Great Valley Sequence/Pacific Coast/Western U.S./United States/Southern California/California Continental Borderland/Santa Catalina Island/guidebook/subsidence/transform faults/faults/volcanism/uplifts/rifting/subduction/continental margin/Mesozoic/Cenozoic/East Santa Cruz Fault/right lateral faults/paleomagnetism/block structures/plate rotation/GEOREF.

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California/areal geology/Santa Catalina Island/Los Angeles

County/Catalina Schist/Pacific Coast/Western U.S./United States/guidebook/history/lead zinc deposits/metal ores/gold ores/silver ores/marine terraces/GEOREF.

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The Ballena Gravels are remnants of a river system that flowed westward across the ancestral Peninsular Ranges during medial and late Eocene time. The gravels (actually conglomerate) are channelized fluvial deposits that built westward as alluvial fan (Poway Group), submarine canyon (Scripps Formation) and submarine fan (Jolla Vieja Formation) depositional systems. Because the integrated sedimentary system contains distinctive Poway rhyolite clasts of limited geographic and temporal extent the now separated component formations are recognizable on the San Diego coastal plain and on the Channel Islands. Paleogeographic reconstructions suggest a transport distance of about 315 km. Multiple techniques analysis suggests the channel gradient in the San Diego area was 12-18 m km -1 . Stream velocity, based on a competent particle size of 52 cm, ranges from 2.5 to 4 m s -1 . Eight equations based on slope and velocity generated estimates of channel depth at flood stage that vary from 2.5 to 4.5 m.--Modified journal abstract.
sedimentation/sedimentary rocks/paleogeography/stratigraphy/Eocene/environment/clastic rocks/fluvial environment/conglomerate/San Diego County/Ballena Gravels/Scripps Formation/Poway Group/Jolla Vieja Formation/Paleogene/Tertiary/Nueces River/atmospheric precipitation/hydrology/granulometry/tectonic controls/San Diego County/Nueces River/California Channel Islands/geology/sedimentary petrology.

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California/areal geology/Santa Catalina Island/maps/Los Angeles County/Pacific Coast/Western U.S./United States/San Pedro Basin/guidebook/tectonics/basement/geomorphology/metal ores/mining geology/geologic maps/GEOREF.

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birth/new records/breeding sites/viviparity/pups/pupping/population studies/rookeries Callorhinus ursinus/northern fur seal/Pribilof Islands/Alaska/Commander Islands/Robben Island/Kurile Islands/U.S.S.R./San Miguel Island/Bogoslof Island/mainland coast

of California/marine biology/mammalogy.

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nodules/manganese/iron/diagenesis/ferromanganese composition/geochemistry/processes/textures/early diagenesis/major elements/minor elements/Holocene/Quaternary/Eocene/Paleogene/Tertiary/Triassic/Maestrichtian/S enonian/Upper Cretaceous/Cretaceous/Tithonian/Portlandian/Upper Jurassic/Jurassic/genesis/North American Pacific/Pacific Ocean/North Atlantic/Atlantic Ocean/Mozambique Channel/Mexico/Baja California/Greek Aegean Islands/Taunus/oceanography/Indian Ocean/Greece/Southern Europe/Europe/Tilos Island/marine geology/oceanography.

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faults/geophysical surveys/displacements/continental shelf seismic surveys/active faults/Hosgri fault zone/reverse faults/right-slip faults/rotation/Transverse Ranges/Cenozoic boundary/structural provinces/Santa Barbara Channel/Point Conception/Purisima Point/structural geology/marine geology/oceanography.

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An analysis of the relationship between organic matter and liquid and plastic limits, and grain-specific gravity of a marine sediment was accomplished by making a stepwise adjustment in the organic content of that sediment. The sample used was from Santa Barbara Basin (off Southern California) and is typical of fine-grained marine sediments; it is a clayey silt with a common suite of minerals and other constituents. Liquid limit, plastic limit, and plasticity index all increased with increasing organic content over the range studied (0.57-3.20% organic carbon). Comparing the results of regression analyses from this and several similar studies shows that although there is good qualitative agreement, there are quantitative inconsistencies. The increase in liquid limit as organic carbon increased by 1% sediment dry weight ranged from 9 to 28% water content; in the plastic limit the range was from 4 to 18%.--Modified journal abstract.
Pacific Ocean/oceanography/sediments/marine sediments/organic materials/soil mechanics/materials/properties/Santa Barbara Basin/regression analysis/statistical analysis/plasticity/C 14/textures/GEOREF.

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faults/Hosgri fault zone/Transverse Ranges/upper Miocene/Miocene/Neogene/Tertiary/offshore/right-lateral faults/displacements Pacific Coast/Western U.S./Central California/Santa Barbara County/Point Sal/Point Conception/Santa Barbara Channel/structural geology.

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California/stratigraphy/archaeology/geophysical surveys/surveys/Pacific Coast/Western U.S./United States/Santa Barbara Channel/marine methods/marine environment/archaeological sites/estuarine environment/lagoonal environment/continental shelf/Holocene/Quaternary/transgression/underwater archaeology/applications/Wisconsinan/upper Pleistocene/Pleistocene/GEOREF.

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at San Miguel Island, California. J. Wildl. Manage. 1984;48(4):1459-1461
Address: Hubbs-Sea World Res. Inst., 1700 South Shores Rd, San Diego, CA 92109, USA.
The author tested the null hypothesis that maximum number of seals hauled-out each day at San Miguel Island, California, was independent of time of day. He monitored harbor seal (Phoca hispida richardsi)populations at San Miguel Island, California (34 degree N, 120 degree W), from December 1978 through September 1981 using biweekly ground counts supplemented with periodic aerial surveys. The major hauling areas are sandy beaches and are accessible at all tide heights except occasionally during winter storms. Hauling patterns were recorded at two major hauling sites using time-lapse photography for 272 days from 19 January 1979 through 9 June 1980.
diurnal variations/activity patterns/hauling areas/haul-out behavior/hauling patterns/circadian rhythms/diurnal rhythms/population dynamics/Phoca hispida richardsi/Phoca vitulina/harbor seal/San Miguel Island/marine biology/mammalogy.

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Address: Hubbs/Sea World Res. Inst., 1700 South Shores Rd., San Diego, CA 92109, USA.
The colonization and range expansion of the Cattle Egret (Bubulcus ibis) along the Pacific coast of the United States during the last two decades is well documented. The species has established several breeding colonies in California, including one at the Salton Sea where several thousand birds now breed annually. Since the late 1970's, egrets have also been regular winter visitors on the southern California Channel Islands. The authors report here on interactions observed between foraging Cattle Egrets and northern elephant seals (Mirounga angustirostris) and California sea lions (Zalophus californianus) on San Nicolas Island, California.
feeding behavior/symbiosis/hosts/new records/reproductive biology/sexual reproduction/breeding sites/population biology/new rocords/geographic distribution/population growth/Mirounga angustirostris/northern elephant seals/Zalophus californianus/California sea lions/Bubulcus ibis/Cattle Egret/southern/California Channel Islands/San Nicolas Island/Salton Sea/terrestrial biology/marine biology/mammalogy/ornithology.

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California/seismology/crust/velocity structure/Pacific Coast/Western U.S./United States/Transverse Ranges/reflection/Santa Barbara/Borderland/Coast Ranges/Santa Barbara Channel/Santa Cruz Island fault/East Pacific Rise/GEOREF.

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Address: HUBBS-SEA WORLD RES. INST., 1700 SOUTH SHORES RD., SAN DIEGO, CALIF. 92109.
Seasonal cycles in abundance of northern elephant seals [Mirounga angustirostris], California sea lions [Zalophus californianus], harbor seals [Phoca vitulina richardsi], and Gaudalupe fur seals [Arctocephalus townsendi] at San Nicolas Island, California, were

monitored by frequent ground and aerial surveys from Feb. 1980-Sept 1982. Northern elephant seals were abundant in late Jan. and early Feb. during the height of their breeding season and again in late April-early May when juveniles and adult females hauled out to molt. Sea lions were most abundant in late June to early July during the height of their breeding season and were least abundant in winter and early spring. Harbor seals were in greatest abundance in late May-early June when they were molting and numbers were lowest in winter. Guadalupe fur seals were present from June-Sept. during their breeding season. Seasonal populations and pup production of elephant seals, sea lions and harbor seals increased each year.
abundance/population biology/seasonal cycles/molting/breeding biology/breeding season/seasonal variations/abundance/population dynamics/aerial survey/marine mammals/census/northern elephant seals/Mirounga angustirostris/California sea lions/Zalophus californianus/harbor seals/Phoca vitulina richardsi/Gaudalupe fur seals/Arctocephalus townsendi/San Nicolas Island marine biology/mammalogy.

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California/seismology/earthquakes/faults/Pacific Coast/Western U.S./United States/Pitas Point Fault/Oak Ridge Fault/Santa Barbara/Mesa Fault/Arroyo Parida Fault/thrust faults/displacements/GEOREF.

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Trends in abundance of pinnipeds in Southern California have apparently not been significantly influenced by entanglement of individuals in marine debris. Juveniles may be the most susceptible to entanglement in debris and the effect of any recent declines in survival of younger age classes on trends in annual numbers of births may not be detectable for several years. Further studies are needed to document trends in debris-related entanglement and the effects of this entanglement on juvenile survival and subsequent recruitment. marine pollution/pollution effects/plastics/fishing nets/marine mammals/mortality causes/entanglement/synthetic debris/fishing line/fragments/population dynamics/entanglement Mammalia/pinnipeds/Pinnipedia/California Channel Islands/San Nicolas Island/San Miguel Island/marine biology/mammalogy/pollution/plastics.

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California/paleontology/Mammalia/Elephantoidea/Pleistocene/mammoths/Santa Cruz Island/Pacific Coast/Western U.S./United

States/Proboscidea/Christy Ranch/Sauces Canyon/Pozo Canyon/GEOREF.

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California/stratigraphy/Cretaceous/algal flora/coccoliths/Santa Barbara County/Mirounga Formation/Pacific Coast/Western U.S./United States/San Miguel Island/Upper Cretaceous/biostratigraphy/zoning/microfossils/GEOREF.

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Conference of the Undersea Medical Society Annual Scientific Meeting and 10. Annual Conference on Clinical Application of Hyperbaric Oxygen. Long Beach, CA (USA). 11-14 Jun 1985. Since 1975, the Los Angeles County lifeguard rescue boats at Catalina Island, "Baywatch Avalon and Isthmus" have responded and treated 58 cerebral air embolism victims. Emergency treatment during transport and results are discussed. diving accidents/brain/therapy/decompression sickness/prechamber treatment/cerebral air embolism/hyperbaric chamber/oxygen/metabolic drug/lactated ringers solution/diving/SCUBA/Homo sapiens/Santa Catalina Island/medicine/human physiology/public health.

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Littorina scutulata were collected from Alaska, Canada and southern California and L. sitkana were collected from Alaska and Canada. These animals were exposed to a range of petroleums at a range of temperatures. Gasoline was the most toxic of all compounds tested. Six degrees C and 29C temperatures both during and prior to experiments had a greater influence on survival and attachment rates a week after exposure to petroleum than did the different types of petroleum. The temperature influence can be related to both zoogeographical distribution and seasonal temperatures. Data obtained in the Santa Barbara Channel can be extrapolated to the Gulf of Alaska when differences such as temperature tolerance and type of oil are considered for the same and closely related species.

Attachment rates and mortality rates changed after the animals were removed from petroleum. This suggests a weakness in standard toxicity testing procedures when mortality rates are compared immediately after removal from test solutions. (Sinha - OEIS).
Oil spills/Toxicity/Mortality/Water pollution effects/Outer Continental Shelf/Environmental effects/Alaska/Canada/California/Laboratory tests/Temperature/Petroleum/Gasoline/survival/oil pollution/toxicity tests/temperature effects/temperature variations/petroleum/environmental impact Mollusca/Gastropoda/Littorina scutulata/Littorina sitkana Alaska/Canada/Southern California/Santa Barbara Channel/marine biology/petroleum/pollution/water quality/resource management.

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California/geochemistry/oil seeps/chemical analysis/methods/infrared spectroscopy/spectroscopy/field methods/petroleum/offshore/Santa Barbara Channel/Pacific Coast/Western U.S./United States/North American Pacific/Pacific Ocean/GEOREF.

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bird bill/wing/character convergence/character displacement/sympatric species/Aves/Passeriformes/Tres Marias, Mexico/California Channel Islands/terrestrial biology/ornithology/evolution.

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California/tectonophysics/plate tectonics/structural geology/neotectonics/paleomagnetism/Neogene/stratigraphy/Santa Barbara County/sedimentary rocks/Anacapa Island/Santa Cruz Island/Santa Rosa Island/San Miguel Island/block structures/Channel

Islands/Tertiary/Pacific Coast/Western U.S./United States/Southern California/GEOREF.

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Basin/Santa Maria Basin/paleo oceanography/lithofacies/microfossils/biofacies/submarine fans/shale/clastic rocks/carbonate rocks/diatomite/laminations/planar bedding structures/sedimentary structures/sedimentation rates/GEOREF.

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California/oceanography/continental margin/geophysical surveys/acoustical surveys/Pacific Coast/Western U.S./United States/continental slope/Seabeam/echo sounding/strike slip faults/faults/active faults/Southern California/San Clemente Fault/Agua Blanca Fault/Fortymile Bank/scarps/bottom features/San Isidro Fault/North American Pacific/Pacific Ocean/marine methods/GEOREF.

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Address: DEP. LIFE SCIENCES, INDIANA STATE UNIV., TERRE HAUTE, IN 47809. cirri/membranelles/tentacles/Mesodinium spp. biology/protozoology.

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California/economic geology/base metals/construction materials/Los Angeles County/Pacific Coast/Western U.S./United States/Southern California/Transverse Ranges/mines/history/Santa Catalina

Island/Channel Islands/metal ores/GEOREF.

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paleogeography/Paleogene/California/sedimentary rocks/clastic rocks/conglomerate/stratigraphy/Tertiary/lower Paleogene/Southern California/Pacific Coast/Western U.S./United States/Transverse Ranges/Channel Islands/rhyolite/rhyolites/volcanic rocks/clasts/Santa Ana Mountains/Valle de Las Palmas/San Miguel Island/Santa Cruz Island/sedimentary petrology/lithostratigraphy/correlation/GEOREF.

3684. Taylor PR, Littler MM. Roles of compensatory mortality, physical disturbance and substrate retention in the development and organization of a sand influenced rocky intertidal community. Ecology 1982;63(1):135-146 Address: DEP. ECOL. EVOL. BIOL., UNIV. CALIF. IRVINE, IRVINE, CALIF. 92717. Manipulative experiments (using fenced exclosures, fence controls and unmanipulated controls) and successional and community structure studies were performed near Dutch Harbor, San Nicolas Island, California [USA] to examine the importance of the anemone Anthopleura elegantissima, the sand tube worm Phragmatopoma californica, and macroalgae in the structure and development of a sand-influenced community. Following the removal of A. elegantissima, the cover of opportunistic algae such as Cladophora columbiana, Chaetomorpha linum, and Ralfsiaceae increased during the first 6 mo., whereas Corallina vancouveriensis and Hydrolithon decipiens suffered bleaching and decreased in abundance as a result of aerial exposure. The density of grazing mollusks(Tegula funebralis, littorines, limpets and chitons) also increased during the 1st 6mo. then declined markedly, coincident with the recruitment and growth of the sand tube building polychaete, P. californica. In the upper-intertidal area (above +1.1 m relative to mean lower low water), P. californica showed little recruitment (< 1% cover after 25 mo) after removal of A. elegantissima. Investigations of. secondary succession following total biota removal revealed that A. elegantissima achieved preremoval cover after 2 yr. In the mid-zone (+0.7 to +1.0 m), experimental anemone removal resulted in recruitment and domination by P. californica (> 70% cover after 20 mo). A. elegantissima again regained preremoval abundance (26% cover) in the successional studies after 2 yr. At low levels (below +0.5 m) where sand burial did not occur, P. californica persisted even when contiguous with A. elegantissima aggregations. Successional data indicated that P. californica achieved preremoval levels in < 12 mo; A. elegantissima was

unsuccessful at recruiting into these regions. The stress of exposure to air (desiccating and thermal effects) and of heavy sand inundation, and differential abilities to sequester and dominate available free space, probably are responsible for the developmental and structural patterns in this community. At desiccated and thermally stressed upper-intertidal levels, A. elegantissima facilitates colonization and subsequent survival of coralline algae and small P. californica aggregations, while simultaneously inhibiting the recruitment of opportunistic macroalgae. P. californica can rapidly colonize and retain newly available free space in low- to mid-intertidal regions with reduced aerial exposure stress. At mid-levels, the upper-intertidal patterns prevail but, when released from A. elegantissima inhibition by disturbance, P. californica colonies show extensive development. However, in mid-intertidal regions, compensatory mortality of P. californica caused by sand deposition prevents these large aggregations from persisting and A. elegantissima becomes dominant. In the low-intertidal zones, with little sand-related stress, P. californica inhibits both A.. elegantissima and macroalgae, while it may enhance recruitment and survival of its own juvenile stages in a self-facilitating strategy larval selectivity. The importance of A. elegantissima depends on compensatory mortality of the superior competitor P. californica caused by periodic stresses (e.g., exposure to air and sand inundation) and physical disturbance.
macroalgae/succession/community structure/thermal stress/desiccation/competition/compensatory mortality/superior competitor/physical disturbance/Anthopleura elegantissima/sand tube worm/Phragmatopoma californica/Cladophora columbiana/Chaetomorpha linum/Ralfsiaceae/Corallina vancouveriensis/Hydrolithon decipiens/Tegula funebralis/littorines/limpets/chitons/Dutch Harbor/San Nicolas Island/marine biology/ecology.

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This dissertation is composed of separate but related facets separated into chapters. Abstracts of these studies are as follows: Chapters 1&2. Manipulative experiments (using fenced exclosures, fenced controls and unmanipulated controls), as well as successional and community structure studies were performed near Dutch Harbor, San Nicolas Island, California to examine the importance of the anemone Anthopleura elegantissima, the sand tube worm Phragmatopoma californica and macroalgae, in the structure and development of a sand-influenced community. The patterns of community development and structure vary drastically depending on an interplay of species' adaptive characteristics, environmental tolerances and the degree of environmental stress and disturbance. These mechanisms of variable successional roles and an intraspecific-facilitating strategy of larval selectivity must be considered in a dynamic theory of community development. Chapter 3. In intertidal pools on San Nicolas Island, California, both abalone, Haliotis cracherodii and sea urchins Strongylocentrotus spp., maintain algal communities dominated by crustose taxa. Removal of these two herbivores yielded a community dominated by erect, articulated coralline algae; little influx of fleshy algal. species occurred and no initial species were excluded following the manipulation of herbivore abundances. The presence of one grazer species stabilizes the algal community in the event of the other species' loss, supporting

the hypothesis that consumer diversity can enhance community stability through compensatory shifts in grazer pressure. Further evidence from temperate and tropical systems is also discussed. Chapter 4. The juveniles of the sea urchin, Strongylocentrotus purpuratus, are often strongly associated with conspecific adults. This has led to the concept of a nursery effect. However, field experimentation has shown that urchin recruitment success is not dependent upon the presence of adults. On the contrary, experiments have documented a negative correlation between juvenile success and the abundance of adults. It is suggested that the hypothetical nursery effect may be due to space limitation in some intertidal populations.
succession/community structure/herbivory/Anthopleura elegantissima/phragmatopoma californica/Haliotis cracherodii/Stronglyocentrotus spp./ San Nicolas Island/Dutch Harbor/marine biology/marine ecology.

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algae/ecology/symbiosis/foraminifera/Globigerinacea/photosynthesis/Pacific Ocean/paleontology/California/Orbulina universa/Orbulina/Globigerinidae/Rotaliina/morphology/microfossils/thallophytes /primary productivity/planktonic taxa/Santa Catalina Island/Pacific Coast/Western U.S./United States/electron microscopy data/Protista/oligotrophic environment/biochemistry/GEOREF.

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Drift tubes were released over the major past and present green abalone (Haliotis fulgens) beds in southern California, USA, to investigate the dispersal potential of this species' relatively short-lived larvae. Of the 1225 drift tubes released at the Channel Islands only 0.4% were found within a time span appropriate for green abalone larval life. The present status of mainland stocks suggests that recolonization by larvae originating elsewhere will be uncommon. Thus, in the absence of local brood stock, the present fishery closure is not likely to promote recovery of mainland populations of H. fulgens in the near future. DE- molluscan larvae; biological drift.
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Drift tubes were released over the major past and present hreen abalone beds in southern CA to investigate the dispersal potential of this species' relatively short-lived larvae. From the data collected, the authors conslude that, in the absence of local brood stock, the present fishery closure is not lekly to promote recovery

of mainland populations of H. fulgens in the near future. These results underscore the importance of local current patterns and details of larval life histories to the understanding of patterns of distribution in any area. larval dispersal/depleted populations/Haliotis fulgens/green abalone/Santa Cruz Island/Santa Barbara Island/Santa Catalina Island/San Clemente Island/Southern California beaches/Northern Los Angeles County/Palos Verdes Peninsula/Orange County/San Diego County/marine biology/fisheries/resource management.

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California/stratigraphy/Jurassic/Cretaceous/radiolarians/biostrat igraphy/Franci scan Formation/Pacific Coast/Western U.S./United States/Pliensbachian/middle Liassic/Lower Jurassic/Albian/Lower Cretaceous/microfossils/Canutus rock fisheries/chert/chemically precipitated rocks/Marin Headlands/paleoenvironment/Ventura Basin/Santa Barbara Basin/Northern California/GEOREF.

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1300 UNIVERSITY AVENUE, MADISON, WIS. 53706.
An equation for determinaton of the photoperiod at any given latitude for any given date is presented and used in an analysis of reproductive timing in the northern fur seal in which there is an obligatory delay of implantation. Fur seals breeding on San Miguel Island, California [USA] (33.degree. N) displayed a mean date of parturition that was 14 days earlier (P < 0.001) than that of the parent stock on the Pribilof Islands, Alaska (57.degree. N). Previous studies have shown that changes occur in the corpus luteum, in follicles in the ovary containing the corpus luteum, in concentrations of plasma progesterone and estradiol-17.beta., and in the uterine lining when there is a mean photoperiod of 12.5 h/day. This photoperiod occurs at both locations at 62 days after the mean dates of parturition and may ct as a cue for the initiation of implantation in these seals. progesterone/estradiol/17/beta/corpus luteum/photoperiod/northern fur seal/Callorhinus ursinus/San Miguel Island/marine biology/mammalogy.

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In uniform deposits of nonplastic, very silty fine sand or sandy silt, the observed spud can penetrations are small and can be predicted using conventional procedures for sand, assuming fully drained conditions. In contrast, where the subsurface materials are predominantly clayey silts of medium plasticity, the spud can penetrations are larger and can be predicted using conventional procedures for the undrained behavior of clay. For silt deposits that are neither very sandy nor very clayey, observed spud can penetrations suggest that these deposits are partially drained during spud can penetration. For silt deposits of intermediate permeability, the spud can penetrations may depend not only on spud can geometry, leg loads, detailed soil layering, and soil properties, but also on the rate at which the spud cans are loaded. Thus, because of partial drainage effects, computational procedures and experience based on undrained or drained behavior should be used with caution when a site is underlain by silt.--Modified abstract. California/engineering geology/foundations/Pacific Coast/Western U.S./United States/silt/clastic sediments/soils/case studies/jackup rigs/offshore/Santa Maria Basin/Southern California/sand/permeability/continental shelf/Le Tourneau/Santa Barbara Channel/GEOREF.

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growth/bioenergetics/hypothermia/ambient air temperature/Phocidae/Otariidae/California sea lion/Zalophus californianus/San Nicolas Island/marine biology/mammalogy.

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County/Los Angeles County/Ventura County/Willows Plutonic Complex/Santa Cruz Island Schist/Santa Monica Formation/Pacific Coast/Western U.S./United States/Southern California/Channel Islands/Santa Monica Mountains/Transverse Ranges/Jurassic/petrology/island arcs/basement/minor elements/major elements/metaigneous rocks/metasedimentary rocks/greenschist facies/gabbros/P T conditions/amphibolite facies/GEOREF.

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Probable mating-related behaviors were observed in 2 species of rays in their natural habitat. A trio of spotted eagle rays, Aetobatis narinari, was observed moving in a clockwise pattern from a pier at the southwest end of Enewetak Island in the west Pacific. The 2 males would dash forward and nip at the anterior margin of the female's pectoral fins. The female in response would raise her back out of the water and slap her wings on the surface. In another observation, a male was noted to gouge the dorsal surface of a female in repeated attempts at mounting. In brief observations of bat rays, Mylobatis californica, near Santa Catalina Island, California, the smaller male was positioned ventrally to the female with the tail flexed dorsally at 90deg and right clasper erected at 45deg. The male repeatedly bumped the female's underside in an attempt to insert the clasper into her cloaca. Topics discussed include the similarity of copulation

between rays and small skates, and the similarity in courtship behaviors between groups of elasmobranch fish.
Mating behavior/Males/Females/reproductive behavior/courtship behavior/Chondrichthyes/elasmobranch fish/Myliobatidae/Aetobatis narinari/spotted eagle rays/Mylobatis californica/bat rays/Santa Catalina Island/Enewetak Island/marine biology/ichthyology.

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California/geochemistry/sea water/sediments/sediment water interface/MANOP/San Clemente Basin/Pacific Coast/Western U.S./United States/ocean basins/nitrates/silicon/dissolved materials/trace metals/pore water/carbon/nitrogen/bottom water/continental borderland/oxygen/Pacific Ocean/GEOREF.

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inshore habitats/digestive rate/telemetric monitoring/diel activities/feeding/predation/fish behavior/feeding habits/diet/predators/prey species/food organisms/prey species/food preferences/predatory behavior/circadian rhythms/Chondrichthyes/blue shark/Prionace glauca/Santa Catalina Island/marine biology/ichthyology.

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to determine the spreading of wave energy with angle. Data are presented in which a bimodal spectrum was present: an attenuated spectrum with wave components to 0.10 Hz from a storm at sea at 270 deg bearing; and a transient local wind spectrum, stronger in amplitude at the higher frequencies, with wave cutoff near 0.14 Hz, and running from 315 deg bearing. Just after the onset of local winds, the westerly spectrum fit a cosine squared spread at the lowest measured frequencies. With the development of local wind which blew at a 12 to 14 knot speed for a period of 12 h, the wave spectrum spread about the wind direction as cosine thirty-second at the lowest frequencies measured, 0.14 Hz, and cosine sixty-fourth at the highest frequencies measured, 0.35 Hz. For 0.28 Hz waves, the Phillips resonance mechanism for wave generation is proposed to. explain the twin peaks in amplitude observed, equally spaced either side of the wind direction. These were dominant for the earliest measurement period, and still major contributions for later measurement periods.
Ocean waves/Meteorological radar/High frequency/Surface waves/Wind direction/Storms/Oceanographic radar/Remote sensing/Surface wave radar/Ionospheric radar/Phillips resonance/Bragg lines/Omnidirectional energy/San Clemente Island/meteorology/Earth Sciences/Oceanography.

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Surficial sediments from slopes and slope-aprons in Santa Barbara, Santa Cruz and San Nicolas basins (California borderland) are dominantly silts and clays. Facies are defined and interpreted on the basis of sedimentary structures as follows: (1) disorganized beds - mudflow or debris flow deposits; (2) beds with deformation features, micro-faults or bowl-shaped dislocations - slump deposits; (3) beds with fluid escape structures - partly fluidized or liquefied beds; (4) graded beds with Bouma sequences - turbidites; (5) ripple cross-bedded silts with mud interlaminae - traction current deposits; (6) horizontally laminated silty clay - suspensate or nepheloid flow deposits; and (7) bioturbated beds. Plasticity indices and water contents vary with texture; both are higher with increasing clay content and organic carbon content. Individual facies are also an influencing factor. For example, beds which were sufficiently consolidated to develop microfaults have lower values than the other facies. Facies distributions correlate with sedimentation rates. Proximal basins (>50 mg/cm(-2) yr(-1)) have more mudflow, debris flow and slump deposits while distal basins (<10 mg/cm(-2) yr(-1)) have more turbidites and laminated deposits. Mudflow deposits are more common in intermediate slope areas, especially in those areas undergoing creep and syn-sedimentary gravity-faulting in Santa Barbara Basin.--Modified journal abstract.
California/engineering geology/geologic hazards/Pacific Ocean/oceanography/sediments/marine sediments/lithofacies/soil mechanics/materials/properties/sedimentary structures/environmental analysis/marine environment/sedimentation/processes/marine sedimentation/Pacific Coast/Western U.S./United States/North American Pacific/Santa Barbara Basin/Santa Cruz Basin/San Nicolas Basin/textures/materials, properties/fine grained materials/continental borderland/continental margin/marginal basins/slumping/turbidite/graded bedding/turbidity current structures/engineering properties/mechanical properties/slope stability/pore water/plasticity/debris flows/mudflows/GEOREF.

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Aerosols/Particle size/Meteorological data/Measurement/Wave propagation/Oceans/Coastal regions/Computations/Extinction Outer Hebrides/San Nicolas Island/atmospheric sciences/meteorology.

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environmental geology/conservation/California Channel Islands/land use/management/fisheries/vertebrates/Sutil Island/San Miguel Island/Santa Rosa Island/Anacapa Island/engineering/environmental geology/fisheries/management/marine biology/resource management.

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California/engineering geology/marine installations/slope stability/geophysical surveys/seismic surveys/Pacific Coast/Western U.S./United States/Southern California/liquefied natural gas/exploration/bathymetry/Santa Ynez Mountains/faults/mass movements/high resolution methods/continental borderland/GEOREF.

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The following is an oil industry representative's perspective on the efforts of the Central Coast (California) commercial fishing industry and the offshore oil and gas industry to address the

inherent conflicts resulting from co-use of the marine environment. The Santa Barbara Channel/Santa Maria Basin, offshore California is well known for its substantial oil and gas resources. Major discoveries in the federal Outer Continental Shelf (OCS) have been announced within the last three years. Knowing this, the local commercial fishing industry envisioned an intensification of previous conflicts. They also feared being excluded from fishing grounds due to the presence of offshore oil and gas facilities. oil industry/gas industry/commercial fishing/disputes/outer continental shelf/Santa Barbara Channel/Santa Maria Basin/petroleum/fisheries/resource management.

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defendant concentrated their arguments on the issue of Presidential intent in the use of the word 'areas' in the proclamation. However in this case, the United States Supreme Court, having original jurisdiction, concluded that this issue was irrelevant. After a consideration of the history of the controversy, the Court concluded that, regardless of past litigation, the dominion over the area at issue was vested in the defendant state by the 1953 Submerged Lands Act, one purpose of which was to undo the Court's earlier (1947) opinion.
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The design of a 9-5/8 inch threaded connection for long-term production applications is presented. The threaded connection was designed for joining sections of 9-5/8 inch production riser for a tension leg platform in 1,600 feet of water for the Santa Barbara Channel. The connection utilizes a tapered thread profile, a preloaded external shoulder and a primary metal-to-metal pressure seal at the nose of the pin. The following items were evaluated for the threaded connection using finite element analysis and the results are presented: the ability to transmit the applied static loads, the ability to survive the applied cyclic loads and the ability to maintain a seal under all load conditions. riser pipes/connectors/design/reliability/tension leg platforms/Santa Barbara Channel/petroleum.

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Birds/Animal behavior/Oil pollution/Fuel oil/Toxicity/Abundance Crude oil/Responses/Age/Surveys/California Seabirds/Oil spills/Water pollution effects (Animals) seabirds/Brown Pelicans/Pelecanus occidentalis/Western Gulls/Larus occidentalis/Heermann's Gulls/Larus heermanni/Santa Barbara Channel/terrestrial biology/ornithology/petroleum.

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Birds/Animal behavior/Oil pollution/Fuel oil/Abundance/Toxicity/Crude oil/Responses/Surveys/Seabirds/Oil spills/Water pollution effects/Animals/seabirds/Brown Pelicans/Pelecanus occidentalis/Western Gulls/Larus occidentalis/Heerman's Gulls/Larus heermanni/Santa Barbara

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geophysical methods/acoustical methods/marine methods/Pacific Ocean/oceanography/ocean floors/automatic data processing/engineering geology/methods/instruments/data acquisition/Coryphaenoides armatus/Eurythenes gryllus/San Clemente Island/Santa Catalina Island/GEOREF.

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rectal swabs/blood/hair/skin/northern fur seals/Callorhinus ursinus/Corynebacterium spp. Staphylococcus spp./Pseudomonas spp./Salmonella spp./fungi/St. Paul Island/Pribilof Islands/Alaska/San Miguel Island/marine biology/mammalogy/parasitology.

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faults/displacements/reverse faults/California/structural geology/Santa Barbara County/Santa Barbara Formation/Vaqueras Formation/Pacific Coast/Western U.S./United States/Santa Barbara Goleta region/Santa Barbara Montecito Basin/Goleta Basin/Pleistocene/Quaternary/folds/Cameros Fault/Goleta Fault/Modoc Fault/disharmonic folds/More Ranch Fault/Coal Oil Point Fault/Mesa Fault/Lavigia Fault/San Jose Fault/Elwood Field/La Goleta Field/Santa Yrez Mountains/Rincon Creek Fault/GEOREF.

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Address: DEP. ZOOL., UNIV. ARKANSAS, FAYETTEVILLE, AR 72701. The teiid lizard C. martyris Stejneger is endemic to Isla San Pedro Martir, a small island in the central region of the Gulf of California about midway between the coast of Sonora and the Peninsula of Baja California, Mexico. Small mesoptychial scales, granular postantebrachial scales, 4-4 or more supraocular scales, and paired frontoparietal scales align the San Pedro Martir whiptail with the c. tigris species group. A combination of small body size (snout vent length of 80 mm or less), distinctive melanistic dorsal and ventral color patterns, and a distinctive ensemble of scutellation characters is presented as strong presumptive evidence that the potential for reproductive isolation has evolved. C. martyris is treated here as 1 among 7 distinctive allospecies (allopatric species) in the superspecies C. tigris. C. martyris is most closely related to the whiptail populations of Islas San Pedro Nolasco(C. bacatus); Santa Catalina (C. catalinensis); San Lorenzo Sur, San Lorenzo Norte and Salsipuedes (C. canus); San Esteban (C. estebanensis); Smith (Cnemidophorus undescribed). Although these insular populations share a number of morphological similarities, each taxon is recognizable by a distinctive combination of color, pattern and scutellation characters.
body size/scale morphology/color/reproductive isolation/teiid lizards/Cnemidophorus martyris/Stejneger/Gulf of California/terrestrial biology/herpetology.

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Univ. Nev., Dep. Geosci., Las Vegas, NV, United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
California/areal geology/Santa Catalina Island/Pacific Coast/Western U.S./United States/Catalina Schist/Farallon North American Subduction Zone/Southern California/Baja California/Franciscan Complex/graywacke/clastic rocks/greenstone/schists/structural geology/Miocene/Neogene/Tertiary/Cretaceous/paleogeography/volcanic rocks/sedimentary rocks/stratigraphy/GEOREF.

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Address: DEP. ANTHROPOL., UNIV. CALIF., SANTA BARBARA, CALIF. 93106. The dentitions of individuals from archaeological sites located along the Santa Barbara Channel [California, USA] were analyzed using quantitative methods which allow the accurate assessment of attrition rates. Comparisons of molar wear gradients indicate that attrition rates have decreased significantly through time in the Santa Barbara Channel area.
human archaeological sites/molar wear/gradient/Homo sapiens/Santa Barbara Channel/anthropology/archaeology.

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California, Santa Barbara County, Department of Environmental Resources, Santa Barbara, CA, United-States; California Coastal Commission, San Francisco, CA, United-States; U. S. Geological Survey, Los Angeles, CA, United-States; U. S. Army Corps of Engineers, Los Angeles, CA, United-States Monographic; Report Environmental impact report/environmental assessment, in two volumes. B; Bibliography and Index of Geology (1969-present) U. S. Geol. Surv., Los Angeles, CA, United States.
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arrested growth/nutritional status/infectious disease/dental carries/hyposkeletal pathology/traumatic injury/communication/Homo sapiens/California Channel Islands/physical anthropology.

3760. Grossman EL. Stable isotope fractionation in live benthic foraminifera from the Southern California Borderland. Palaeogeography, Palaeoclimatology, Palaeoecology. 1984;47(3-4):p.301-327
Texas A & M Univ., Dep. Geol., TX, United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
California/geochemistry/isotopes/foraminifers/biochemistry/carbon/C 13/C 12/oxygen/O 18/O 16/stable isotopes/ecology/continental borderland/Southern California/benthonic taxa/biological fractionation/dissolved inorganic carbon/microfossils/Pacific Coast/Western U.S./United States/paleontology/fractionation/sediments/marine sediments/aragonite/carbonates/calcite/Hoeglundina

elegans/Cassidulinen/Globogulumina/GEOREF.

3761. Walker PL. Porotic pyperostosis in a marine-dependent California USA Indian population. Am. J. Phys. Anthropol. 1986;69(3):345-354 Address: DEP. ANTHROPOL., UNIV. California, SANTA BARBARA, CALIF. 93106. A maize-based iron- and protein-deficient diet is commonly cited as the most important cause of porotic hyperostosis among American Indian agriculturalists. An alternative to this maize dependence hypothesis is suggested by the analysis of 432 crania from the nonagricultural, fish-dependent population of the Channel Island area of southern California, Cribra orbitalia, a form of porotic hyperostosis associated with iron deficiency anemia, is just as common among these fisherpeople, whose diet was rich in iron and essential amino acids, as it is among maize-dependent agriculturalists. Northern Channel Island crania have much more cribra orbitalia than those from the California mainland. The highest incidence is on San Miguel, a small geographically isolated island with a shortage of fresh water and terrestrial resources. The Indians who lived on Santa Cruz, the largest of the northern Channel Islands with the greatest diversity of terrestrial plants and animals, have less cribra orbitalia than those who lived on Santa Rosa or San Miguel Island. This geographical distribution appears to be explained by island-mainland and interisland differences in water contamination, exposure to fish-borne parasites, and nutritional adequacy of the diet. The prevalence of porotic hyperostosis in a population with a heavy dietary dependence on marine resources shows that among prehistoric American Indians, this condition is not. always associated with an iron- and protein-deficient diet of cultigens. It seems likely that high nutrient losses associated with diarrheal disease are often more significant in the etiology of porotic hyperostosis than a low dietary intake of essential nutrients. Cribra orbitalia/anemia/diarrhea/iron/protein/malnutrition/paleopathology/porotic hyperostosis/Indians/Homo sapiens/California Channel Island/San Miguel Island/Santa Cruz Island/Santa Rosa Island/anthropology/paleopathology/paleontology.

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3763. Walker PL. Human biological evolution in the Santa Barbara Channel area, California USA: an evaluation of genetic and environmental influences on skeletal morphology. Am. J. Phys.

Anthropol 1983;60(2e):267 Address: UNIV. CALIF., SANTA BARBARA CONFERENCE PAPER: 52ND ANNUAL MEETING OF THE AMERICAN ASSOCIATION OF PHYSICAL ANTHROPOLOGISTS, INDIANAPOLIS, INDIANA, USA, APRIL 6-9, 1983.
archaeological/population/dentition/gene flow/diet/socio-economics/temporal variation/morphometrics/American Indians/Homo sapiens/Santa Barbara Channel/physical anthropology.

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Transactions-Gulf-Coast-Association-of-Geological-Societies. 1984;34:p.397 La. Geol. Surv., Coastal Geol. Program, Baton Rouge, LA, United-States Thirty-fourth annual meeting of the Gulf Coast Association of Geological Societies and Thirty-first annual meeting of the Gulf Coast Section of SEPM, Shreveport, LA, Oct. 24-26, 1984 Analytic; Serial; Conference publication B; Bibliography and Index of Geology (1969-present).
Gulf Coastal Plain/geomorphology/shore features/barrier islands/North America/models/processes/shorelines/hurricanes/Florida/Southeastern U.S./Eastern U.S./United States/Santa Rosa Island/Perdido Key/Alabama/Southern U.S./Dauphin Island/Louisiana/Caminada Bay/GEOREF.

3765. Walker PL, Craig S. Archaeological evidence concerning the prehistoric occurrence of sea mammals at Point Bennett, San Miguel Island, California, USA. Calif. Fish Game 1979;65(1):50-54 Address: DEP. ANTHROPOL., UNIV. CALIF., SANTA BARBARA, CALIF.
Faunal remains from an archaeological site at Point Bennett (SMI-525) were analyzed to obtain information concerning prehistoric distribution of sea mammals on San Miguel Island [California, USA]. All of the pinniped species which presently utilize the island were recovered in the archaeological material. Although the sea otter Enhydra lutris does not currently inhabit the island, its remains were frequently encountered in the site material. In contrast to its current restricted distribution in the vicinity of the Guadalupe Island, the Guadalupe fur seal Arctocephalus townsendi was the most frequently encountered pinniped in the deposit. The relative frequency of California sea lion Eumetopias jubata remains indicates that its present position as a marginal species on the island extends well into the prehistory of the rookery.
distribution/marine mammals/Pinnipedia/sea otter/Enhydra lutris/Guadalupe fur seal/Arctocephalus townsendi/California sea lion/Eumetopias jubata/Point Bennett/San Miguel Island/archaeology/marine mammalogy/marine biology/anthropology.

3766. Savrda CE, Bottjer DJ, Gorsline DS. Development of a comprehensive oxygen deficient marine biofacies model; evidence from Santa Monica, San Pedro, and Santa Barbara basins, California continental borderland. AAPG Bulletin. 1984;68(9):p.1179 Univ. South. Calif., Dep. Geol. Sci., Los Angeles, CA, United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present). Pacific Ocean/oceanography/marine geology/ecology/echinoderms/dysaerobic environment/California/Pacific Coast/Western U.S./United States/Santa Monica Basin/San Pedro Basin/Santa Barbara Basin/sedimentation/sedimentary petrology/biofacies/marine environment/models/low oxygen environment/faunal studies/assemblages/biogenic structures/sedimentary

structures/continental borderland/anaerobic environment/oxygen/paleo oceanography/cores/GEOREF.

3767. Walker PL, Deniro MJ. Stable nitrogen and carbon isotope ratios in bone collagen as indices of prehistoric dietary dependence on marine and terrestrial resources in Southern California, USA. Am. J. PHys. Anthropol. 1986;71(1):51-62 Address: DEP. ANTHROPOL., UNIV. CALIF., SANTA BARBARA, CALIF. 93106. The ratios of 15N to 14N and 13C to 12C tend to be higher in marine than in terrestrial organisms. The concentrations of these isotopes in human bone collagen consequently can be used to make inferences about the contribution of marine and terrestrial resources to prehistoric diets. The utility of studying 15N/14N and 13C/12C ratios in conjunction with each other is illustrated by our analysis of 40 human burials from archaeological sites in the Santa Barbara Channel area of southern California. The mean .delta.13C and .delta.15N values (in per mil) of collagen from these skeletons decrease progressively from the Channel Islands (.delta.13C = -14.0, .delta.15N = +16.3) to the mainland coast (.delta.13C = -14.5, .delta.15N = +14.9) to the interior (.delta.13C = -17.2, .delta.15N = +10.9). These data suggest that Indians living on the Channel Islands during the late prehistoric period were heavily dependent on marine resources. The inhabitants of the mainland interior, in contrast, had a diet composed largely of terrestrial foods. From their isotope ratios, it appears that the Indians who lived on the mainland coast consumed a mixed diet containing substantial quantities of both marine and terrestrial resources. Differences in 15N/14N and 13C/12C ratios of individuals from mainland sites dating from the early and late prehistoric periods show that the marine component of the diet increased substantially through time. These isotopic data are consistent with pathological,. faunal, and artifactual evidence of increased marine resource exploitation during the late prehistoric period. human nutrition/Homo sapiens/Native Americans/Indians/Santa Barbara Channel/anthropology/archaeology.

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3769. Wall DA. Dinoflagellate cysts and acritarchs from California current surface sediments [dissertation]. Saskatchewan, Canada: University of Saskatchewan; 1986. Unknown. Three aspects of Recent dinoflagellate cyst and acritarch paleoecology in the California Current are examined in the present study: their biogeography from seventy surface sediment samples, yearly variations in cyst deposition in varved sediments, and their systematics. Six regions within the Current were studied; aquatic palynomorphs varied in peak abundance as follows (from greatest to smallest): Baja California, Southern California Bight, Gulf of California, Washington Shelf, San Juan Islands, Central California. The most important dinocyst group is the genus Spiniferites, with several species reaching dominance. Lingulodinium machaerophorum is the most abundant cyst in the Southern California Bight. Broad similarity is seen in assemblages from the six areas, with a general tendency to add species to the flora during the southward flow. To determine

whether distinctive dinocyst communities could be detected a TWINSPAN analysis of species and samples was run. This hierarchical clustering technique revealed interregional differences in community composition: e.g. the Washington shelf was characterized by a predominance of freshwater palynomorphs, the inshore Southern California Bight by L. machaerophorum, offshore Oregon by Impagidinium spp., and smaller subregions distinguished by subtler differences. Yearly variations in cyst. abundance from Santa Barbara Basin varves representing the years 1925 to 1970 A.D. were compared to historical time series of blooms of cyst forming dinoflagellates and sea surface temperature (SST). L. machaerophorum, Spiniferites spp. and total cyst abundance apparently respond negatively to annual SST. In addition, some blooms of Gonyaulax polyedra follow peaks in deposition of its cyst. Sixty-four species of palynomorphs are described, including six new species and three new genera. Distribution maps of significant species are presented. cysts, acritarch/paleoecology/California Current/palynomorphs paleobotany/Holocene/microfossils/new taxa/acritarchs dinoflagellates/spiniferites/Lingulodinium machaerophorum/acritarchs/Southern California Bight/geology.

3770. Simila GW. Analysis of Rayleigh wave group velocity data for the Transverse Ranges and the Southern California borderland region. Anonymous. Eastern Section of the Seismological Society of America. Earthquake-Notes. 1984;55:p.24
Calif. State Univ., Dep. Geol. Sci., Northridge, CA, United-States The Seismological Society of America, 1984 annual meeting, Anchorage, AK, May 30-June 1, 1984 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).
California/seismology/elastic waves/Rayleigh waves/Pacific Coast/Western U.S./United States/Transverse Ranges/crust/properties/velocity structure/tectonophysics/southern California/earthquakes/magnitude/P waves/body waves/refraction/Catalina Block/shear/phase velocity/surface waves/wave dispersion/GEOREF.

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Address: BOT. SECT., NATURAL HISTORY MUSEUM LOS ANGELES COUNTY, 900 EXPOSITION BOULEVARD, LOS ANGELES, CALIF. 90007.
Vascular plant taxa of the Channel Islands of southern California and Guadalupe Island, Mexico, are treated, to include their distribution among the islands, citation of verified specimens from several herbaria, and a detailed account of earlier synonymous taxa, misidentified specimens, and taxa incertae sedis based on herbarium specimens and literature citations. A total of 621 native vascular taxa include 137 endemics and 227 introduced taxa.
taxa synonyms/identification/distribution/endemics/introductions/Vascular plant/taxa/California Channel Islands/Guadalupe Island/terrestrial biology/botany.

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Weidlinger Assoc., Menlo Park, CA, United-States The Seismological Society of America, 1984 annual meeting, Anchorage, AK, May 30-June 1, 1984 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).

California/seismology/explosions/chemical explosions/Pacific Coast/Western U.S./United States/San Clemente Island/underwater exlosions/seismograms/shock waves/magnitude/seismographs/networks/Southern California Network/traveltime curves/accelerometers/elastic waves/mathematical methods/equations/velocity structure/GEOREF.

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Address: Calif. Technol., Seismol. Lab., Pasadena, CA Note: Calif. Inst. Technol., Seismol. Lab.; Contrib. No. 3404.
seismology/earthquakes/spectral analysis/broad-band spectra/body waves/focal mechanism/accelerograms/strong motion/seismic moment/Santa Barbara earthquake, 1978/Santa Barbara County/Santa Barbara Channel/seismology/geophysics/geology.

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Pacific Coast/geophysical surveys/well logging/electrical logging/interpretation/California/Kings County/Western U.S./United States/pore pressure/conductivity/Santa Barbara Channel/accuracy/Los Angeles Basin/San Joaquin Valley/GEOREF.

3775. Wallerstein MC. An examination of the roles of predation and competition in determining the distributions of the ophiuroids Ophiothrix spiculata Le Conte, 1851 and Ophiopterus papillosa (Lyman, 19=875) in a shallow marine community [dissertation]. Los Angeles, California, USA: University of Southern California; 1982. Unknown.
The roles of predation and competition in determining the distributions of Ophiopterus papillosa and Ophiothrix spiculata were studied in a rocky bottom, shallow water, marine community at Santa Catalina Island, California. Ophiopterus papillosa and Ophiothrix spiculata were always found in under-rock and Macrocystis pyrifera holdfast crevices, which protected them from predators. Both species displayed several behavioral mechanisms which function in surviving predator attacks. Ophiopterus papillosa was found more abundantly under larger rocks and laboratory experiments showed a preference for narrow crevices with a larger area. They showed a clumped distribution in the field, but laboratory experiments showed no tendency to aggregate. This distribution may reflect habitat availability. Large and small Ophiopterus papillosa were found in under-rock crevices, whereas only small individuals were found in kelp holdfasts. Ophiothrix spiculata occurred almost exclusively in kelp holdfasts. Laboratory experiments showed no substrate preferences which would cause this pattern. Field experiments showed no evidence of competition between Ophiopterus papillosa and Ophiothrix spiculata which could. produce the observed distribution. Quantitative laboratory and field observations showed that Ophiothrix spiculata has more of a tendency to climb upwards from under rocks to a feeding position where it is exposed to predators. However, individuals in holdfasts are provided with protection for the disc and an advantageous filter feeding position. Ophiopterus papillosa shows a greater tendency to deposit feed, a stronger negative phototaxis and a stronger thigmotaxis than Ophiothrix spiculata does. It remains under rocks where it is protected from predation. Although the preferred feeding methods of each species and

the tendency of Ophiothrix spiculata to climb upwards to filter feed do contribute to their distribution patterns, true habitat specialization does not appear to occur for these species. In the laboratory Ophiothrix spiculata was observed using both arm loop capture and deposit feeding methods. Under different levels of predation pressure individuals could employ less preferred feeding mechanisms to obtain the majority of their food requirements. In Monterey Bay, California, Ophiothrix spiculata occurs abundantly under rocks. Changes in predation pressure could allow changes in habitat utilization and feeding mechanisms employed, and possible changes in competitive interactions.
predation/competition/habitat preference/deposit feeding/filter feeding/ ophiuroids/Ophiothrix spiculata/Ophiopterus papillosa/Santa Catalina Island/marine biology.

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Sci. Appl., Monterey, CA, United-States; Lockheed Mar. Syst. Group, United-States; Nav. Postgrad. Sch., Dep. Oceanogr., United-States Inst. Electr. and Electron. Eng., Piscataway, NJ Oceans '83, San Francisco, CA, Aug. 29-Sept. 1, 1983 Analytic; Book; Conference publication B; Bibliography and Index of Geology (1969-present).
Pacific Ocean/geophysical surveys/remote sensing/applications/experimental studies/cartography/imagery/satellite methods/airborne methods/two dimensional models/models/California Current/high resolution methods/NESDIS/case studies/GEOREF.

3777. Wallis WS. Oil and gas exploration, offshore Southern California. M.T. Halbouty. Energy resources of the Pacific region. AAPG Studies in Geology 12. ; 1981. 383-389.
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well-logging/interpretation/fuel resources/lithostratigraphy/petroleum/natural gas/continental margin/San Diego Trough/sedimentary basins/Tertiary/Cenozoic/deformation/faults/anticlines/folds/possibilities/trap s/offshore Los Angeles Basin/Outer Banks Basin/Ventura Basin/Santa Barbara Channel/San Diego Trough/economic geology/energy sources/petroleum.

3778. Anderson JG, Hough SE. A model for the shape of the Fourier amplitude spectrum of acceleration at high frequencies. Bulletin of the Seismological Society of America. 1984;74(5):p.1969-1993
Scripps Inst. Oceanogr., Inst. Geophys. and Planet. Phys., La Jolla, CA, United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
At high frequencies f the spectrum of S-wave accelerations is characterized by a trend of exponential decay, e(-pi)kappa f . In our study, the spectral decay parameter kappa increases gradually as the epicentral distance increases. For multiple recordings of the San Fernando earthquake, kappa increases slowly with distance, and kappa is smaller for sites on rock than for sites on alluvium. Under the assumption that the Fourier spectrum of acceleration at the source is constant above the corner frequency (an omega (-2) source model), the exponential decay is consistent with an attenuation model in which Q increases rapidly with depth in the

shallow crustal layers.--Modified journal abstract. California/engineering geology/earthquakes/seismology/elastic waves/ground motion/acceleration/models/spectral analysis/Fourier analysis/amplitude/S waves/body waves/spectral decay parameter/epicenters/San Fernando earthquake, 1971/alluvium/clastic sediments/attenuation/Q/crust/seismic sources/propagation/Santa Barbara Island earthquake, 1981/Pacific Coast/Western U.S./United States/GEOREF.

3779. Walmsley JL, Blanc TV. Computer-model results for the beach-escarpment-induced distortion of onshore wind flow at the northwest point of San Nicolas Island, California. Final rept. : Naval Research Lab., Washington, DC. NRL-8746; 1983. 22.
A computer model developed by the Atmospheric Environment Service of Canada concluded that the beach escarpment underlying the Naval Research Laboratory's micrometeorological tower facility at San Nicolas Island, California, induced wind-speed amplifications ranging from 1.00 to 1.25 and wind-direction perturbations ranging from -5 deg to +5 deg, depending upon the altitude and wind direction, for measurements made from the NRL tower. The altitudes considered ranged from 5 to 35 m above the beach for onshore winds ranging over a 180 deg arc centered about the prevailing northwest wind direction. The model calculations were based upon a high-resolution aerial survey of the island beach escarpment. The model assumes that the tide height is at mean level, the horizontal length scale is 50 m, the roughness length of both the sea and island is 0.01 m, and the atmosphere is neutrally stable. The model results are presented in graphic form, to illustrate a typical example, and in tabular form as a function of altitude and wind direction, to facilitate the use of the results as a correction algorithm for future air-sea interaction experiments at the coastal facility. Beaches/Cliffs/Wind/Computer aided diagnosis/Wind velocity/Wind direction/Distortion/Micrometeorology/Islands/Towers/Naval research/San Nicolas Island/atmospheric sciences/meteorology.

3780. Hein FJ, Longstaffe FJ. Controls on geotechnical properties of fine grained mass flow deposits, California borderland. International Congress on Sedimentology = Congres International de Sedimentologie. 1982;11:p.166 Univ. Alberta, Dep. Geol., Edmonton, AB, Canada Eleventh international congress on sedimentology, Hamilton, ON, Aug. 22-27, 1982 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present). California/oceanography/continental slope/soil mechanics/materials/properties/marine sediments/organic materials/geochemistry/Pacific Coast/Western U.S./United States/materials, properties/X ray data/sedimentation/transport/mass movements/debris flows/silt/clastic sediments/clay/Santa Barbara Basin/Santa Cruz Basin/San Nicolas Basin/plasticity/Atterberg limits/smectite/clay minerals/sheet silicates/silicates/vermiculite/illite/chlorite/chlorite group/kaolinite/North American Pacific/Pacific Ocean/GEOREF.

3781. McClay PL, Slosson JE. Photographic evidence in forensic engineering and geology. Hannan, D. L. Engineering geology today and tomorrow. Converse Consult., Anaheim, CA, United-States. Program-Association-of-Engineering-Geologists,-National-Meeting. 1983;26:p.86 Slosson and Assoc., Van Nuys, CA, United-States; Converse Consult., Anaheim, CA, United-States Association of Engineering Geologists 26th annual meeting; Engineering geology today and tomorrow, San Diego, CA, Oct. 2-7, 1983 Analytic;

Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).
California/engineering geology/slope stability/Pacific Coast/Western U.S./United States/land use/legislation/photography/floods/debris/landslides/Santa Catalina Island/Hidden Springs/rupture/forensic geology/GEOREF.

3782. Walton JTL, Dean RG. Computer algorithm to calculate longshore energy flux and wave direction from a two pressure sensor array. US Army Coastal Engineering Research Center, Technical Paper 1982;82-2:33 pages Address: Dept of Army Coastal Eng Res Center, (CEREN-EV), Kingman Building, Fort Belvoir, VA 22060,FL.
A documented (FORTRAN IV) computer program to analyze wave data collected at Channel Islands Harbor, California is discussed. The program performs the basic analysis of two wave gage pressure records necessary to compute wave direction and wave energy at a given frequency and computes the longshore energy flux used in sand transport for the entire energy spectrum of the wave record. This program uses linear wave theory for the wave transformation process and includes the assumption of straight and parallel bottom contours necessary for application of Snell's law of refraction. The necessary steps in an analysis of wave data and sample outputs for some wave records from the Channel Islands wave gage pressure sensor pair are given. The program presently accepts data in the standard CERC magnetic-tape format where record lengths consist of 4100 values. Computer program/longshore energy flux/sediment transport/wave gage array/wave spectra/Channel Islands Harbor/marine geology.

3783. Howell DG, Vedder JG. Ferrelo Fan, California; depositional system influenced by eustatic sea level changes. Geo Marine Letters. 1984;3(2-4):p.187-192
U. S. Geol. Surv., Menlo Park, CA, United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
Remnants of an Eocene fan system are preserved onshore at San Diego and in the central part of the southern California borderland. Even though faults and erosion have truncated its margins, geophysical data and exploratory wells indicate that remaining parts of the fan extent beneath an offshore area nearly 400-km long and 40- to 100-km wide. Environments representing fluvial, fan-delta, shelf-channel, overlapping inner- to outer-fan, and basin-plain facies are recognized or inferred. Three progradational cycles onshore and two distinct pulses of sand accumulation offshore are attributable to eustatic low sea-level sands.
California/stratigraphy/Eocene/sedimentation/environment/submarine fans/Mount Soledad Formation/Scripps Conglomerate/Stadium Conglomerate/Pomerado Conglomerate/Pacific Coast/Western U.S./United States/Ferrelo Fan/transgression/Paleogene/Tertiary/marine geology/San Diego/continental borderland/faults/erosion/sandstone/clastic rocks/turbidite/GEOREF.

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program uses linear wave theory for the wave transformation process and includes the assumption of straight and parallel bottom contours necessary for application of Snell's law of refraction. The necessary steps in an analysis of wave data and sample outputs for some wave records from the Channel Islands wave gage pressure sensor pair are given. The program presently accepts data in the standard CERC magnetic-tape format where record lengths consist of 4,100 values.
Ocean waves/Dynamic pressure/Computations/Computer programs/Orientation /Energy/Flux/Spectra/Sand/Sediment transport/Channel Islands Harbor/geology/earth Sciences/Oceanography.

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U. S. Geol. Surv., Menlo Park, CA, United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
Blanca Fan is a submarine fan composed of Miocene volcaniclastic strata. Parts of the fan system are exposed on Santa Cruz and Santa Rosa Islands, and possibly correlative strata crop out on San Miguel and Santa Catalina Islands. The Blanca Fan and underlying breccia reflect regional transcurrent faulting in the California Continental Borderland and development of a system of rapidly subsiding basins and uplifted linear ridges during early and middle Miocene time. Erosion of uplifted crystalline basement rocks followed by silicic volcanism created linear sediment sources for the alluvial and submarine fans, respectively.
California/oceanography/ocean floors/Blanca Formation/Vaqueros Formation/Blanca Fan/Miocene/Neogene/Tertiary/Pacific Coast/Western U.S./United States/bottom features/submarine fans/marine geology/transcurrent faults/faults/volcaniclastics/Santa Cruz Island/Santa Rosa Island/conglomerate/clastic rocks/Pacific Ocean/GEOREF.

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Address: NORTHWEST ALASKA FISHERIES CENT., NATL. MARINE FISHERIES SERVICE, NOAA, 2725 MONTLAKE BLVD. EAST, SEATTLE, WASH. 98112.
A multispecies analysis of allozyme data for 10 marine shore fishes [Embiotoca jacksoni, Clinocottus analis, Alloclinus holderi, Lythrypnus dalli, Caulolatilus princeps, Chromis punctipinnis, Girella nigricans, Paralabrax clathratus, Semicossyphus pulcher, Medialuna californiensis] was undertaken to identify patterns of genetic differentiation resulting from larval drift. Previous studies suggest that allele frequencies in these fishes are sensitive primarily to the effects of migration, rather than to natural selection or historical factors. The following patterns recur in most species: 1) Two northern populations (La Jolla, California, and the California Channel Islands) share a relatively high genetic affinity with all other populations, while the two southern populations (Isla de Guadalupe and Punta Eugenia, Baja California, Mexico) are relatively divergent; 2) the two southern populations apparently exchange genes much more frequency with northern populations than with each other, 3) anomalous results for. the ocean whitefish, Caulolatilus princeps, can be understood on the basis of known patterns of larval distribution in this species. The consistency of these large-scale patterns among species with markedly different life history features and dispersal capabilities suggests that the results obtained here may provide insight into the population structure of other species (invertebrates as well as fish) with pelagic larvae.

allele frequency/migration/population structure/allozyme/genetic differentiation/larval drift/coastal waters/population structure/nearshore fishes/pelagic larvae/fish larvae/population genetics/dispersion/allozyme Embiotoca jacksoni/Clinocottus analis/Alloclinus holderi/Lythrypnus dalli/Caulolatilus princeps/Chromis punctipinnis/Girella nigricans/Paralabrax clathratus/Semicossyphus pulcher/Medialuna californiensis/La Jolla, California/California Channel Islands/Isla de Guadalupe/Punta Eugenia/Baja California, Mexico/marine biology/ichthyology/evolution/genetics.

3787. Normark WR, Piper DJW. Navy Fan, California borderland; growth pattern and depositional processes. Geo Marine Letters. 1984;3(2-4):p.101-108 U. S. Geol. Surv., Menlo Park, CA, United-States; Geol. Surv. Can., Bedford Inst. Oceanogr., Canada Analytic; Serial B; Bibliography and Index of Geology (1969-present).
Navy Fan is a late Pleistocene sand-rich fan prograding into an irregularly shaped basin in the southern California borderland. The middle fan, characterized by one active and two abandoned ''distributary'' channels and associated lobe deposits, at present onlaps part of the basin slope directly opposite from the upper-fan valley, thus dividing the lower-fan/basin-plain regions into two separate parts of different depths. Fine-scale mesotopographic relief on the fan surface and correlation of individual turbidite beds through nearly 40 cores on the middle and lower fan give data for evaluating the late Pleistocene and Holocene depositional processes.
California/oceanography/ocean floors/Pacific Coast/Western U.S./United States/Navy Fan/Pleistocene/Quaternary/submarine fans/bottom features/marine geology/acoustical surveys/geophysical surveys/continental borderland/upper Pleistocene/Pacific Ocean/GEOREF.

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natural seepage/Hydrocarbon/Gulf of Mexico/Norton Sound/Santa Barbara Channel/Coal Oil Point/petroleum.

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California/environmental geology/waste disposal/Los Angeles County/Orange County/Southern California/Pacific Coast/Western U.S./United States/sludge/marine environment/deep sea environment/sewage/Southern California Bight/offshore/ocean circulation/models/nutrients/Pacific Ocean/continental shelf/GEOREF.

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Address: California Univ., Los Angeles.
Methanogenesis in the Avalon outfall sediments of Santa Catalina Island, California, was monitored in its natural environment before and after the initiation of wastewater treatment. After treatment began, the outfall sediments were less reducing and contained less organic matter, which led to a thirty fold reduction in the rate of methane production. High

concentrations of sulfide and the presence of active sulfate-reduction did not inhibit methanogenesis, contrary to the observations in lacustrine sediments. Methanogenesis was observed to recycle annually 0.13% of the organic carbon. (EIS-Deal).
Methane/Methane bacteria/Sewage treatment/Outfall sewers/Methanogenesis/Outlets/Waste water treatment/Sulfates/Sulfides/Organic matter/Water analysis/Chemical analysis/Sediments/Bacteria/Carbon cycle/sulfur compounds/sewage outfall/wastewater treatment/sediment analysis/bacteria/Santa Catalina Island/Avalon outfall/water quality/pollution/water quality/public health/marine biology/resource management.

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Quantitative studies were conducted on bioluminescence of mesopelagic animals. It was found that the mesopelagic shrimp Sergestes similis trawled at depths of 25-400 m in the Santa Barbara Channel emits ventrally directed bioluminescence that closely matches the intensity of downward-directed illumination and is able to rapidly modify its light output to match changes in background intensity. Masking experiments show that the photoreceptors involved are the compound eyes or adjacent tissues. Light emission originates from modified portions of the hepatopancreas and is similar to oceanic light in angular distribution and spectral characteristics. Normally oriented animals respond minimally to upward-directed light.
Sergestes similis/shrimp/Santa Barbara Channel/marine biology.

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seismology/earthquakes/Pitas Point

Unit/data/effects/stratigraphy/Santa Barbara Channel/Pitas Point/geophysics/seismology/geology.

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Miocene/processes/style/silicification/en echelon folds/Rincon Formation/Monterey Formation/Beechers Bay Formation/San Miguel Volcanics/San Onofre Breccia/ rotation/Santa Cruz Fault/Santa Rosa Island Fault/Garanon fault system/Carrington Basin/Santa Rosa Island/stratigraphy/historical geology/structural geology.

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California/seismology/earthquakes/seismicity/refraction/Pacific Coast/Western U.S./United States/Santa Barbara earthquake, 1978/magnitude/seismographs/epicenters/focus/Santa Barbara Channel/distribution/faults/swarms/focal mechanism/GEOREF.

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Particulate organic matter collected in sediment traps from various oceanic regimes--Sargasso Sea, equatorial North Atlantic, central North Pacific, California Current, and Peru coastal upwelling--have been analyzed for their lipid and amino acid composition and flux. Despite rapid settling of the large particles through the water column and a relatively small depth gradient for total organic carbon flux, there are major changes in the composition and flux of lipids and amino acids associated with the particles. The rapid disappearance of the more labile compounds with increasing depth indicates that the major sources of such compounds are in the upper part of the water column and that they are readily degraded as the particles sink. On the other hand, the intermittent appearance of large amounts of wax ester, along with the changing fatty acid composition of the particles, points to deep-water sources for some of these compounds. ocean circulation/biocirculation/organic materials/geochemistry/sea water/sediments/biogeochemistry/world ocean/amino acids/lipids/fatty acids/organic carbon/GEOREF.

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fuel resources/continental shelf/OCS lease sale 95/basement/reservoir rocks/source rocks/structural traps/stratigraphic traps/resources Santa Barbara Channel/Santa Maria Basin/economic geology/energy sources/petroleum/oceanography.

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California/oceanography/sedimentation/paleoecology/indicators/anaerobic environment/environment/marine environment/Pacific Coast/Western U.S./United States/stratigraphy/biofacies/petroleum/deep sea environment/Santa Monica Basin/San Pedro Basin/X ray radiography/biogenic structures/sedimentary structures/photogeologic methods/oxygen/faunal studies/biogeography/echinoderms/gastropods/arthropods/ichnofossils/GEOREF.

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Presented at: Symposium on Entomology of the California Channel Islands (at) Annual Meeting of the Entomological Society of America, San Diego, CA (USA), Dec 1981 Address: Dep. Entomol., California Acad. Sci., Golden Gate Park, San Francisco, CA 94118.
The Channel islands are useful for testing many biogeographical tenets because only eight islands are involved: these Island are closer, fewer, and smaller than other island groups (i.e. Hawaiian, Galapagos, Canary, West indies, etc.) from which extensive empirical biogeographical data have also come. Additionally, all eight Channel Islands are presently located near the mainland. This permits identification and comparison of island and mainland (source) faunas and assessment of probable speciation patterns. In this paper, the authors consider the Orthoptera in the broadest sense to also include the walking sticks, praying mantis, and cockroaches. Six years (1969-74) of extensive field work on all the Channel Islands and adjacent mainland areas form the foundation for this analysis.
zoogeography/biogeography/endenism/species-area relationship/island biogeography/Orthoptera/California Channel Islands/terrestrial biology/entomology.

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A juvenile gray whale exhibited unusual surface feeding behavior in a bed of giant kelp, Macrocystis pyrifera. It appeared to be

consuming the mysid crustacean, Acanthomysis sculpta. feeding biology/foraging behavior/Echrichtius robustus/gray whale/Santa Barbara Channel/Refugio Beach State Park/marine biology.

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CA 90089-0182.). storm disturbance/competition/ subtidal algae/Lithothrix aspergillum/Corallina/officinalis/Colpomenia/sinuosa/Sargassum muticum/Macrocystis pyrifera/Santa Catalina Island/Big Fisherman's Cove/marine biology, botany.

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Though the controlled use of fire may have been one of the most important achievements in the development of culture, little is known of the effects of fire in the prehistoric record. Additionally, little is known about natural fire features which may resemble cultural features such as fire pits and hearths. The controversial fire areas, or hearths, of Santa Rosa Island, California, illustrate the need for research into the effects of fire in the prehistoric record. The Santa Rosa features, dated by radiocarbon at more than 40,000 years to about 10,000 years, sometimes contain the charred bones of the island mammoth (Mammuthus exilis), and, rarely, possible stone tools. It has been hypothesized that these fire areas were hearths in which mammoth were roasted by early man. With reference to the fire areas, this research examines the effects of recent natural fires throughout California. Several hypotheses, including the hearth hypothesis, are tested in succession, and a dune blowout site on Santa Rosa Island is excavated. In a series of tests, it is shown that (1) the features are fire caused; (2) the fire areas are not hearths or fire pits; (3) the majority of fire areas were caused by forest fires in the Pleistocene; and (4) there is as yet no unquestionable evidence of man and mammoth associations on Santa Rosa Island, though additional research may yield conclusive evidence. Additionally, a typology of fire areas. is devised and a method of differentiating fire reddened and non-fire reddened sediments is presented. It is hoped that this typology will be of assistance to those concerned with the effects of fire in the prehistoric record. fire/fire areas/fire pits/hearths/stone tools/Homo sapiens/Mammuthus exilis/island mammoth/Santa Rosa Island/anthropology/archaeology.

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This study examines the ability of a marine gradiometer to produce diurnal-free magnetic intensity data. An experimental program was carried out in the Santa Barbara channel offshore California. A shore-based station was operated continuously during the survey period to monitor the temporal magnetic activity. The gradiometer data are adversely affected by the magnetic field of the towing vessel. An analysis of gradiometer bias as a function of ship's heading and deployment distance shows remarkable agreement with a model of the ship's magnetic field proposed by Bullard and Mason in 1961. Based upon this model, analytic azimuth correction factors are developed and applied to the gradiometer data. Comparisons are made among single-sensor, ship-minus-shore, and integrated total magnetic intensities. Residual mistie statistics, contour maps, and

profile plots form the basis of the comparison. At this location, the ship-minus-shore and integrated total intensities produce maps with standard residual misties of 0.55 and 0.62 gamma. The gradiometer is recommended for routine use in the marine environment. The gradiometer is very effective in eliminating diurnal activity, but it requires moderately more sophisticated data analysis procedures.--Modified journal abstract.
geophysical methods/magnetic methods/instruments/automatic data processing/geophysical surveys/magnetic surveys/Pacific Ocean/California/marine methods/magnetometer/magnetic gradiometer/magnetic field/Santa Barbara channel/offshore/Pacific Coast/Western U.S./United States/interpretation/techniques/Earth/GEOREF.

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3812. Westman WE. Island biogeography: studies on the xeric shrublands of the inner Channel Islands, California. Journal of Biogeography 1983;10(2):97-118 Address: Dept. of Geog., Univ. of California, Los Angeles, CA 90024. On Santa Cruz, East Anacapa, Santa Catalina and San Clemente, floristic variation among island samples responds primarily to a gradient of decreasing moisture availability, inducing a transition from mesophyllous coastal sage shrub to increasingly fleshy coastal succulent scrub vegetation. Previous studies of the California Islands, sampling more islands and considering island floras as a whole, found positive correlations between island area and species richness. In the present study, samples are limited to a single broad vegetation type, sites of a fixed area are considered, and disturbance factors are minimized. When richness (total or native species only) of these samples is considered against island area and distance to the mainland, low or negative correlations result. When total area of the vegetation type on the island is used as independent variable, the negative correlations persist. The previous positive correlations reported were possibly due to increasing habitat (including disturbance) heterogeneity with increasing island area, rather than to reduced extinction pressure as postulated by the MacArthur-Wilson model.
Island biogeography/moisture availability/species richness/coastal

sage shrub/succulent scrub/plant ecology/plant communities/disturbance/grazing/fire/air pollution/Santa Cruz Island/East Anacapa Island/Santa Catalina Island/San Clemente Island/terrestrial biology/ecology/botany.

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Address: DEP. OF GEOGRAPHY, UNIV. OF CALIF., LOS ANGELES, LOS ANGELES, CA 90024. A survey of the xeric shrublands of Pacific coastal North America from San Francisco to El Rosario (Mexico), including the inner Channel Islands, was conducted using 99 sample sites of 0.063 ha size. TWINSPAN classification and DECORANA ordination confirmed the existence of 2 plant formations, distinguishable physiognomically: coastal sage shrub and coastal succulent shrub. Within coastal sage scrub, 4 floristic associations were recognized: Diablan, Venturan, Riversidian and Diegan. Within coastal succulent shrub, 2 floristic associations were defined: Martirian Vizcainan. These associations occur in distinct geographical regions following the coastline, with the Riversidian association occurring in the basin inland from Venturan and Diegan regions. Their locations are strongly correlated with differences in evapotranspirative stress regimes. The Channel Island sites show affinities to several of the mainland associations. The Venturan association can be further subdivided floristically into 2 subassociations, dominated by Salvia mellifera and S. leucophylla, respectively. These subassociations which are coextensive geographically at a regional scale, typically do not. intermingle at a local scale but often meet along sharp boundaries in the landscape. The dominant species segregate by moisture preference, S. mellifera preferring coarser-texture soils and more southerly aspects than S. leucophylla. Richness and equitability of these sites are depressed relative to other xeric shrubland sites, reflecting the fact that the 2 subassociations partition the Venturan flora into substantially non-overlapping subsets of species. This segregation of associates between the 2 Salvia dominance types strongly suggests biotic influence of the dominants on subordinate species, perhaps mediated by allelopathy. This biotic interaction, leading to relatively strong floristic subassociations segregating independently in the landscape, would provide an example of the holistic community structure referred to by Clements and his followers, embedded within a larger pattern of continuity in species distributions.
coastal sage shrub/coastal succulent scrub/holistic continuity/species distribution/allelopathy/vegetation surveys/semiarid environments/phytogeography/phytosociology/community composition/evapotranspiration/moisture preferences/soil texture/Salvia mellifera/Salvia leucophylla/Pacific coastal North America/San Francisco/El Rosario, Mexico/California Channel Islands/terrestrial biology/botany/ecology.

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Scripps Inst. Oceanogr., Mar. Life Res. Group, La Jolla, CA, United-States; Scripps Inst. Oceanogr., Mar. Life Res. Group, La Jolla, CA, United-States; NASA, Goddard Space Flight Cent., United-States; Univ. South. Calif., Dep. Geol. Sci., United-States
Analytic; Serial B; Bibliography and Index of Geology (1969-present).

Pacific Ocean/oceanography/ocean circulation/California/sea water/composition/salinity/Pacific Coast/Western U.S./United States/offshore/eddies/density/vorticity/observations/mechanism/spatial variations/chemical properties/GEOREF.

3815. Simpson JJ, Koblinsky CJ, Haury LR, Dickey TD. An offshore eddy in the California current system. Progress in Oceanography. 1984;13(1):111 Scripps Inst. Oceanogr., Mar. Life Res. Group, La Jolla, CA, United-States; NASA, Goddard Space Flight Cent., United-States; Univ. South. Calif., Dep. Geol. Sci., United-States Monographic; Serial Individual article in scope is cited separately. B; Bibliography and Index of Geology (1969-present). Pacific Ocean/oceanography/ocean circulation/California/Pacific Coast/Western U.S./United States/offshore/GEOREF.

3816. Wickham DE, Kuris AM. The comparative ecology of nemertean egg predators. Amer. Zool. 1985;25:127-134
The nemertean family, Carcinonemertidae, is adapted to fill the specialized niche of ectocommensal and egg-predator on decapod crustacean hosts. The group has been known for over a century but its ecological role has only recently been elucidated. This paper contains information on the life history, development, diet, reproductiontaxonomy and evolution of parasitic nemerteans. Carcinonemertidae/Pseudocarcinonemertes/Carcinonemertes/Pacific Coast/marine biology/parasitology.

3817. Savrda CE, Bottjer DJ, Gorsline DS. Euxinic biofacies in anoxic basins; San Pedro and Santa Barbara basins, California continental borderland. Horn, M. K. AAPG annual convention with divisions SEPM/EMD/DPA. AAPG-Bulletin. 1983;67(3):p.544
Univ. South. Calif., Los Angeles, CA, United-States AAPG annual convention with divisions SEPM/EMD/DPA, Dallas, TX, April 17-20, 1983 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present). California/oceanography/continental slope/paleoecology/indicators/anaerobic environment/sedimentary structures/biogenic structures/environmental analysis/sedimentation/environment/Pacific Coast/Western U.S./United States/San Pedro Basin/Santa Barbara Basin/continental margin/geochemistry/oxygen/fabric/species richness/continental borderland/lithofacies/cores/burrows/benthonic taxa/slope environment/GEOREF.

3818. Wicksten MK. The species of Lebbeus in California, USA (Crustacea: Caridea: Hippolytidae). Allan Hancock Found. Occas. Pap. (New Ser.) 1978;0(1):1-8 Address: ALLAN HANCOCK FOUND., UNIV. SOUTH. CALIF., LOS ANGELES, CALIF. 90007. Species [3] of the genus Lebbeus [L. lagunae, L. washingtonianus and L. polaris] were found in California. Of these, only L. lagunae was observed in its natural habitat. This shrimp inhabits low intertidal to subtidal areas from Monterey Bay to Cortez Bank. In life, the colors of the animal provide camouflage among algae. Each ovigerous female carried 800-900 eggs. The other 2 spp. of Lebbeus inhabit soft substrates. L. washingtonianus is a bathyal species recorded from Santa Rosa Island to San Clemente Island at depths of 827-1818 m. L. polaris was collected in the Monterey submarine canyon at 954-1044 m. A key to the species is provided. distribution/ecology/fertility/eggs/descriptions/comparisons/taxonomy/systematics/key/shrimp/Crustacea/Caridea/Hippolytidae/lagunae/Lebbeus washingtonianus/Lebbeus polaris/Monterey Bay/Cortez Bank/Santa Rosa Island/San Clemente Island/Monterey submarine canyon/marine biology.

3819. Giger W, Schaffner C. Unsaturated steroid hydrocarbons as indicators of diagenesis in immature Monterey shales. Naturwissenschaften. 1981;68(1):p.37-39 Stanford Univ., Dep. Geol., Stanford, CA 94305, United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present). California/geochemistry/organic materials/hydrocarbons/diagenesis/materials/shale/sedimentary rocks/clastic rocks/Monterey Formation/biogenic origin/geochemical indicators/maturity/gas chromatography/Pacific Coast/Western U.S./United States/Santa Barbara Basin/sedimentary petrology/steroids/Santa Barbara/GEOREF.

3820. Wicksten MK. Observations on feeding in Maxwellia santarosana (Gastropoda: Muricidae). Veliger 1980;23(1):96 Address: ALLAN HANCOCK FOUND., UNIV. SOUTH. CALIF., LOS ANGELES, CALIF. 90007. M. santarosana was collected on rocky reefs at Santa Catalina Island and along the Palos Verdes Peninsula, California [USA]. In an aquarium, this snail drilled a tapered hole into the upper valve of the pelecypod Chama arcana. Feeding and drilling lasted 9 days. M. santarosana and M. gemma both prey on pelecypods of rocky intertidal to subtidal areas. feeding biology/reef/aquarium/intertidal/subtidal/predation/drilling/Gastropoda/Muricid ae/Maxwellia santarosana/Maxwellia gemma/Chama arcana/Santa Catalina Island/Palos Verdes Peninsula/marine biology/malacology.

3821. LaPointe PR, Belfield WC, Helwig JA. Analysis of fracturing and fluid flow characteristics of the Monterey Formation, Santa Barbara Channel, CA. Mayer, E. H. Western energy frontiers. THUMS Long Beach Co., Long Beach, CA, United-States. Proceedings-Annual-California-Regional-Meeting.-Society-of-Petroleum-Engineers. 1984;54:p.97-106 ARCO Oil and Gas Co., United-States; THUMS Long Beach Co., Long Beach, CA, United-States Western energy frontiers; 1984 California regional meeting, Long Beach, CA, Apr. 11-13, 1984 Analytic; Serial; Conference publication B; Bibliography and Index of Geology (1969-present). California/stratigraphy/Miocene/fractures/experimental studies/reservoir rocks/Monterey Formation/Pacific Coast/Western U.S./United States/Santa Barbara Channel/Neogene/Tertiary/statistical analysis/tortuosity/regression analysis/permeability/porous materials/GEOREF.

3822. Wicksten MK. Behavior in Clythrocerus planus (Rathbun, 1900) (Brachyura, Dorippidae). 43(3)Crustaceana 1982;43(3):306-307 Address: Dep. Biol., Texas A&M Univ., College Station, TX 77843. Clythrocerus planus is a small crab found on subtidal bottoms of coarse sand, shell or pebbles from the northern Gulf of California, Mexico, to Monterey, California (Schmitt, 1921; Wicksten, 1980b). Nininger (in Schmitt, 1921) noted that C. planus carried pieces of shell, pebbles, sticks, bits of seaweeds, or entire shells above the carapace. The last two pair of pereopods, shaped like hooks, gripped these objects. The author obtained live specimens of C. planus by dredging at 40-120 m off Big Fisherman's Cove, Santa Catalina Island; and Huntington Beach, California. The crabs were kept in aquaria for observation. All crabs carry bits of shell, chips of rock, or entire shells dorsal to the posterior part of the carapace. These objects are held by the propodi and dactyls of the fourth and fifth pereopods. Dead and preserved animals, however, always lose the material formerly carried.

camouflage/anti-predator behavior/crabs/Clythrocerus planus/Brachyura/Dorippidae/Big Fisherman's Cove/Santa Catalina Island/Huntington Beach/marine biology.

3823. Wicksten MK. Pagurus redondoensis, a new species of hermit crab from southern California (Anomura: Paguridae). J. Crust. Biol. 1982;2(4):605-611 Address: Texas A&M Univ., Biol. Dep., College Station, TX 77843, USA. Pagurus redondoensis , new species, is the only known member of the provenzanoi group of the genus Pagurus in California. This small hermit crab occurs along the mainland of southern California and Santa Catalina Island. It is particularly common in shallow subtidal areas of King Harbor, Redondo Beach. new species/animal morphology/taxonomy/Anomura/Paguridae/Pagurus redondoensis/hermit crab/southern California/King Harbor/Redondo Beach/Santa Catalina Island/marine biology.

3824. Anderson JG. The 4 September 1981 Santa Barbara Island, California, earthquake; interpretation of strong motion data. Bulletin of the Seismological Society of America. 1984;74(3):p.995-1010
Univ. Calif., San Diego, Inst. Geophys. and Planet. Phys., La Jolla, CA, United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present).
Seven timed strong motion accelerograms were recorded between 45 and 80 km from the Santa Barbara Island earthquake. From these, the average estimate for ML is 6.0, compared to an average of ML = 5.5 from more distant recordings. When ML is estimated from accelerograph data using the distance correction to the ML scale proposed by Luco (1982), an average of 5.3 is obtained. S-wave spectra imply a seismic moment of 1.5 X 10(24) dyne-dm and, by the method of Brune (1970), a source radius of 2 km and a stress drop of 90 bars. If the displacement spectrum is assumed to be approximated by two asymptotes, f(0) at frequencies less than the corner frequency and f(-2) at frequencies greater than the corner frequency, the level of the f(-2) asymptote can be constrained by rms acceleration (Hanks, 1979). This leads to a smaller estimated source radius and a higher stress drop. In the process of matching these spectra, an average value of Q can be inferred to be consistent with the spectra at high frequencies. This value is between 300 and 500 for the assumed spectral shapes.--Modified journal abstract. California/seismology/earthquakes/elastic waves/Pacific Coast/Western U.S./United States/Santa Barbara/Channel Islands/Santa Barbara Island earthquake, 1981/accelerograms/strong motion/attenuation/magnitude/Santa Monica Mountains/S waves/body waves/Q/spectral analysis/GEOREF.

3825. Wicksten MK. Two species of Odontozona (Decapoda: Stenopodidea) from the Eastern Pacific. J. Crustac. Biol. 1982;2(1):130-135
Address: Dept. Biol., Texas A&M Univ., College Station, TX 77843, USA. Two species of stenopodid shrimp of the genus Odontozona are here recognized from the eastern Pacific. Odontozona rubra , new species, a red shrimp from the Gulf of California, is described. A broken specimen, probably O. spongicola (Alcock and Anderson), has been collected off Santa Catalina Island, California. new species/morphology/taxonomy/new records/biogeography/Decapoda/Stenopodidea/Malacostraca/Odontozona rubra/Odontozona spongicola/shrimp Pacific Ocean Northeast/California Coast/Gulf of California/Santa Catalina Island/marine biology.

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eastern North Pacific as inferred from stable isotope ratios of foraminifera. Elfner, L. E. Ohio Academy of Science; 93rd annual meeting. Ohio J. Sci., Columbus, OH, United-States. The-Ohio-Journal-of-Science. 1984;84:p.15
Case West. Reserve Univ., Dep. Geol. Sci., Cleveland, OH, United-States; Ohio J. Sci., Columbus, OH, United-States Ohio Academy of Science; 93rd annual meeting, Cleveland, OH, April 27-20, 1984 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present). Pacific Ocean/stratigraphy/Miocene/foraminifers/biochemistry/isotopes/stable isotopes/oxygen/O 18/O 16/carbon/C 13/C 12/Neogene/Tertiary/North Pacific/eastern North Pacific/Deep Sea Drilling Project/DSDP Site 173/DSDP Site 470/IPOD/DSDP Site 495/California Current/microfossils/assemblages/GEOREF.

3827. Wicksten MK. A new species of Heptacarpus from California USA with a redescription of Heptacarpus palpator (Caridea: Hippolytidae). Bull. South. Calif. Acad. Sci. 1986;85(1):46-55
Address: DEP. BIOL., TEX. A AND M UNIV., COLLEGE STATION, TEX. 77843-3258. A new species of Heptacarpus, a small shrimp marked with brown dots, is described. It ranges from Santa Rosa Island, California to Guadalupe Island, Mexico. Related to H. palpator and H. brevirostris, it can be distinguished from them by having only one large distal spine on the first segment of the antennular peduncle, and often having a spine at the distal end of the carpus of the first pereopod. Heptacarpus palpator is redescribed and better distinguished from H. brevirostris. Heptacarpus palpator ranges from Monterey Bay, California to the south, while H. brevirostris usually lives north of Monterey Bay.
description/color pattern/peduncle/pereopod Heptacarpus/Heptacarpus palpator/Heptacarpus brevirostris/Santa Rosa Island/Guadalupe Island/marine biology.

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Univ. Calif., Dep. Geol. Sci., Santa Barbara, CA 93106, United-States Analytic; Serial B; Bibliography and Index of Geology (1969-present). Pacific Ocean/geophysical surveys/acoustical surveys/automatic data processing/California/Pacific Coast/Western U.S./United States/Santa Barbara Channel/marine methods/sonar methods/cartography/image analysis/computers/maps/side scanning sonar/Anacapa Passage/GEOREF.

3829. Wildenstein AW, Ruez WJ, Hayes DA, Delflache ML, Glasscock MS. Design of the Hondo Platform for 850-Ft water depth in the Santa Barbara Channel. Journal of Petroleum Technology 1979;31(4):407
Platform design/Offshore drilling/Petroleum technology/Santa Barbara Channel/petroleum.

3830. Mullins HT, Nagel DK. Detection of shallow hydrocarbons with high frequency seismic reflection data. AAPG annual convention with divisions SEPM/EMD/DPA. AAPG-Bulletin. 1983;67(3):p.521-522
Syracuse Univ., Syracuse, NY, United-States; Moss Landing Mar. Lab., United-States AAPG annual convention with divisions SEPM/EMD/DPA, Dallas, TX, April 17-20, 1983 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).
California/geophysical surveys/seismic surveys/Pacific

Ocean/economic geology/fuel resources/Santa Cruz County/Monterey Formation/Santa Cruz Mudstone/Purisima Formation/exploration/offshore/Pacific Coast/Western U.S./United States/San Gregorio Fault Zone/Santa Cruz Basin/Outer Santa Cruz Basin/anomalies/Monterey Bay fault zone/GEOREF.

3831. Willason SW, Cox JL. Laminarinase activity of euphausiid crustaceans in response to different food levels and temperatures. Am. Zool. 1980;20(4):754 Address: UNIV. CALIF., SANTA BARBARA CONFERENCE PAPER: ANNUAL MEETING OF THE AMERICAN SOCIETY OF ZOOLOGISTS, AMERICAN MICROSCOPICAL SOCIETY, AMERICAN SOCIETY OF LIMNOLOGY AND OCEANOGRAPHY, ANIMAL BEHAVIOR SOCIETY, CANADIAN SOCIETY OF ZOOLOGISTS, ECOLOGICAL SOCIETY OF AMERICA, SOCIETY OF SYSTEMATIC ZOOLOGY, AND THE WESTERN SOCIETY OF NATURALISTS, SEATTLE, WASH., USA, DEC. 27-30, 1980.
nauplii/digestive enzymes/beta 1-3 glucan/starvation euphausiid/crustaceans/ditylum brightwellii/Euphausia pacifica/Nematoscelis difficilis/Artemia nauplii/Santa Barbara Channel/marine biology.

3832. Molina CA. The occurrence of Cycladophora (?) davisiana Ehrenberg in the Gulf of California. AAPG annual convention with divisions SEPM/EMD/DPA. AAPG-Bulletin. 1983;67(3):p.517
UNAM, Mexico City, Mexico AAPG annual convention with divisions SEPM/EMD/DPA, Dallas, TX, April 17-20, 1983 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).
radiolarians/biogeography/Holocene/Gulf of California/paleontology/Radiolaria/microfossils/ecology/biostratigraphy/occurre nce/distribution/Cycladophora ? davisiana/North American Pacific/Pacific Ocean/ocean circulation/paleocirculation/stratigraphy/interpretation/Quaternary/California Current/GEOREF.

3833. Willason SW, Cox JL. Diel feeding laminarinase activity and phytoplankton consumption by euphausiids. Biol. Oceanogr. 1987;4(1):1-24 Address: MARINE SCIENCE INSTITUTE, UNIVERSITY OF California, SANTA BARBARA. Three corroborative techniques-stomach fullness, gut fluorescence, and digestive enzyme activity (laminarinase)-were used to examine the feeding ecology of two common euphausiid species off the California coast [USA]. Euphausia pacifica showed a diel feeding periodicity: stomach fullness, gut pigment levels, and laminarinase activity increased at night when this species entered the surface waters (< 80 m). In situ phytoplankton consumption by E. pacifica was quite variable and was positively correlated with surface chlorophyll a concentration at the time of collection. E. pacifica collected during March 1981 in Monterey Bay had the highest ingestion rates, and those collected in the Santa Barbara Channel during October 1980 had the lowest. Diel changes in digestive enzyme activity of E. pacifica were influenced by phytoplankton ingestion during a single feeding period. However, overall digestive enzyme levels (average day or night enzyme activity) were probably influenced by longer-term feeding conditions (> 4-5 days). In contrast to E. pacifica, Nematoscelis difficilis consumed only small amounts of phytoplankton and did not show any consistent feeding patterns or diel changes in enzyme activity.
feeding biology/feeding ecology/diel patterns/euphausiids/Euphausia pacifica/Nematoscelis difficilis/Santa Barbara Channel/marine biology.

3834. Shiller AM. Particulate geochemistry in an area of

coastal upwelling; the Santa Barbara Basin. Suess E, Thiede J. Coastal upwelling, its sediment records; Part A, Responses of the sedimentary regime to present coastal upwelling. Oreg. State Univ., Sch. Oceanogr., Corvallis, OR, United-States. 10A. ; 1983. p. p. 289-301.
Scripps Inst. Oceanogr., La Jolla, CA, United-States; Oreg. State Univ., Sch. Oceanogr., Corvallis, OR, United-States; Univ. Kiel, Dep. Geol., Federal-Republic-of-Germany Plenum Press, New York, NY Coastal upwelling and its sediment record, Vilamoura, Sept. 1-4, 1981 Analytic; Book; Conference publication B; Bibliography and Index of Geology (1969-present). Pacific Ocean/oceanography/ocean circulation/California/sediments/marine sediments/geochemistry/Pacific Coast/Western U.S./United States/Santa Barbara Basin/upwelling/particulate materials/seasonal variations/sea water/dissolved materials/bathymetry/California Current/grain size/GEOREF.

3835. Williams AB. Mud shrimps Upogebia from the Eastern Pacific (Thalassinoidea: Upogebiidae). San Diego Soc. Nat. Hist. Mem. 1986;0(14):1-60 Address: NATL. MARINE FISH. SERV. SYSTEMATICS LAB., NATL. MUSEUM NATURAL HISTORY, WASHINGTON, D.C. 20560.
The mud shrimp genus Upogebia found in the eastern Pacific between Alaska and the Galapagos Islands is reviewed. Four previously described species from this region are recognized: U. longipollex (Streets) and spinigera (Smith) ranging from El Salvador to Ecuador; pugettensis (Dana), from Valdez, Alaska to Morro Bay, California; rugosa (Lockington), Gulf of California; and a fifth species from the western Atlantic, affinis (Say), has been taken once in San Francisco Bay. Fifteen species new to science are described: U. acanthops, Panama; burkenroadi, Sonora, Mexico; dawsoni, Gulf of California to Panama; galapagensis, Galapagos Islands; jonesi, Sonora, Mexico, to Panama; lepta islands off southern California, maccraryae. El Salvador to Ecuador; macginitieorum, southern California bight; onichion, San Miguel Island off southern California; schmitti, Panama; tenuipollex, Ecuador; thistlei, Gulf of Caifornia to Ecuador; veleronis, Islas Tres Marias, Mexico, and Cape San Francisco, Ecuador; ramphula, Maria Madre Island, Mexico; cocosia, Cocos Island. All except U. affinis are illustrated. Keys are given for identification of all species of Upogebia known from the Western Hemisphere, 7 from the western Atlantic and 19 from the eastern Pacific. new species/mud shrimp/Upogebia/eastern Pacific/Alaska/Galapagos Islands/San Miguel Island/marine biology.

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Nav. Postgrad. Sch., Dep. Oceanogr., Monterey, CA, United-States; Oreg. State Univ., Sch. Oceanogr., Corvallis, OR, United-States; Univ. Kiel, Dep. Geol., Federal-Republic-of-Germany Plenum Press, New York, NY Coastal upwelling and its sediment record, Vilamoura, Sept. 1-4, 1981 Analytic; Book; Conference publication B; Bibliography and Index of Geology (1969-present). Pacific Ocean/oceanography/ocean circulation/California/geophysical surveys/remote sensing/maps/cartography/satellite methods/upwelling/nutrients/North Pacific/infrared surveys/eastern North Pacific/currents/Point Sur/Pacific Coast/Western U.S./United States/California Current/temperature/GEOREF.

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Address: 650 S. Grand Ave., Los Angeles, CA 90017, USA.
Union to start flow from Platform Gina in Santa Barbara Channel's Hueneme field. Firm brought Platform Gilda on stream earlier this month. Both platforms are to be fully on stream in 1983 with flow of 20,000 b/d oil, 7.6 MMcfd associated gas. production platforms/oil production/gas production/Platform Gina/Hueneme Field/Santa Barbara Channel/Platform Gina/Hueneme/Field petroleum.

3838. Juillet A, Labeyrie LD, Schrader H. Oxygen isotope composition of diatom silica and silicoflagellate assemblage changes in the Gulf of California; a 700 year upwelling study. Thiede J, Suess E. Coastal upwelling, its sediment record; Part B, Sedimentary records of ancient coastal upwelling. Univ. Kiel, Dep. Geol., Kiel, Federal-Republic-of-Germany. 10B. ; 1983. p. p. 277-293. Cent. Faibles Radioact., Lab. Mixte C.N.R.S.-C.E.A., Gif-sur-Yvette, France; Univ. Kiel, Dep. Geol., Kiel, Federal-Republic-of-Germany; Oreg. State Univ., Sch. Oceanogr., United-States; Oreg. State Univ., Sch. Oceanogr., United-States Plenum Press, New York, NY Coastal upwelling and its sediment record, Vilamoura, Sept. 1-4, 1981 Analytic; Book; Conference publication B; Bibliography and Index of Geology (1969-present).
Gulf of California/geochemistry/silica/oxygen/isotopes/O 18/O 16/Protista/Silicoflagellata/Holocene/algal flora/diatom flora/North American Pacific/Pacific Ocean/stable isotopes/diatoms/algae/Quaternary/Carmen Basin/upwelling/biostratigraphy/temperature/Guaymas Basin/Mexico/Sonora/Baja California/California Current/salinity/microfossils/GEOREF.

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Address: c/o Oil Gas Journal, P.O. Box 1260, Tulsa, OK 74101, USA.
The quest for prolific Miocene Monterey pay off California has spread to the Santa Barbara Channel. New wildcat campaigns in deep waters and deeper zone tests in mature areas in search of the once elusive Monterey presage a new surge of development in the offshore Santa Barbara basin, site of the world's first offshore oil well. Exxon Co. U.S.A.'s oil discoveries in the channel's Santa Ynez Unit, together with onshore Santa Maria basin strikes, triggered the Monterey hunt in the first place. But untested giant structures in the Outer Continental Shelf Sale 53 area of the offshore Santa Maria basin so far have commanded the spotlight.
oil exploration/gas exploration/Miocene/Monterey/petroleum exploration/resevoir delimitation/exploration management/Santa Barbara Channel/petroleum/geology.

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Gulf of California/oceanography/ocean circulation/Mexico/geochronology/varves/correlation/sediments/marine sediments/lithofacies/North American Pacific/Pacific

Ocean/upwelling/variations/Guaymas Basin/planar bedding structures/sedimentary structures/Baja California/bathymetry/Carmen Basin/Farallon Basin/Pescadero Basin/San Pedro Martir Basin/Sonora/Sinaloa/currents/California Current/laminations/sedimentation rates/GEOREF.

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Pacific Ocean/geochemistry/isotopes/California/oceanography/continental shelf/sediments/stable isotopes/foraminifers/biostratigraphy/Holocene/oxygen/O 18/O 16/carbon/C 13/C 12/Pacific Coast/Western U.S./United States/Santa Barbara Basin/upwelling/anaerobic environment/microfossils/ratios/Quaternary/Port Hueneme/Los Angeles/San Diego/varves/planar bedding structures/sedimentary structures/Davidson Current/standard materials/temperature/GEOREF.

3842. Summerhayes CP. Sedimentation of organic matter in upwelling regimes. Thiede J, Suess E. Coastal upwelling, its sediment record; Part B, Sedimentary records of ancient coastal upwelling. Univ. Kiel, Dep. Geol., Kiel, Federal-Republic-of-Germany. 10B. ; 1983. p. p. 29-72.
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Gulf of California/oceanography/sedimentation/Pacific Ocean/Atlantic Ocean/ocean circulation/patterns/upwelling/organic materials/geochemistry/organic carbon/continental margin/North American Pacific/pelagic sedimentation/bottom water/Santa Barbara Basin/anaerobic environment/oxidation/varves/planar bedding structures/sedimentary structures/laminations/bathymetry/turbidite/topography/diagenesis /GEOREF.

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faults/Hosgri fault zone/San Gregorio Fault/San Simeon fault zone/right-lateral faults/common-depth-point method/thrust faults/seismic surveys/geophysical surveys/displacements/Pacific Coast/Western U.S./United States/Santa Barbara County/Santa Barbara Channel/Point Arguello/Point Conception/structural geology/applied geophysics.

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Radon 222 fluxes at a site in San Clemente Basin, measured with the MANOP lander. Anonymous. American Geophysical Union; 1983 Fall meeting.
Eos,-Transactions,-American-Geophysical-Union. 1983;64(45):p.721
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Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present). Pacific Ocean/geochemistry/nodules/manganese composition/radon/isotopes/Rn 222/manganese/San Clemente Basin/California/Pacific Coast/Western U.S./United States/bioturbation/biogenic structures/sedimentary structures/noble gases/diffusion/X ray radiography/Equatorial Pacific/MANOP/GEOREF.

3845. Wilson H. Santa Barbara Channel drilling slowed. Oil Gas J. (Tulsa) 1980;78(10):68-70
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Pacific Ocean/geochemistry/sediments/oceanography/instruments/Bottom Lander/nodules/manganese composition/manganese/pore water/tracers/San Clemente Basin/calcium carbonate/solution/hydrochemistry/sediment water interface/MANOP/GEOREF.

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Address: ROCKEFELLER UNIV. FIELD RES. CENT., TYRREL ROAD, MILLBROOK, N.Y. 12545. Investigations of the colonies of western gulls on Santa Barbara Island, California, USA, revealed a surplus of females and the occurrence of female-female pairs that produce clutches with as many as 6 eggs. Females are able to establish and

defend breeding territories, behaviors generally thought to be under the control of androgens. Few significant differences in circulating levels of the luteinizing hormone and androgens are seen among breeding males, breeding females in heterosexual pairs and breeding females in homosexual pairs. In both homo and heterosexual pairs sampled in 1977, only females had elevated plasma levels of estrogens in spring, coincident with the period in which they show courtship behaviors such as food begging and solicitation of copulation. Given a sex ratio skewed in favor of females, as with the colonies of this species on Santa Barbara Island, and the essentially equal plasma levels of androgens in males and females, it is not difficult to rationalize the formation of female-female pairs. The hypothesis that female-female pairing involves hormonal masculinization of 1 member of the pair was not supported.
territorial defense/territoriality/courtship/androgens/leutenizing hormone/masculinization/sex ratio/reproductive biology/sexual behavior/endocrinology/females/breeding territories/androgens/oestrogens/estrogens/sex hormones/homosexual behavior/Charadriiformes/Western Gulls/Larus occidentalis/Santa Barbara Island/terrestrial biology/ornithology.

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California/stratigraphy/Eocene/Mexico/paleogeography/sedimentary rocks/clastic rocks/provenance/San Diego County/Poway Conglomerate/Jolla Vieja Formation/Ballena Gravels/Pacific Coast/Western U.S./United States/San Diego/Santa Cruz Island/Peninsular Ranges/continental borderland/Sonora/Ballena River/Paleogene/Tertiary/paleohydrology/Imuris Volcanics/alluvium/clastic sediments/alluvial fans/submarine fans/channel geometry/grain size/stream transport/velocity/floods/reconstruction/GEOREF.

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The author questions the correlation between the Eocene of San Nicolas Island and the Poway Conglomerate of central San Diego County in Howell and Link's 1979 paper (GeoAbstracts 80E/0144) as it does not take into account a difference in content of large quartz grains in the welded tuff clasts that are the most abundant constituents of the conglomerates involved.
Eocene/conglomerates/San Nicolas Island/San Diego County/geology/petroleum.

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California/oceanography/continental shelf/sedimentation/environment/ichnofossils/ecology/invertebrates/shelf environment/Pacific Coast/Western U.S./United States/San Clemente Basin/substrates/sand/clastic sediments/biofacies/lithofacies/Scolicia/Skolithos/Aconichnus/Teichichnus/Aster osoma/Chondrites/burrows/marine sediments/echinoderms/crustaceans/worms/Polychaetia/turbidite/North American Pacific/Pacific Ocean/GEOREF.

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Stratigraphic, radiometric, amino acid, and pedologic dating techniques have allowed the development of a chronology of sea-level changes for about the last 500,000 yr. A uranium-series date on coral of about 127,000 yr for the 2nd terrace serves as a calibration point for amino acid age estimates of four other mapped terraces. Two of these terraces have age estimates of about 80,000-105,000 yr, another has an age estimate of about 127,000 yr, and the 5th terrace on the west side of the island is estimated to be about 415,000-575,000 yr old. These dates correlate reasonably well with marine terraces dated elsewhere and with stages of the oxygen-isotope record that are thought to represent high stands of the sea. Weakly cemented calcareous dune sands (eolianites) on northern San Clemente Island appear to represent low stands of the sea, since calcareous shelf sands were the most likely source. A radiocarbon date of about 22,000 yr suggests that the youngest eolianite was deposited during the last glacial maximum. An older

eolianite is estimated to be about 140,000-195,000 yr old based on stratigraphic relations and degree of soil development. The suggested ages for the eolianites also correlate well with oxygen-isotope estimates of low sea levels.--Modified journal abstract.
California/stratigraphy/Quaternary/geomorphology/coastal features/terraces/sedimentary rocks/clastic rocks/eolianite/absolute age/dates/corals/changes of level/Pacific Coast/Western U.S./United States/San Clemente Island/northern San Clement Island/amino acids/organic materials/alluvial fans/relative dating/oxygen/isotopes/O 18/O 16/stable isotopes/correlation/racemization/soils/shore features/GEOREF.

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Calif. State Univ., Northridge, CA, United-States; Mesa, United-States AAPG annual convention with divisions SEPM/EMD/DPA, Dallas, TX, April 17-20, 1983 Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).
California/structural geology/faults/Pacific Ocean/oceanography/continental slope/patterns/en echelon faults/Pacific Coast/Western U.S./United States/North Channel slope fault/Pitas Point Fault/F 1 Fault/Point Conception Fault/seismic surveys/geophysical surveys/Coal Oil Point/Molino Anticline/reverse faults/high angle faults/Hondo/Neogene/Tertiary/Quaternary/Gaviota/South Santa Ynez Fault/systems/Santa Barbara Basin/GEOREF.

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Atlantic Ocean/geochemistry/sulfur/Pacific Ocean/Gulf of Mexico/environmental geology/pollution/isotopes/S 34/S 32/organic materials/hydrocarbons/sediments/marine sediments/petroleum/stable isotopes/Walvis Bay/Gulf of Alaska/North American Pacific/Bering Sea/West Pacific/North American Atlantic/North Atlantic/southern California Bight/California Bight/eastern Bering Sea/gas chromatograms/GEOREF.

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Univ. Calif., Inst. Geophys. and Planet. Phys., Dep. Earth & Space Sci., Los Angeles, CA, United-States; Univ. Calif., Dep. Earth & Space Sci., Los Angeles, CA, United-States Prentice-Hall, Englewood Cliffs, NJ The Rubey colloquium ; The environment of the deep sea, Los Angeles, CA, April-June 1979 Analytic; Book; Conference publication B; Bibliography and Index of Geology (1969-present). Pacific Ocean/geochemistry/nitrogen/sea water/geochemical cycle/California/Southern California/nitrous oxide/Santa Barbara Basin/Whites Point/San Pedro Basin/nitrate ion/nitrite ion/nitrification/denitrification/saturation/atmosphere/pollution /waste disposal/sewage/liquid waste/GEOREF.

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seismology/structural geology/seismicity/earthquakes/neotectonics/seismotectonics/upper Quaternary/Quaternary/magnitude/mechanism/elastic waves/P-waves/faults/fault planes/uplifts/geodesy/extension/plate tectonics Santa Barbara County/Ventura County/Transverse Ranges/Santa Barbara Channel/Ventura Basin/geology/geophysics/seismology.

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California/soils/Paleosols/surveys/sedimentary rocks/clastic rocks/conglomerate/sedimentation/cyclic processes/regression/Pacific Coast/Western U.S./United States/Southern California/Eocene/Paleogene/Tertiary/transgression/San Diego/kaolinite/clay minerals/sheet silicates/silicates/Peninsular Ranges/continental borderland/GEOREF.

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ingestion/sediments/environmental factors/organic matter/age composition/size distribution/detritus feeders/evisceration/temperature/grainsize/sediment ingestion/feeding behavior/deposit feeders/Holothurian/Holothuroidea/Parastichopus parvimensis/Santa Catalina Island/Isthmus/marine biology.

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data/experimental studies/Baltic Sea/European Atlantic/North Atlantic/Atlantic Ocean/pore water/California/Pacific Coast/Western U.S./United States/Santa Barbara Basin/pyrite/sulfides/Nonesuch Shale/Precambrian/Tertiary/Devonian/petroleum/GEOREF.

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We studied the haul-out patterns and movements of harbor seals (Phoca vitulina richardsi) on San Miguel Island, California, from 23 October through 6 December 1982 by attaching a radio transmitter to each of 18 seals and monitoring their presence ashore with continuously scanning receivers. Seals hauled out at all hours although, an average, the largest proportion of tagged seals was ashore between 1300 and 1500 h. Median duration of haul-out bouts of individual seals ranged from 4.7 to 21.8 h; 81% of all haul-out bouts were less than 12 h and 3% were longer than 24 h. Eighty-one percent of the seals that were resighted at least twice used only the sites where they were tagged; two seals used two sites and one seal used three. Most seals were hauled out on fewer than 51% of the days sampled. On average, about 41% of tagged seals hauled out every day whereas an average of about 19% was hauled out during peak afternoon hours. Using telemetry data to correct a count of 412 seals made during an aerial survey, we estimated absolute abundance at about 2,168 seals; a modified Peterson mark-recapture model produced an estimate of about 1,445 seals.
movements/peterson mark-recapture/survey/radio transmitter/aerial survey/haul-out patterns/population levels/activity patterns/diurnal variations/haul-out behavior/site fidelity/Phoca vitulina richardsi/harbor seals/San Miguel Island/marine biology/mammalogy.

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Address: NATL. MAR. MAMMAL LAB., NATL. MAR. FISH. SERV. NOAA, 7600 SAND POINT WAY N.E., BUILD. 4, SEATTLE, WASH. 98115 Presented: CAMBRIDGE, ENGLAND, UK, APRIL 23-27.
Northern fur seal/Callorhinus ursinus/Pribilof Islands/Alaska/San Miguel Island/marine biology/mammalogy.

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California/geochemistry/isotopes/igneous rocks/volcanic rocks/potassium/strontium/rubidium/iron/magmas/differentiation/Santa Barbara County/Pacific Coast/Western U.S./United States/Southern California/continental borderland/Catalina Island/Santa Cruz Island/Conejo/major elements/GEOREF.

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Address: ALLAN HANCOCK FOUND., DEP. BIOL. SCI., UNIV. SOUTHERN CALIF., LOS ANGELES, CALIF. 90089.
species descriptions/taxonomic notes/Polysiphonia flaccidissima/Polysiphonia scopulorum/Polysiphonia decussata/Polysiphonia pacifica/Polysiphonia eastwoodae/Polysiphonia acuminata/Polysiphonia savatieri/Polysiphonia simplex/Santa Catalina Island/marine biology/botany/phycology.

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Abstracts-with-Programs-Geological-Society-of-America. 1982;14(4):p.173-174 Univ. Calif., Dep. Geol. Sci., Santa Barbara, CA, United-States The Geological Society of America, Cordilleran Section, 78th annual meeting, Anaheim, CA, April 19-21, 1982
Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).
California/structural geology/tectonics/paleomagnetism/Neogene/Topanga Formation/Monterey Formation/Rincon Shale/Pacific Coast/Western U.S./United States/Transverse Ranges/Miocene/Tertiary/shale/clastic rocks/marine environment/Point Mugu/Santa Cruz Island/Santa Ynez Range/declination/rotation/Santa Maria Basin/Santa Monica Mountains/GEOREF.

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Seven concrete reefs were positioned at 10 m depth on a flat sand bottom, surrounded on three sides by a cobble field which supported a kelp forest. Each reef contained 36 interstices of each of four sizes in specific geometric array. Blocks of interstices were interspersed with vertical walls of identical dimension. Removable sample bricks were attached to each reef. Monthly day and night censuses (May, 1979 through May, 1980) identified reef inhabitants as to holes of specific size and position vertically, horizontally, and by side of reef. Sample bricks were retrieved monthly, their inhabitants were identified, counted, and their biomass measured. Three reefs were continuously perturbed by having all macro-algae removed monthly. Algal abundance was influenced primarily by Colpomenia sinuosa and Sargassum muticum. Shannon diversity for algae varied inversely with biomass due to the effect of these two species on equitability. Perturbation led to a significant increase in Shannon diversity by increasing equitability, thus implicating natural disturbance as a possible source for maintenance of subtidal algal diversity. Analysis of sample bricks yielded 30,368 identifiable animals. The majority (78%) were amphipods and their numbers heavily influenced Shannon diversity. Algal perturbation significantly increased Shannon diversity for invertebrates by reducing the number of amphipods and thus. increasing equitability. Monthly Shannon indices for invertebrates and algae correlated significantly, as did monthly algal biomass and invertebrate number. Of the two resident species of fish, one, Lythrypnus dalli, exhibited no spatial preferences and was present 24 hours per day, but was markedly diurnal. The other, Chromis punctipinnis, was resident only at night, and certain size classes exhibited specificity both for interstice size and vertical level. Perturbation had no

measurable effect on L. dalli, but there were significantly more C. punctipinnis in perturbed than in unperturbed reefs. Although previous studies have indicated that C. punctipinnis generally spends the night in the open only when interstitial spaces are unavailable, some were always sheltered on the exposed top surfaces of the reefs during night censuses even though interstices of all sizes were available.
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High-resolution seismic data. Three bathymetrically prominent conduits supply sediment. Seismic profiling data confirm the previously reported erosional character of the channel and constructional nature of flanking levees. Newport Channel is a single well-defined channel with flanking constructional levees where it lies in a structurally controlled trough. The position of Loma sea valley is tightly controlled by the structure of the steep flank of Coronado Bank. The La Jolla Fan comprises a complex interleaved set of sediment wedges derived from multiple sources and woven around the wrench tectonic fabric of uplifts and basins of the Southern California borderland. Expansion from the simple radial growth pattern of fan sedimentation to a complex fan system.--Modified journal abstract. California/oceanography/ocean floors/Pacific Ocean/geophysical surveys/seismic surveys/sedimentation/controls/tectonic controls/Pacific Coast/Western U.S./United States/Southern California/offshore/submarine fans/channels/bathymetry/bottom features/reflection methods/geophysical profiles/sea valleys/geometry/deep sea sedimentation/wrench faults/faults/plate tectonics/La Jolla Fan/North American Pacific/GEOREF.

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Analytic; Serial; Conference publication; Abstract B; Bibliography and Index of Geology (1969-present).
California/geochemistry/isotopes/Pacific Ocean/radon/Rn 222/radium/Ra 226/sediments/marine sediments/sea water/processes/diffusion/Pacific Coast/Western U.S./United States/Santa Barbara Basin/Channel Islands/San Nicolas Basin/continental borderland/North American Pacific/noble gases/radioactive isotopes/mixing/geochemical profiles/sediment water interface/GEOREF.

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Bur. Reclam., Denver, CO, United-States; U. S. Geol. Surv., Menlo Park, CA, United-States Conference on earthquake hazards in the eastern San Francisco Bay area, Hayward, CA, Mar. 24-27, 1982
Analytic; Serial; Conference publication B; Bibliography and Index of Geology (1969-present).
Seismicity recorded in the San Luis Dam area by the U.S. Geological Survey Central California Microearthquake Network has been relocated for the purpose of better understanding seismic hazards to San Luis Dam. A parallelogram-shaped area roughly 75 by 50 kilometers was selected which encompasses the Ortigalita Fault and extends about 20 kilometers into the San Joaquin Valley. Earthquakes recorded by a temporary network operated around the San Luis Reservoir by the U.S. Geological Survey in 1974 and an ML 3.7 shock recorded by the current California Department of Water Resources local network in 1981 comprise the set of master events with which seismicity from 1969 through 1980 was relocated. With the limitation of events in the lower part of the study area to magnitude 2.0 or greater, the data set numbers about 250 earthquakes. Epicenters generally moved to the south and west after relocation. The Ortigalita Fault is sub-parallel to the Calaveras Fault and lies about 35 kilometers to the east of it. It consists of at least four en echelon segments that are separated by grabens or pull-apart basins. Seismic activity generally increases from north to south. Clustering occurs at specific locations on the fault. Focal mechanism analysis shows strike-slip faulting to be predominant along the fault and to the east and west. A few small earthquakes in the San Luis Basin (beneath the reservoir) indicate normal and vertical faulting. The level of seismicity in the study area is low; the largest earthquake associated with the Ortigalita Fault sine 1969 is the ML 3.7 event of 1981.--Journal abstract.

California/engineering
geology/earthquakes/seismology/seismicity/networks/Pacific
Coast/Western U.S./United States/Diablo Range/Ortigalita
Fault/neotectonics/San Luis Dam/San Joaquin
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reflection spectrometry/qualitative analysis/oil seeps/GEOREF.

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Solomon
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rocks/lithostratigraphy/correlation/corals/biostratigraphy/Pleist
ocene/foramini fers/biogeography/Melanesia/Quaternary/Santa Cruz
Basin/Rennell Basin/Solomon Basin/Malaita Uki Basin/East Choiseul
Basin/Central Solomons Basin/Phanerozoic/sedimentary
basins/microfossils/Miocene/Neogene/Tertiary/planktonic
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Project/geologic maps/maps/GEOREF.

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petrology/Santa Maria Islands/San Miguel Island/Azores/Terceira
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materials/Pacific
Ocean/alteration/diagenesis/materials/sediments/marine
sediments/processes/reduction/organic acids/early
diagenesis/microorganisms/Santa Barbara Basin/California/Pacific
Coast/Western U.S./United States/North American Pacific/North

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