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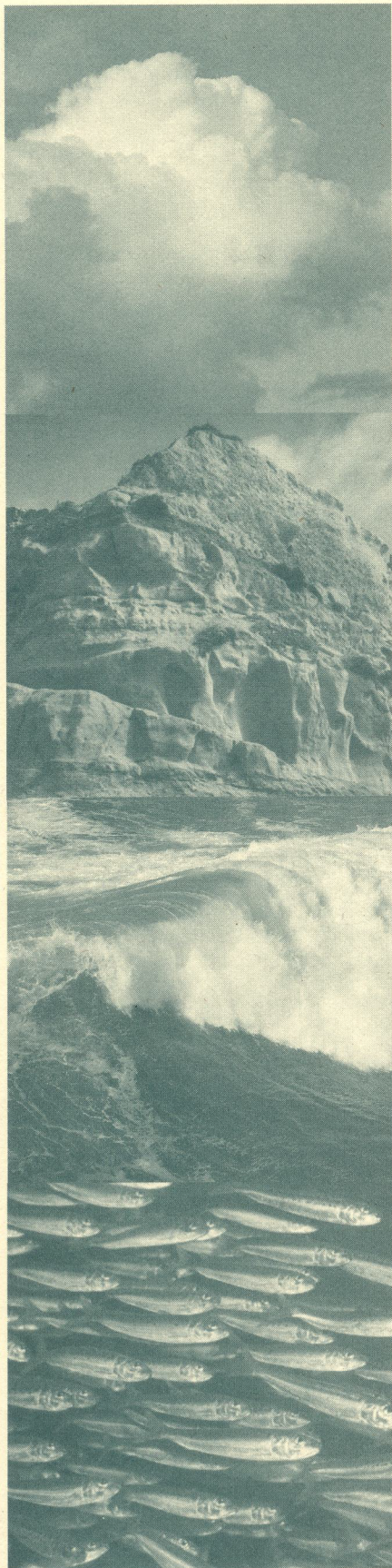
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Game

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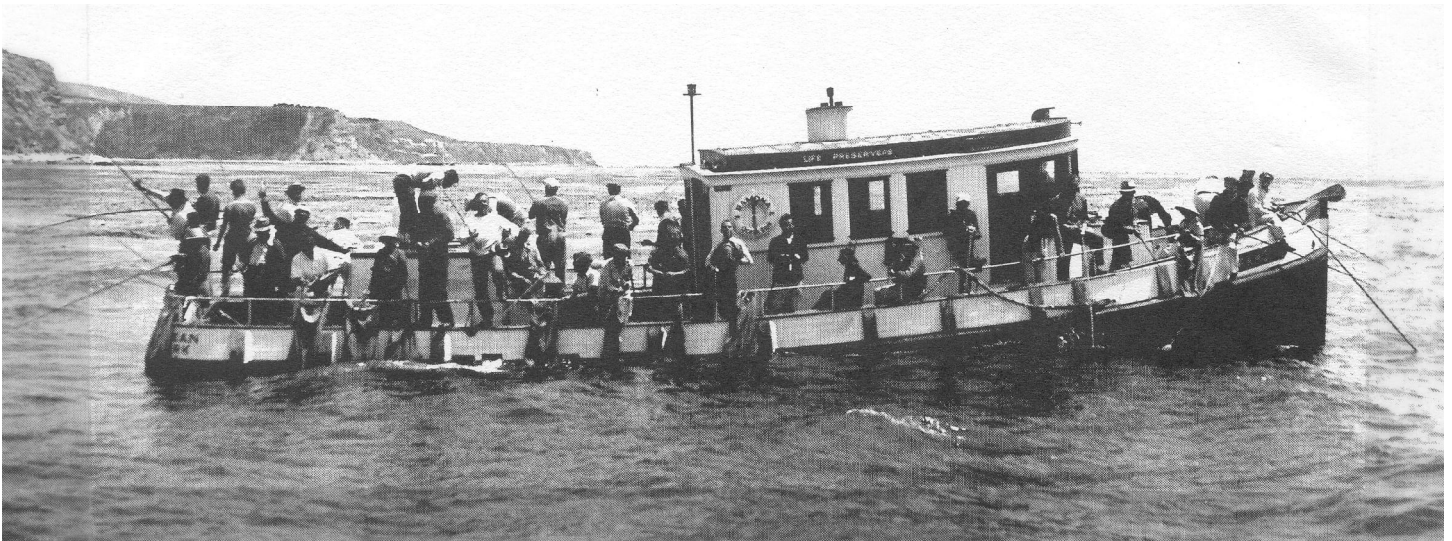
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This report is dedicated to the hundreds of Commercial Passenger Fishing Vessel Skippers who submitted logs to the Department of Fish and Game since implementation of the mandatory reporting system in 1936. Logbook programs such as this are only useful when a good faith effort is put forth on the part of the fishing industry, and this effort is gratefully acknowledged here. We thank the numerous staff of California Department of Fish and Game's Marine Fisheries Statistics Unit that have spent long hours hand-tallying, keypunching, and scanning the logbook data, as well as all biologists in charge of reviewing the data on a regular basis. Cheri Goodall (Action Data, San Diego, CA) provided timely and accurate data entry services throughout the recovery process. This paper is funded by a grant from the National Oceanic and Atmospheric Administration. The views expressed herein are those of the authors and do not necessarily reflect the views of NOAA or any of its subagencies. In-kind support was provided by the California Department of Fish and Game. We thank both agencies for recognizing the value of this long-term data set and supporting its restoration into useful form.



Commercial passenger fishing vessel 'Ramona' off Rocky Pt., California, 1938. Photo by R. S. Croker.

INTRODUCTION

California's commercial passenger fishing vessel (CPFV, or 'partyboat') fleet is among the largest of its kind in the world. CPFV fishing began in California at the turn of the 20th century with boats that seated one or two anglers, but were expensive to hire (Young, 1969). During the 20-year period from 1920 to 1939, however, CPFV fishing came within economic reach of a large number of anglers. Upon resumption of the fishery in 1947, the fleet rapidly expanded throughout the 1950's and 1960's, with vessels increasing in angler capacity and range. Today, the industry offers a great variety of services and target species, and fishing trips may range from hours to weeks at sea. Historical overviews of the California's CPFV fishery have been provided by Baxter and Young (1953), Roedel and Frey (1968), and Young (1969).

Since 1936, CPFV catch logs have been collected on a routine basis by the California Department of Fish and Game (CDFG). Historical CPFV logbook data have a wide range of potential uses in assessment and management of the state's marine sport fish resources. The data provide a wealth of information about the geographic distribution, relative abundance, and diversity of many ecologically- and economically-important fish species and habitat areas off California's coast.

Historical records of catch and occurrence provide species-specific information useful for characterizing long-term changes in the marine fish communities due to fishing activity, habitat alteration, pollution, and natural variability in the environment. Fishery managers might use this information to assess effectiveness of regulations imposed on sport and commercial sectors of the industry. Fishery economists may also use historical data to track trends in effort as related to changing value of the fishery. Long-term catch and occurrence data, meshed with historical oceanographic data (e.g., sea surface temperature from shore stations), will provide an opportunity to investigate potential predictability of future fishing opportunities of migratory species based on seasonal forecasts of climate and oceanic conditions.

Until now, CPFV logbook data have only been available to the public as two-page reports summarizing sport catch by port area for the calendar year. Electronic records of individual trip logs have been maintained by the Department since 1980, but trip-specific logbook records contain confidential information (vessel-specific) and are not available to the general public. From 1936 to 1978, however, the Department maintained an archive of reports (hard copy sheets) which summarize total monthly CPFV catch and effort for CDFG statistical areas ('blocks'). These data are the subject of this report.

In 1997, funding was received from the Saltonstall-Kennedy grant program (NOAA Grant# NA76FD0053 to Schneider, Barnett, and Hill) to recover and analyze these historical logbook summaries (catch and effort by block and month). In this report, we summarize the history of the CPFV logbook reporting system, describe

methods used to recover and verify the archival data, and provide a description of the summary databases. This report is meant to serve as a source of 'metadata' for all potential users of the databases, and will also discuss strengths and weaknesses of the data for use in scientific studies or fishery stock assessments.

CPFV LOGBOOKS

Reporting requirements

In 1935, the California Legislature enacted a bill requiring written catch logs from all CPFV operators. Since then, owners and operators of CPFV's have been required to keep daily trip records of catches made from their boats. Skippers record this information on official forms provided by the Department of Fish and Game and submit them to the Department monthly. The Department has collected and compiled CPFV logbook information since 1936, except six years during World War II (1941-46) when CPFV activity was effectively halted. During this period, many CPFVs were put into service as military transport and supply craft.

Historical and current logbook formats

While design of CPFV logbooks has evolved over time, most variables have been consistently collected from the onset. This information includes: (1) date of fishing, (2) port code or town of landing, (3) boat name, (4) Fish and Game boat number, (5) CDFG block areas fished (primarily 10 minutes latitude x 10 minutes longitude), (6) angler effort (measured various ways), and (7) number of fish kept by species. Different logbook forms have always existed for northern-central and southern California regions, differing only by primary species listed on the forms (Figures 1-6). It is important to note that logbook forms from all eras have allowed CPFV skippers an opportunity to record catch of additional species not listed on the forms. At one time, a separate form was used for the San Francisco Bay estuarine complex.

Method of measuring CPFV fishing effort has changed considerably over time. For the early period of 1936 to 1956, fishing effort was measured primarily as angler-days, recorded on the logs as the number of fishermen in the party (Figures 1 and 2). Starting in 1960, 'number of anglers' and 'hours spent fishing' were added to the logs, enabling a more refined estimate of actual fishing effort calculated as angler-hours (number of anglers multiplied by hours the lines were in the water).

In 1994, many changes to CPFV logbook forms were implemented which continue at present. Additional information on effort was required, including target species, fishing method, bait type, and trip departure and return times. Besides reporting number of fish kept (landed), operators were required to report number of fish thrown back and number lost to seals (sea lions or harbor seals). Sea surface

temperature information was also required. Logbooks expanded from a half page to a full page, scannable form for optical character recognition (OCR) processing (Figures 5 and 6).

HISTORICAL CPFV LOGBOOK DATA ARCHIVE

Historical CPFV logbook data were archived on paper as monthly summaries between 1936 and 1978 by CDFG. The reports, known as 'Report VI' contain monthly fishing effort and catch data for a year, month, and CDFG fishing block. Fishing blocks (or Origin) are a three digit code describing the statistical area where most of the fishing effort was expended for the day. The reports reflect changes in effort reporting over four different periods and summary forms: from 1936 to 1957, effort was given as angler days (Figure 7); from 1957 to 1959, effort was given as angler days and boat days (Figure 8); for 1960 and 1961, effort was angler days, number of anglers, angler hours, and boat days (Figure 9); from 1962 onward, effort was number of anglers, angler hours, and boat days (Figure 10). The effort type 'boat-days' recorded in Report VI was likely a straight-forward count of daily trip logs.

Catch information on all summary forms includes number of each species caught in each block and month. From 1936 to 1956, species are identified on the forms by common names (Figure 7) and were subsequently coded by the data entry subcontractor. For 1957 to 1978, species were identified on the forms by a three digit code which is otherwise referred to as the 'external species code' by the CDFG (Figures 8-10). Data are only provided for months with non-zero effort and catch. In addition, total monthly catch and annual totals of catch and effort were occasionally provided. The paper archive is comprised of approximately 11,900 paper sheets, with about 900 sheets of the oldest form type (Figure 7) and 11,000 machine typed printout pages exist for the three form types from 1957 onward (Figures 8-10). The paper reports are ageing, suffering from mildew, silverfish, and an occasional coffee stain. An undetermined amount of the reports was at one time recorded on microfiche, but some microfiches have suffered from water damage. Duplicate hard copies of these data do not exist elsewhere. The original daily or trip-level catch and effort information for that period are no longer available.

Report VI was not generated in 1979 in the monthly summary format, and the status of an electronic archive is uncertain as of this writing. Attempts have been made to recover data from VAX backup tapes without success. We were, however, able to locate a summary with annual totals of effort and catch by block for 1979, and this data has been incorporated into the database.

In addition to historical data recovered for this project, trip-specific CPFV logbook data for 1980 through 1997 were summarized in non-confidential format for inclusion in this database. Data were summarized in a manner identical to recovered

data, with all vessel- and port-specific information removed.

Time coverage for Report VI summaries varies by geographic location. Southern California blocks have been archived over the longest period, from 1936 onward. Southern California coverage ranges from Pt. Arguello to the U.S.-Mexico border. Baja California blocks cover the second longest period, from 1947 to present. Northern California summary reports begin in 1957, even though the CPFV fishery had begun much earlier. Northern California blocks range from Pt. Arguello to the Oregon border (blocks 100 to 650). More detailed discussion of CDFG statistical areas is provided in the following *Database contents and relevant metadata* section.

DATA RECOVERY AND VERIFICATION

A data entry company (Action Data, San Diego, CA) was subcontracted to double-key enter all paper archive records for the 1936-1978 period. Action Data was provided with preliminary training on interpretation of various species names and coding criteria, and were consulted with on a regular basis to clarify questions on species names and other related issues. A single page form was provided which included effort and species codes. All possible common names were included for each species to avoid confusion. Data files were delivered by Action Data in a series of three batches over a period of five months. Initial spot checks were made to insure that records existed for every block number file, and a random subset of each file was checked for accuracy.

A wide variety of data verification procedures were applied to the database to proof for keypunching and transposition errors as well as potential errors on the original data reports. A brief summary of the procedures used follows.

One fortunate feature of the recovered data was the availability of annual totals for each set of monthly values by data type (species or effort). This allowed for a direct comparison the key-entered annual totals to the sum of all key-entered monthly values. This was a fast and convenient method of checking for keypunching errors, as an error in either a single monthly value or an annual total would result in a balance discrepancy which could be flagged and checked in the original records. This comparison resulted in 476 records with discrepancies. Only 748 (<1%) of all original records had no annual total available on the original forms, and each of these records were checked against the keypunched values. An additional 2,650 database records were randomly selected for validation of accuracy.

Another possible keypunching error was one where correct numbers were entered into the wrong months, so that the comparison of the above mentioned totals was valid, but the data were out of phase by month. These types of errors were identified by creating a new set of relational databases with a calculated catch-per-unit-

effort field in the re-merged files. In the event that catch and effort records for a given block and year were out of phase by month, a zero or out-of-range value was returned in this field. This method enabled direct identification of records out-of-phase, of which approximately 350 were found and corrected. This process also revealed missing effort information in original reports for blocks 701 and 702 for the years 1936-1940.

Duplicate records were another common problem in the database. Duplicate records were identified by creating a field with a unique string of block-year-typecode values. A count was calculated for each unique record, and any record with more than one occurrence was identified and the duplicate removed. A large number of duplicate records were entered in 1957, the year in which hard copy reports transitioned from hand-written copy to tab machine-generated printouts. Both copies were contained in the files and keypunched in the recovery process. These duplicates were also removed.

The database was checked for invalid CDFG block and species codes. Unique lists of block and species codes were generated, sorted, and compared to valid code lists. A number of invalid entries were identified and corrected.

Incorrect entry of valid species or block codes is another possible type of keypunching error. In other words, the data were entered incorrectly, but the incorrectly entered values represent other valid block or species codes. In an effort to identify some of these types of errors, maps were generated to display geographic (CDFG blocks) occurrence of catch. Invalid entries of either code type could result in unusual catch location as revealed on the maps (e.g., yellowfin tuna off Eureka, or scorpionfish 100 miles offshore). A single map generated for each valid species code, summing catch for the entire 1936-1997 period. Numerous invalid entries were found and corrected.

Annual sums of catch were tabulated for major species for comparison to totals reported in annual catch reports distributed by CDFG. While detailed quantitative comparisons of the results are not presented here, these comparisons were meant to serve as a crude data verification method. Most of the database catch totals were similar to previously published data within one percent.

Occurrence of effort type by year was checked by generating tables summarizing effort types totals for each year in the database. This was used to identify invalid effort or year coding from keypunching errors. This also revealed decimal errors in the angler-hours (ANGHRS) and boat-days (BOATDAYS) fields for given report years. An unrealistically high number of BOATDAYS was identified in 1961. Examination of original reports revealed a lack of decimal place in the reports where one should have existed. Since all BOATDAYS data were one order of magnitude higher, 1961 BOATDAYS were divided by 10. A similar type of decimal problem was found for angler-hours in reports from 1960 to 1967. For correction, all angler-hours for

1960-67 were divided by 10.

More than one effort data type was collected from 1960 onward. Paired effort data types were compared using scatter plot diagrams to reveal outliers caused by keypunching or coding errors. The effort database was also queried to compare ratios between each effort pair as another means of revealing data out-of-range.

HISTORICAL CPFV LOGBOOK DATABASES

Database formats

The historical CPFV logbook databases exist in two designs: 'flat' and 'relational' table structures. The flat structure was created for the data recovery (keypunching) process, and has been used by the authors for data verification and other analytical procedures. Structure of the flat file 'CPFV3697.DBF' (dBASE) is defined in Table 1. In the flat file design, each record represents the monthly data sums (effort or species-specific catch) for a given block and year. The last field, TOTAL, gives the annual total across months. TYPECODE field specifies the data type as either effort or species codes (see *Fishing effort* and *Species codes* sections).

The relational databases, derived from the flat file described above, consists of two dBASE V files, 'PM3697H.DBF' (Table 2) and 'PM3697D.DBF' (Table 3). These are header and detail tables with a one-to-many relationship joined by the common field YMMBLK, a unique string composed of the YEAR+MONTH+BLOCK fields. The header table 'PM3697H.DBF' contains effort data for each unique year, month, and block combination (Table 2). The detail table 'PM3697D.DBF' contains reported catch for each unique year, month, and block, with a new record for each unique species kept in that effort stratum (Table 3). In addition, latitude and longitude coordinates (LAT and LONG in decimal degrees) are provided for the lower right-hand coordinate of each respective BLOCK. Effort and catch data from the two tables can be joined through relational query, using YMMBLK as the common, indexed field (Tables 2 and 3).

Database contents and relevant metadata

CDFG statistical block areas: CPFV operators report effort and catch location using the statistical block area system established by CDFG in at least the early 1930's. Illustrations of block locations are provided in Figures 11-15. The blocks are based on the latitude and longitude grid system, with coordinates generally aligned to 10' intervals. All blocks are numbered ranging from the 100's to 900's from north to south, respectively. The majority of blocks are sized as 10' latitude by 10' longitude areas, representing approximately 100 square nautical miles, depending on latitude. Blocks farthest offshore are larger in size, and may represent 20' by 30' or 30' by 30' areas (Figures 11-13).

Statistical areas off Baja California are considerably larger and irregularly shaped (Figure 14), although a small sector of 10' by 10' blocks (901, 902, 903, 904, 916) was established to gather more detailed data from the northern-most sector between Mesquite Point and the U.S.-Mexico border out to the Coronado Islands (Figure 15; Roedel and Frey, 1968). Some catch off Mexico is reported only by crude latitudinal strata (e.g. blocks 910, 920, 930; Figure 14).

In some cases, generic numbers have been used to general latitudinal strata in cases where location was not reported but the vessel is known to operate in a certain area on a regular basis. Generic block areas are numbered as 100 or 199 for 100-series blocks, 200 or 299 for 200-series blocks, etc.

Time-area coverage: In practice, and for purposes of this report, broad latitudinal divisions along the California- Baja California coast may be made at Pt. Arguello (near Pt. Conception) and the U.S.-Mexico border. Blocks with numbers ranging from 100 to 650 constitute the northern-central California region. Southern California blocks are numbered from 651 to 899, and Baja California blocks are numbered as a 900 series.

Recovered data from Report VI summaries were available for differing time ranges depending upon geographic region. Summaries for southern California blocks (651-899) date back to 1936. Baja California records (≥ 900) range from 1947 to present, and northern-central California blocks are only available back to 1957.

Fishing effort: As stated previously, fishing effort data has been measured in various ways from 1936 to the present. Effort types in the databases include angler-days (1936-1961), angler-hours (1960-present), number of anglers (1960-present), boat days (1957-1979), boat hours (1980-present), and number of trips (1980-present). Effort data are coded numerically in the flat file 'CPFV3697.DBF' (Table 4), and broken out as separate fields in the relational file 'PM3697H.DBF' (Table 2).

Fishing effort types are defined as follows:

ANGDAYS (Angler-day): one full day of angling by one fisherman, as on an all-day boat (Young, 1969).

ANGHRS (Angler-hours): one full hour of angling by one fisherman. On vessel trip logs, angler-hours is the total number of anglers on-board multiplied by the total hours the vessel spent fishing. This factor is summed for block and month on Report VI records as recorded in the databases.

NUMANG (Number of anglers): total number of fishermen. On daily trip logs, *number of anglers* is the total number of anglers on-board a vessel during the trip. This value is summed for block and month on Report VI records as recorded in the databases.

BOATDAYS (Boat-days): one day of fishing by one CPFV. Derived directly from Report VI, but actual meaning has yet to be defined. Probably comparable in value to *number of trips*.

BOATHRS (Boat-hour): one full hour of fishing by one CPFV. Based on sums from individual trip records for 1980-present.

NUMTRIPS (Number of trips): number of CPFV trips made to a block in a given month. Probably comparable in value to *boat-day*, but this has yet to be confirmed.

Effort data conversion: Of the various measures of fishing effort available, *angler-days* and *angler-hours* are likely the best measures for calculating total effort or catch-per-unit-effort (CPUE). Both are factors based on number of anglers fishing and time spent fishing and are therefore the highest resolution data for CPUE estimation. *Angler-day* data were collected from 1936 through 1961 and *angler-hours* were collected from 1960-present, giving an incomplete time series for both effort types and only two years (1960 and 1961) where both data types were estimated. We used the 1960-61 data to calculate conversion factors between the two types and fill in the time series forward and backward in time.

Initial examination of these factors by latitudinal strata (block series 100, 200, 300, etc.) revealed differences in conversion coefficients among areas (Table 5; Figure 16. This probably reflects regional differences in length of fishing day. For this reason, we used series-specific conversion coefficients to calculate effort data for missing years. A dBASE script was written to replace missing ANGDAYs using ANGHRS for 1962-1997 and replace missing ANGHRS using ANGDAYs for 1936-1959 using these coefficients (Table 5).

This process effectively replaced the majority of missing data, however, there were small remaining number of missing ANGHRS cases where the source ANGDAYs data type was missing. To replace these missing values, we used conversion factors derived from the regression of ANGHRS to NUMANG for 1960-1997 (Table 6).

Species codes: Three-digit numeric codes were used to identify finfish and invertebrate species contained in the databases. The codes were developed by CDFG decades ago, and are commonly referred to as 'external species codes'. A complete list of species contained in the historical database is provided in Table 7. A comprehensive list of CDFG external codes is also provided in the file 'SPECIES.DBF'. Species codes are contained in the TYPECODE field of 'CPFV3697.DBF' and the SPECIES field of 'PM3697D.DBF'.

HISTORICAL CPFV EFFORT AND CATCH

Fishing Effort

The historical database represents fishing effort of over 338 million angler hours among areas and respective time periods. The data set allows investigations of the trend in total effort (all areas) from 1957 to 1997. During this time, effort increased from a low of approximately 2.73 million angler hours in 1960 to a peak period of between 3.77 to 4.4 million angler hours between 1966 and 1973 (Figure 17). Angler hours subsequently declined to a lower average level of 3.57 million between 1975 and 1996. Effort reached an all-time peak in 1997 at close to 4.57 million angler hours (Figure 17).

CPFV angling effort varies considerably among areas. Highest overall CPFV effort has been off the southern California coast. For the period 1936-97, southern California effort averaged close to 1.9 million angler hours, and has steadily fluctuated between 1.64 and 2.83 million angler hours since 1947 (Figure 18). Southern California effort peaked in 1997 at 2.835 million angler hours.

Northern-central California had the second-highest level of effort, with an average of close to 930,000 angler hours between 1957 and 1997 (Figure 18). Effort increased steadily between 1957 and 1973, peaking at 1.26 million angler hours. Effort has declined gradually since 1973, reaching a low of 765,193 angler hours in 1996 (Figure 18).

CPFV effort off Baja California has averaged 527,136 for the period 1947-97. Effort increased steadily between 1947 and 1972, peaking at an all time high of 969,695 angler hours (Figure 18). Effort levels off Baja have dropped to slightly lower levels in recent years, but has peaked again in 1984 and 1997 during major El Nino events. Effort off Baja California reached levels comparable to northern-central California during both of those years (Figure 18).

CPFV fishing effort has a pronounced seasonal component in all areas (Young, 1969). We examined monthly sums of angler hours for respective time periods covered for each area to verify this aspect of the recovered database. Southern California monthly sums (1936-97) illustrate a seasonal peak in July and August, with the least amount of effort in December and January (Figure 19). Northern-central California effort also peaked in July and August, with the lowest months being in December and January. Similarly, Baja California effort peaked in August, with a more extended period of inactivity from November through March (Figure 19). The seasonal pattern for northern California differed from southern and Baja California by having nearly equal effort from March to May.

Since 1936, CPFV fishing effort has expanded geographically over time. Early- and late-period maps generated from the database revealed that the majority of effort

was concentrated nearshore, close to mainland California, during the period 1936-40 (Figure 20). By 1993-97, CPFVs have grown in size, speed, and capacity, the fishery has rapidly expanded to the Channel Islands and offshore banks (Figure 21).

Species Composition

The database includes catch records for a total of 266 marine fish and invertebrate species. An alphabetical listing of common names, scientific names, and species codes is provided in Table 7.

Geographic differences exist in predominant species targeted and landed by CPFVs. Lists of species landed off northern-central California, southern California, and Baja California may be found in Tables 8-10. The top-ten species/groups landed by CPFV anglers off northern-central California between 1957 and 1997 were: rockfish (primarily unspecified *Sebastes*, but also many black rockfish and yellowtail rockfish), salmon (chinook and coho), lingcod, striped bass, Pacific mackerel, flounder (unspecified), jack mackerel, albacore, cabezon, and sablefish (Table 8).

The top ten species landed by CPFV anglers off southern California between 1936 and 1997 were: rockfish (unspecified), rock bass (kelp and barred sand bass), bonito, Pacific mackerel, barracuda, scorpionfish, halfmoon, California halibut, yellowtail, and ocean whitefish (Table 9). Off Baja California, the top ten species landed by CPFV anglers between 1947 and 1997 were: yellowtail, rockfish (unspecified), albacore, bonito, barracuda, rock bass (kelp or barred sand bass), yellowfin tuna, Pacific mackerel, scorpionfish, and skipjack tuna (Table 10).

Sample Catch Trends for Select Species

Albacore tuna: Albacore, or “longfin”, tuna is highly desirable species targeted opportunistically by CPFVs. The annual catch by CPFV anglers is highly variable since availability is dependent on prevalent oceanic conditions (Figure 22). Albacore catch off southern California was highest in the 1950s and 1960s, with catch peaking at approximately 175,000 fish in 1952 and 180,000 fish in 1962. Catch off southern California has remained at relatively low levels since the late 1960s. Albacore catch off Baja California has also been variable, with highest levels occurring between 1962 and 1986. Baja catch peaked at over 190,000 fish in 1984 (Figure 22). Catch has been depressed since the mid-1980s, but underwent a minor resurgence in 1997, perhaps associated with El Niño conditions. Albacore are also caught in CPFV trips originating out of San Francisco and Monterey, but total catch off central California has been low relative to southern and Baja California (Figure 22).

Barracuda: California barracuda has long been an important component of the southern California sport fish catch. Barracuda range from Kodiak Island, Alaska to Cabo San Lucas, Baja California, but the population center ranges from San Quintin, Mexico, to Pt. Conception, California. They are primarily targeted during nearshore surface fishing trips off southern California and northern Baja California (Coronado

Islands). Catch off southern California declined between 1947 and 1956, but underwent a dramatic peak at close to 1.2 million fish in 1959 associated with a strong El Niño event (Figure 23). Catch dropped to negligible levels between 1970 and the mid-1980s, but has trended steadily upward. The recent resurgence of barracuda abundance off southern California may be related to the general warming trend which began in 1977. Barracuda are occasionally caught in small numbers off central and northern California during warm water events.

Pacific Bonito: The Pacific bonito has been ranked among the top ten species sought by CPFV anglers off southern California (Young, 1969). Historically, bonito landings were highest in the 1960's, ranging between 700 thousand and 1.3 million fish. There was a second resurgence in catch which peaked at 645 thousand fish in 1981 (Figure 24). Catch has been variable over the past fifteen years, declining over 80% since 1981. The drop in CPFV landings has been matched by similar decreases in commercial landings, indicating an overall decline in abundance. Bonito occasionally extend their range into northward with warming sea temperatures.

Ocean whitefish: Ocean whitefish, a popular sport fish in southern California, are typically caught in bottom fishing trips off the Channel Islands and offshore banks. The steady increase landings since the mid-1970s (Figure 25) is likely due to increased angler retention coincident with decreased rockfish availability over the same period. The southern California population is derived from Baja California, so this catch trend may also be associated with the current warm water regime. Ocean whitefish catch peaked at 130,000 fish in 1995 (Figure 25).

Yellowtail: The sport fishery for yellowtail has existed since the late 1800's. Yellowtail are targeted on CPFV trips off southern California and northern Baja California. Catch off both areas has been highly variable over the historic data period, and is dependent on whether warm water conditions are prevalent off northern Baja California (Figure 26). Strong catches off both areas have occurred during El Niño events in the 1959, 1973, 1983, and 1997.

DATA CAVEATS

The recovered data are based on summary reports generated by CDFG and not the original logbook forms, therefore, overall accuracy of the data cannot be confirmed. As such, the databases likely contain miscellaneous errors introduced during processing and tabulation of original logbook submissions over the historical period. In addition, the databases will contain any errors or biases contained on original logs, such as over- or under-reporting, species misidentifications, or inaccurate fishing location.

Effort data in the databases represents all CPFV effort expended on a given block and month, and is not trip- or target-specific. Care should be taken to examine catch composition within a given block and examine monthly trends in catch for surface and bottom species. When analyzing the data for CPUE trends, the user should take into account proportion of surface v. bottom species caught on a given block and standardize accordingly. In addition, effort represented in irregularly-shaped areas off Baja California (e.g. block 910, Figure 14) is different than blocks off California or smaller blocks off the Coronado Islands and Ensenada (Figure 15), therefore no attempt should be made to pool CPUE estimates between these areas.

Effective effort (fishing power) has changed over the history of this fishery. CPFVs are now larger, faster, and travel longer distances. Fish-finding technologies have evolved dramatically since the 1930's. Navigation tools have evolved from dead reckoning to LORAN, SatNav, and global position system (GPS) instrumentation. Sounding devices for locating fish schools and bottom habitat have similarly improved. Modern fishing tackle is also vastly different from that of yesteryear (e.g. cotton string v. monofilament line).

Angler preferences have changed on a decadal scale, and the likelihood of anglers retaining a given species will depend upon availability of more preferred target species as well as perceived value by various cultures involved in this fishery. For example, species such as scorpionfish, halfmoon, sheephead, ocean whitefish, and Pacific mackerel are more likely to be retained in recent decades as availability of rockfishes has declined (Hill and Barnes 1998).

The user is reminded that only annual aggregate data exist for 1979. The databases will be updated with the monthly data if and when they become available.

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Table 1. Table structure for flat database file 'CPFV3697.DBF'.

NAME	TYPE	WIDTH	DECIMAL	INDEX	DESCRIPTION
YEAR	Num	2	0	None	Year of fishing
BLOCK	Num	3	0	None	CDFG fishing block where fishing occurred
TYPECODE	Num	3	0	None	Data type code (Catch or effort); see Tables X & X
JAN	Num	12	1	None	Sum for January
FEB	Num	12	1	None	Sum for February
MAR	Num	12	1	None	Sum for March
APR	Num	12	1	None	Sum for April
MAY	Num	12	1	None	Sum for May
JUN	Num	12	1	None	Sum for June
JUL	Num	12	1	None	Sum for July
AUG	Num	12	1	None	Sum for August
SEP	Num	12	1	None	Sum for September
OCT	Num	12	1	None	Sum for October
NOV	Num	12	1	None	Sum for November
DEC	Num	12	1	None	Sum for December
TOTAL	Num	12	1	None	Total value for all months

Table 2. Table structure for relational dBASE header file 'PM3697H.DBF'. YYMMBLK field is indexed to create a relational link with detail file 'PM3697D.DBF'.

NAME	TYPE	WIDTH	DECIMAL	INDEX	DESCRIPTION
YYMMBLK	Num	7	0	Ascend	Unique string based on YEAR+MONTH+BLOCK
YEAR	Num	2	0	None	Year of fishing
MONTH	Num	2	0	None	Month of fishing
BLOCK	Num	3	0	None	CDFG fishing block where fishing occurred
LAT	Num	8	6	None	Latitude in decimal degrees
LONG	Num	10	6	None	Longitude in decimal degrees
ANGDAYS	Num	12	1	None	Number of Angler Days
BOATDAYS	Num	12	1	None	Number of Boat Days
NUMANG	Num	12	1	None	Number of Anglers
ANGHRS	Num	12	1	None	Number of Angler Hours (Anglers x Hours)
BOATHRS	Num	12	1	None	Number of Boat Hours
NUMTRIPS	Num	12	1	None	Number of Trips

Table 3. Table structure in relational dBASE detail file 'PM3697D.DBF'. YYMMBLK field is indexed to link to header file 'PM3697H.DBF'.

NAME	TYPE	WIDTH	DECIMAL	INDEX	DESCRIPTION
YYMMBLK	Num	7	0	Ascend	Unique string based on YEAR+MONTH+BLOCK
SPECIES	Num	3	0	None	CDFG external species code
NUMBER	Num	12	0	None	Number of fish kept

Table 4. Effort codes used in 'CPFV3697.DBF' file as listed in the TYPECODE field.

<u>Typecode</u>	<u>Effort type and time coverage</u>
-2	Angler days (collected 1936-1961; estimated for 1962-1997)
-3	Boat days (collected 1957-1979)
-4	Number of Anglers (1960-1997)
-5	Angler Hours (collected 1960-1997; estimated for 1936-1959)
-6	Vessel Hours (collected 1980-1997)
-7	Number of Trips (equivalent to boat days; collected 1980-1997)

Table 5. Coefficients used to convert effort data between angler-hours and angler-days for missing years or cells, where: $ANGHRS=m(ANGDAYS)$.

<u>Blocks</u>	<u>m</u>	<u>r²</u>
100	3.774	0.979
200	5.465	0.986
300	4.870	0.966
400	4.870	0.966
500	5.400	0.947
600	5.272	0.980
700	6.015	0.993
800	6.122	0.986
900	5.634	0.998

Table 6. Coefficients used to convert effort data between angler-hours and number of anglers for missing years or cells, where: $ANGHRS=m(NUMANG)$.

<u>Blocks</u>	<u>m</u>	<u>r²</u>
100	4.545	0.904
200	4.714	0.963
300	5.288	0.962
400	5.161	0.972
500	4.431	0.952
600	4.146	0.911
700	4.281	0.925
800	4.019	0.950
900	8.404	0.969

Table 7. Alphabetical list of species and codes present in the historical CPFV database. See Tables 8, 9, and 10 for total numbers of fish kept by geographic region and respective time coverage.

COMMON NAME	SCIENTIFIC NAME	CODE
Abalone	<i>Haliotis spp.</i>	700
Abalone, green	<i>Haliotis fulgens</i>	703
Abalone, pink	<i>Haliotis corrugata</i>	704
Abalone, red	<i>Haliotis rufescens</i>	702
Abalone, threaded	<i>Haliotis assimilis</i>	706
Abalone, white	<i>Haliotis sorenseni</i>	705
Anchovy, northern	<i>Engraulis mordax</i>	110
Anchovy, slough	<i>Anchoa delicatissima</i>	113
Barracuda, California	<i>Sphyraena argentea</i>	130
Bass, barred sand	<i>Paralabrax nebulifer</i>	278
Bass, giant sea	<i>Stereolepis gigas</i>	280
Bass, kelp	<i>Paralabrax clathratus</i>	277
Bass, rock	<i>Paralabrax spp.</i>	275
Bass, spotted sand	<i>Paralabrax maculatofasciatus</i>	276
Bass, striped	<i>Morone saxatilis</i>	335
Blackfish, Sacramento	<i>Orthodon microlepidotus</i>	349
Blacksmith	<i>Chromis punctipinnis</i>	479
Bonefish	<i>Albula vulpes</i>	477
Bonito, Pacific	<i>Sarda chiliensis</i>	3
Butterfish (Pacific pompano)	<i>Peprilus simillimus</i>	80
Cabezon	<i>Scorpaenichthys marmoratus</i>	261
Cabrilla, spotted	<i>Epinephelus analogus</i>	431
Carp	<i>Cyprinus carpio</i>	345
Catfish, unspecified	<i>Siluriformes</i>	320
Chiton, unspecified	<i>Polyplacophora</i>	860
Clam, California jackknife	<i>Tagelus californianus</i>	728
Clam, Pismo	<i>Tivela stultorum</i>	722
Cod, Pacific	<i>Gadus macrocephalus</i>	197
Corbina, California	<i>Menticirrhus undulatus</i>	426
Corvina, shortfin	<i>Cynoscion parvipinnis</i>	427
Crab, Dungeness	<i>Cancer magister</i>	800
Crab, box	<i>Lopholithodes foraminatus</i>	809
Crab, pelagic red	<i>Pleuroncodes planipes</i>	807
Crab, rock unspecified	<i>Cancer spp.</i>	801
Crab, spider	<i>Loxorhynchus spp.</i>	803
Croaker, black	<i>Cheilotrema saturnum</i>	421
Croaker, spotfin	<i>Roncador stearnsii</i>	422
Croaker, unspecified	<i>Sciaenidae</i>	420
Croaker, white	<i>Genyonemus lineatus</i>	435
Croaker, yellowfin	<i>Umbrina roncador</i>	423
Crustacean, unspecified	<i>Crustacea</i>	899
Cucumber, sea	<i>Holothuroidea</i>	755
Dolphinfish	<i>Coryphaena hippurus</i>	481
Echinoderm, unspecified	<i>Echinodermata</i>	750
Eel	<i>Osteichthyes</i>	450
Eel, California moray	<i>Gymnothorax mordax</i>	452
Eel, blenny	<i>Lumpenus anguillaris</i>	451
Eel, monkeyface	<i>Cebidichthys violaceus</i>	456
Eel, spotted cusk-	<i>Chilara taylori</i>	455
Eel, wolf (wolf-eel)	<i>Anarrhichthys ocellatus</i>	454
Escolar	<i>Lepidocybium flavobrunneum</i>	15
Eulachon	<i>Thaleichthys pacificus</i>	188
Fish, unspecified	<i>Osteichthyes</i>	999
Flounder, starry	<i>Platichthys stellatus</i>	231
Flounder, unspecified	<i>Pleuronectidae</i>	230
Flyingfish	<i>Exocoetidae spp.</i>	445
Garibaldi	<i>Hypsypops rubicundus</i>	482
Goby, yellowfin	<i>Acanthogobius flavimanus</i>	487

Table 7. Species codes (continued).

COMMON NAME	SCIENTIFIC NAME	CODE
Greenling, kelp	<i>Hexagrammos decagrammus</i>	290
Grenadiers	<i>Macrouridae</i>	198
Grouper	<i>Mycteroperca / Epinephelus</i>	430
Grouper, broomtail	<i>Mycteroperca xenarcha</i>	432
Grunion, California	<i>Leuresthes tenuis</i>	181
Guitarfish, shovelnose	<i>Rhinobatos productus</i>	174
Hagfishes	<i>Eptatretus spp.</i>	457
Halfmoon	<i>Medialuna californiensis</i>	478
Halibut, California	<i>Paralichthys californicus</i>	222
Halibut, Pacific	<i>Hippoglossus stenolepis</i>	221
Halibut, unspecified	<i>Pleuronectiformes</i>	220
Herring roe on kelp	<i>Clupea/algae</i>	995
Herring, Pacific	<i>Clupea pallasii</i>	121
Herring, round	<i>Etrumeus teres</i>	105
Jack, Pacific crevalle	<i>Caranx caninus</i>	41
Jack, almaco (amberjack)	<i>Seriola rivoliana</i>	43
Jacks, unspecified	<i>Carangidae</i>	42
Jacksmelt	<i>Atherinopsis californiensis</i>	184
Kelp	<i>Macrocystis spp.</i>	950
Kelpfish, giant	<i>Heterostichus rostratus</i>	501
Kelpfishes	<i>Gibbonsia spp.</i>	510
Killifish, California	<i>Fundulus parvipinnis</i>	491
Limpet, unspecified	<i>Archaeogastropoda</i>	709
Lingcod	<i>Ophiodon elongatus</i>	195
Lizardfish, California	<i>Synodus lucioceps</i>	473
Lobster, California spiny	<i>Panulirus interruptus</i>	820
Mackerel, Pacific	<i>Scomber japonicus</i>	51
Mackerel, bullet	<i>Auxis rochei</i>	19
Mackerel, jack	<i>Trachurus symmetricus</i>	55
Mackerel, unspecified	<i>Scomber / Trachurus</i>	50
Marlin, striped	<i>Tetrapturus audax</i>	92
Midshipman, plainfin	<i>Porichthys notatus</i>	485
Mollusk, unspecified	<i>Mollusca</i>	799
Mudsucker, longjaw	<i>Gillichthys mirabilis</i>	483
Mullet, striped	<i>Mugil cephalus</i>	135
Mussel	<i>Mytilus spp.</i>	730
Needlefish, California	<i>Strongylura exilis</i>	476
Octopus, unspecified	<i>Octopus spp.</i>	712
Oilfish	<i>Ruvettus pretiosus</i>	17
Opah	<i>Lampris guttatus</i>	467
Opaleye	<i>Girella nigricans</i>	475
Oyster, giant Pacific	<i>Crassostrea gigas</i>	743
Oyster, unspecified	<i>Ostreidae</i>	740
Queenfish	<i>Seriphus politus</i>	440
Ratfish, spotted	<i>Hydrolagus colliei</i>	166
Ray, Pacific electric	<i>Torpedo californica</i>	172
Ray, bat	<i>Myliobatis californica</i>	171
Ray, unspecified	<i>Rajiformes</i>	170
Rockfish, China	<i>Sebastes nebulosus</i>	258
Rockfish, Pacific ocean perch	<i>Sebastes alutus</i>	271
Rockfish, bank	<i>Sebastes rufus</i>	663
Rockfish, black	<i>Sebastes melanops</i>	252
Rockfish, black-and-yellow	<i>Sebastes chrysomelas</i>	251
Rockfish, blue	<i>Sebastes mystinus</i>	665
Rockfish, bocaccio	<i>Sebastes paucispinis</i>	253
Rockfish, bronzespotted	<i>Sebastes gilli</i>	662
Rockfish, brown	<i>Sebastes auriculatus</i>	267
Rockfish, calico	<i>Sebastes dallii</i>	671
Rockfish, canary	<i>Sebastes pinniger</i>	247
Rockfish, chilipepper	<i>Sebastes goodei</i>	254
Rockfish, copper	<i>Sebastes caurinus</i>	655
Rockfish, copper (whitebelly)	<i>Sebastes caurinus</i>	246

Table 7. Species codes (continued).

COMMON NAME	SCIENTIFIC NAME	CODE
Rockfish, cowcod	<i>Sebastes levis</i>	245
Rockfish, flag	<i>Sebastes rubrivinctus</i>	657
Rockfish, gopher	<i>Sebastes carnatus</i>	263
Rockfish, grass	<i>Sebastes rastrelliger</i>	652
Rockfish, greenblotched	<i>Sebastes rosenblatti</i>	661
Rockfish, greenspotted	<i>Sebastes chlorostictus</i>	255
Rockfish, greenstriped	<i>Sebastes elongatus</i>	654
Rockfish, group bolina	<i>Sebastes/group</i>	957
Rockfish, group gopher	<i>Sebastes/group</i>	962
Rockfish, group red	<i>Sebastes/group</i>	959
Rockfish, honeycomb	<i>Sebastes umbrosus</i>	660
Rockfish, kelp	<i>Sebastes atrovirens</i>	659
Rockfish, olive	<i>Sebastes serranoides</i>	651
Rockfish, pink	<i>Sebastes eos</i>	653
Rockfish, redbanded	<i>Sebastes babcocki</i>	675
Rockfish, rosy	<i>Sebastes rosaceus</i>	268
Rockfish, speckled	<i>Sebastes ovalis</i>	669
Rockfish, splitnose	<i>Sebastes diploproa</i>	270
Rockfish, squarespot	<i>Sebastes hopkinsi</i>	666
Rockfish, starry	<i>Sebastes constellatus</i>	256
Rockfish, treefish	<i>Sebastes serriceps</i>	658
Rockfish, unspecified	<i>Sebastes spp.</i>	250
Rockfish, vermilion	<i>Sebastes miniatus</i>	249
Rockfish, widow	<i>Sebastes entomelas</i>	269
Rockfish, yelloweye	<i>Sebastes ruberrimus</i>	265
Rockfish, yellowtail	<i>Sebastes flavidus</i>	259
Sablefish	<i>Anoplopoma fimbria</i>	190
Sailfish	<i>Istiophorus platypterus</i>	95
Salema	<i>Xenistius californiensis</i>	484
Salmon	<i>Oncorhynchus spp.</i>	300
Salmon, chinook	<i>Oncorhynchus tshawytscha</i>	302
Salmon, coho	<i>Oncorhynchus kisutch</i>	304
Salmon, pink	<i>Oncorhynchus gorbuscha</i>	303
Sanddab	<i>Citharichthys spp.</i>	225
Sanddab, Pacific	<i>Citharichthys sordidus</i>	227
Sanddab, longfin	<i>Citharichthys xanthostigma</i>	226
Sanddab, speckled	<i>Citharichthys stigmaeus</i>	228
Sardine, Pacific	<i>Sardinops sagax caeruleus</i>	100
Sargo	<i>Anisotremus davidsonii</i>	480
Scallop, rock	<i>Crassadoma gigantea</i>	718
Scallop, unspecified	<i>Pectinidae</i>	719
Scorpionfish, California	<i>Scorpaena guttata</i>	260
Sculpin, staghorn	<i>Leptocottus armatus</i>	272
Sculpin, yellowchin	<i>Icelinus quadriseriatus</i>	273
Sea slug	<i>Opisthobranchia</i>	729
Sea stars	<i>Asteroidea</i>	751
Seabass, white	<i>Atractoscion nobilis</i>	400
Senorita	<i>Oxyjulis californica</i>	144
Shad, American	<i>Alosa sapidissima</i>	325
Shad, threadfin	<i>Dorosoma petenense</i>	324
Shark, Pacific angel	<i>Squatina californica</i>	165
Shark, basking	<i>Cetorhinus maximus</i>	156
Shark, bigeye thresher	<i>Alopias superciliosus</i>	97
Shark, blacktip	<i>Carcharhinus limbatus</i>	149
Shark, blue	<i>Prionace glauca</i>	167
Shark, brown smoothhound	<i>Mustelus henlei</i>	154
Shark, dusky	<i>Carcharhinus obscurus</i>	164
Shark, gray smoothhound	<i>Mustelus californicus</i>	179
Shark, horn	<i>Heterodontus francisci</i>	169
Shark, leopard	<i>Triakis semifasciata</i>	153
Shark, pelagic thresher	<i>Alopias pelagicus</i>	98
Shark, salmon	<i>Lamna ditropis</i>	168

Table 7. Species codes (continued).

COMMON NAME	SCIENTIFIC NAME	CODE
Shark, sevengill	<i>Notorynchus cepedianus</i>	162
Shark, shortfin mako	<i>Isurus oxyrinchus</i>	151
Shark, sixgill	<i>Hexanchus griseus</i>	161
Shark, smooth hammerhead	<i>Sphyrna zygaena</i>	158
Shark, soupfin	<i>Galeorhinus zyopterus</i>	159
Shark, spiny dogfish	<i>Squalus acanthias</i>	152
Shark, swell	<i>Cephaloscyllium ventriosum</i>	163
Shark, thresher	<i>Alopias vulpinus</i>	155
Shark, unspecified	<i>Selachii spp.</i>	150
Shark, white	<i>Carcharodon carcharias</i>	96
Sharks, cow	<i>Hexanchidae</i>	160
Sheephead, California	<i>Semicossyphus pulcher</i>	145
Shrimp, ghost	<i>Callinassa californiensis</i>	811
Shrimp, unspecified	<i>Crustacea</i>	814
Sierra, Pacific	<i>Scomberomorus sierra</i>	52
Silversides	<i>Atherinidae</i>	189
Skate, California	<i>Raja inornata</i>	177
Skate, big	<i>Raja binoculata</i>	176
Skate, thornback	<i>Platyrhinoidis triseriata</i>	178
Skate, unspecified	<i>Rajidae</i>	175
Smelt, night	<i>Spirinchus starksi</i>	187
Smelt, surf	<i>Hypomesus pretiosus</i>	182
Smelt, whitebait	<i>Allosmerus elongatus</i>	185
Smelts, true	<i>Osmeridae</i>	180
Snail, sea	<i>Gastropoda</i>	732
Snapper -Mexico-	<i>Lutianidae</i>	415
Sole, Dover	<i>Microstomus pacificus</i>	211
Sole, English	<i>Pleuronectes vetulus</i>	206
Sole, bigmouth	<i>Hippoglossina stomata</i>	202
Sole, butter	<i>Pleuronectes isolepis</i>	208
Sole, fantail	<i>Xystreurys liolepis</i>	204
Sole, petrale	<i>Eopsetta jordani</i>	209
Sole, rex	<i>Errex zachirus</i>	207
Sole, rock	<i>Pleuronectes bilineata</i>	203
Sole, sand	<i>Psettichthys melanostictus</i>	205
Sole, unspecified	<i>Pleuronectiformes</i>	200
Squawfish	<i>Ptychocheilus grandis</i>	365
Squid, jumbo	<i>Dosidicus gigas</i>	710
Squid, market	<i>Loligo opalescens</i>	711
Stickleback, threespine	<i>Gasterosteus aculeatus</i>	361
Stingray	<i>Dasyatidae</i>	173
Sturgeons	<i>Acipenseridae</i>	470
Sunfish, ocean	<i>Mola mola</i>	292
Surfperch, barred	<i>Amphistichus argenteus</i>	551
Surfperch, black	<i>Embiotoca jacksoni</i>	552
Surfperch, calico	<i>Amphistichus koelzi</i>	560
Surfperch, pile	<i>Rhacochilus vacca</i>	559
Surfperch, rainbow	<i>Hypsurus caryi</i>	562
Surfperch, redtail	<i>Amphistichus rhodoterus</i>	553
Surfperch, rubberlip	<i>Rhacochilus toxotes</i>	558
Surfperch, shiner	<i>Cymatogaster aggregata</i>	554
Surfperch, unspecified	<i>Embiotocidae</i>	550
Surfperch, walleye	<i>Hyperprosopon argenteum</i>	557
Surfperch, white	<i>Phanerodon furcatus</i>	556
Swordfish	<i>Xiphias gladius</i>	91
Tomcod, Pacific	<i>Microgadus proximus</i>	196
Topsmelt	<i>Atherinops affinis</i>	186
Triggerfish	<i>Balistidae</i>	291
Trout, rainbow	<i>Oncorhynchus mykiss</i>	316
Tuna, albacore	<i>Thunnus alalunga</i>	5
Tuna, bigeye	<i>Thunnus obesus</i>	8
Tuna, blackfin	<i>Thunnus atlanticus</i>	12

Table 7. Species codes (continued).

COMMON NAME	SCIENTIFIC NAME	CODE
Tuna, bluefin	<i>Thunnus thynnus</i>	4
Tuna, longtail	<i>Thunnus tonggol</i>	11
Tuna, skipjack	<i>Katsuwonus pelamis</i>	2
Tuna, skipjack, black	<i>Euthynnus lineatus</i>	9
Tuna, unspecified	<i>Scombridae</i>	6
Tuna, yellowfin	<i>Thunnus albacares</i>	1
Tunicates	<i>Urochordata</i>	840
Turbot	<i>Pleuronectidae</i>	240
Turbot, curlfin	<i>Pleuronichthys decurrens</i>	235
Turbot, hornyhead	<i>Pleuronichthys verticalis</i>	238
Turbot, spotted	<i>Pleuronichthys ritteri</i>	239
Turtle	<i>Chelonia mydas</i>	930
Urchin, red	<i>Strongylocentrotus franciscanu</i>	752
Urchin, white	<i>Lytechinus anamesus</i>	756
Wahoo	<i>Acanthocybium solanderi</i>	57
Whitefish, ocean	<i>Caulolatilus princeps</i>	490
Whiting, Pacific	<i>Merluccius productus</i>	495
Wrasse, rock	<i>Halichoeres semicinctus</i>	146
Yellowtail	<i>Seriola lalandi</i>	40
Zebraperch	<i>Hermosilla azurea</i>	602

Table 8. Species present in the historical CPFV database in northern-central California (blocks<651) for the period 1957-1997, listed in order of abundance (number kept).

COMMON NAME	SCIENTIFIC NAME	NUMBER KEPT
Rockfish, unspecified	<i>Sebastes spp.</i>	42,366,069
Salmon	<i>Oncorhynchus spp.</i>	2,965,199
Lingcod	<i>Ophiodon elongatus</i>	1,590,218
Rockfish, black	<i>Sebastes melanops</i>	1,146,297
Bass, striped	<i>Morone saxatilis</i>	611,337
Rockfish, yellowtail	<i>Sebastes flavidus</i>	519,171
Salmon, chinook	<i>Oncorhynchus tshawytscha</i>	425,517
Mackerel, Pacific	<i>Scomber japonicus</i>	411,003
Flounder, unspecified	<i>Pleuronectidae</i>	290,101
Mackerel, jack	<i>Trachurus symmetricus</i>	176,526
Tuna, albacore	<i>Thunnus alalunga</i>	165,179
Cabezon	<i>Scorpaenichthys marmoratus</i>	133,763
Sablefish	<i>Anoplopoma fimbria</i>	127,275
Whiting, Pacific	<i>Merluccius productus</i>	109,355
Halibut, California	<i>Paralichthys californicus</i>	79,929
Croaker, white	<i>Genyonemus lineatus</i>	46,658
Sanddab	<i>Citharichthys spp.</i>	41,235
Bonito, Pacific	<i>Sarda chiliensis</i>	39,130
Crab, Dungeness	<i>Cancer magister</i>	32,682
Sturgeons	<i>Acipenseridae</i>	24,627
Rockfish, blue	<i>Sebastes mystinus</i>	17,470
Crab, rock unspecified	<i>Cancer spp.</i>	16,009
Salmon, coho	<i>Oncorhynchus kisutch</i>	14,597
Shark, leopard	<i>Triakis semifasciata</i>	11,972
Greenling, kelp	<i>Hexagrammos decagrammus</i>	11,380
Rockfish, yelloweye	<i>Sebastes ruberrimus</i>	10,412
Bass, barred sand	<i>Paralabrax nebulifer</i>	9,298
Bass, kelp	<i>Paralabrax clathratus</i>	8,697
Rockfish, chilipepper	<i>Sebastes goodei</i>	6,163
Whitefish, ocean	<i>Caulolatilus princeps</i>	4,748
Shark, unspecified	<i>Selachii spp.</i>	4,728
Fish, unspecified	<i>Osteichthyes</i>	4,021
Barracuda, California	<i>Sphyræna argentea</i>	3,640
Seabass, white	<i>Atractoscion nobilis</i>	3,378
Rockfish, bocaccio	<i>Sebastes paucispinis</i>	2,967
Croaker, unspecified	<i>Sciaenidae</i>	2,868
Shark, spiny dogfish	<i>Squalus acanthias</i>	2,716
Sole, petrale	<i>Eopsetta jordani</i>	2,615
Halfmoon	<i>Medialuna californiensis</i>	2,345
Mackerel, unspecified	<i>Scomber / Trachurus</i>	2,177
Squid, market	<i>Loligo opalescens</i>	1,998
Shark, sevengill	<i>Notorynchus cepedianus</i>	1,626
Rockfish, cowcod	<i>Sebastes levis</i>	1,594
Scorpionfish, California	<i>Scorpaena guttata</i>	1,545
Rockfish, copper	<i>Sebastes caurinus</i>	1,320
Smelts, true	<i>Osmeridae</i>	1,298
Sole, unspecified	<i>Pleuronectiformes</i>	1,260
Shark, blue	<i>Prionace glauca</i>	1,130
Catfish, unspecified	<i>Siluriformes</i>	1,028
Halibut, unspecified	<i>Pleuronectiformes</i>	974
Jacksmelt	<i>Atherinopsis californiensis</i>	951
Sole, rock	<i>Pleuronectes bilineata</i>	921
Sheephead, California	<i>Semicossyphus pulcher</i>	846
Shark, brown smoothhound	<i>Mustelus henlei</i>	813
Flounder, starry	<i>Platichthys stellatus</i>	701
Squid, jumbo	<i>Dosidicus gigas</i>	689
Yellowtail	<i>Seriola lalandi</i>	575
Rockfish, gopher	<i>Sebastes carnatus</i>	523
Rockfish, brown	<i>Sebastes auriculatus</i>	520

Table 8. Northern-central California species, 1957-1997 (continued).

COMMON NAME	SCIENTIFIC NAME	NUMBER KEPT
Rockfish, widow	<i>Sebastes entomelas</i>	518
Shark, thresher	<i>Alopias vulpinus</i>	511
Tuna, skipjack	<i>Katsuwonus pelamis</i>	507
Sculpin, staghorn	<i>Leptocottus armatus</i>	492
Rockfish, China	<i>Sebastes nebulosus</i>	490
Rockfish, olive	<i>Sebastes serranoides</i>	468
Tuna, yellowfin	<i>Thunnus albacares</i>	453
Scallop, rock	<i>Crassadoma gigantea</i>	450
Surfperch, unspecified	<i>Embiotocidae</i>	421
Shark, soupfin	<i>Galeorhinus zyopterus</i>	417
Halibut, Pacific	<i>Hippoglossus stenolepis</i>	393
Bass, rock	<i>Paralabrax spp.</i>	356
Sardine, Pacific	<i>Sardinops sagax caeruleus</i>	349
Octopus, unspecified	<i>Octopus spp.</i>	311
Eel, wolf (wolf-eel)	<i>Anarrhichthys ocellatus</i>	302
Rockfish, vermilion	<i>Sebastes miniatus</i>	288
Skate, unspecified	<i>Rajidae</i>	250
Trout, rainbow	<i>Oncorhynchus mykiss</i>	246
Abalone, red	<i>Haliotis rufescens</i>	246
Tuna, bluefin	<i>Thunnus thynnus</i>	214
Sole, English	<i>Pleuronectes vetulus</i>	186
Lobster, California spiny	<i>Panulirus interruptus</i>	184
Rockfish, group red	<i>Sebastes/group</i>	174
Rockfish, canary	<i>Sebastes pinniger</i>	162
Crab, pelagic red	<i>Pleuroncodes planipes</i>	130
Surfperch, rubberlip	<i>Rhacochilus toxotes</i>	121
Shark, shortfin mako	<i>Isurus oxyrinchus</i>	119
Opah	<i>Lampris guttatus</i>	108
Wahoo	<i>Acanthocybium solanderi</i>	107
Ray, bat	<i>Myliobatis californica</i>	100
Queenfish	<i>Seriphus politus</i>	91
Abalone	<i>Haliotis spp.</i>	87
Silversides	<i>Atherinidae</i>	85
Sole, sand	<i>Psettichthys melanostictus</i>	83
Stickleback, threespine	<i>Gasterosteus aculeatus</i>	64
Kelpfishes	<i>Gibbonsia spp.</i>	58
Shark, Pacific angel	<i>Squatina californica</i>	55
Eel	<i>Osteichthyes</i>	50
Rockfish, redbanded	<i>Sebastes babcocki</i>	49
Shark, sixgill	<i>Hexanchus griseus</i>	46
Shark, bigeye thresher	<i>Alopias superciliosus</i>	45
Bass, spotted sand	<i>Paralabrax maculatofasciatus</i>	44
Croaker, yellowfin	<i>Umbrina roncador</i>	42
Ratfish, spotted	<i>Hydrolagus colliei</i>	41
Rockfish, treefish	<i>Sebastes serriceps</i>	40
Sunfish, ocean	<i>Mola mola</i>	40
Scallop, unspecified	<i>Pectinidae</i>	40
Shad, American	<i>Alosa sapidissima</i>	37
Rockfish, black-and-yellow	<i>Sebastes chrysomelas</i>	35
Surfperch, redtail	<i>Amphistichus rhodoterus</i>	31
Turbot, curlfin	<i>Pleuronichthys decurrens</i>	31
Mackerel, bullet	<i>Auxis rochei</i>	30
Carp	<i>Cyprinus carpio</i>	29
Ray, unspecified	<i>Rajiformes</i>	27
Herring, Pacific	<i>Clupea pallasii</i>	27
Stingray	<i>Dasyatidae</i>	26
Sole, rex	<i>Errex zachirus</i>	26
Rockfish, starry	<i>Sebastes constellatus</i>	24
Rockfish, grass	<i>Sebastes rastrelliger</i>	24
Croaker, spotfin	<i>Roncador stearnsii</i>	22
Sharks, cow	<i>Hexanchidae</i>	21
Sole, Dover	<i>Microstomus pacificus</i>	21

Table 8. Northern-central California species, 1957-1997 (continued).

COMMON NAME	SCIENTIFIC NAME	NUMBER KEPT
Surfperch, rainbow	<i>Hypsurus caryi</i>	19
Rockfish, greenspotted	<i>Sebastes chlorostictus</i>	17
Kelpfish, giant	<i>Heterostichus rostratus</i>	16
Lizardfish, California	<i>Synodus lucioceps</i>	15
Tomcod, Pacific	<i>Microgadus proximus</i>	15
Rockfish, copper (whitebelly)	<i>Sebastes caurinus</i>	14
Rockfish, pink	<i>Sebastes eos</i>	14
Surfperch, walleye	<i>Hyperprosopon argenteum</i>	12
Guitarfish, shovelnose	<i>Rhinobatos productus</i>	12
Eel, California moray	<i>Gymnothorax mordax</i>	12
Salmon, pink	<i>Oncorhynchus gorbuscha</i>	9
Sea stars	<i>Asteroidea</i>	9
Dolphin (fish)	<i>Coryphaena hippurus</i>	8
Snapper -Mexico-	<i>Lutianidae</i>	8
Jack, Pacific crevalle	<i>Caranx caninus</i>	8
Sea slug	<i>Opisthobranchia</i>	8
Sierra, Pacific	<i>Scomberomorus sierra</i>	7
Bass, giant sea	<i>Stereolepis gigas</i>	7
Blacksmith	<i>Chromis punctipinnis</i>	7
Flyingfish	<i>Exocoetidae spp.</i>	6
Marlin, striped	<i>Tetrapturus audax</i>	6
Shark, gray smoothhound	<i>Mustelus californicus</i>	6
Sargo	<i>Anisotremus davidsonii</i>	6
Shark, basking	<i>Cetorhinus maximus</i>	5
Crustacean, unspecified	<i>Crustacea</i>	5
Triggerfish	<i>Balistidae</i>	5
Tuna, unspecified	<i>Scombridae</i>	5
Abalone, green	<i>Haliotis fulgens</i>	5
Wrasse, rock	<i>Halichoeres semicinctus</i>	4
Butterfish (Pacific pompano)	<i>Peprilus simillimus</i>	3
Crab, spider	<i>Loxorhynchus spp.</i>	3
Surfperch, barred	<i>Amphistichus argenteus</i>	3
Surfperch, black	<i>Embiotoca jacksoni</i>	3
Salema	<i>Xenistius californiensis</i>	3
Smelt, night	<i>Spirinchus starksi</i>	3
Squawfish	<i>Ptychocheilus grandis</i>	3
Jack, almaco (amberjack)	<i>Seriola rivoliana</i>	2
Turbot	<i>Pleuronectidae</i>	2
Turbot, hornyhead	<i>Pleuronichthys verticalis</i>	2
Snail, sea	<i>Gastropoda</i>	2
Ray, Pacific electric	<i>Torpedo californica</i>	2
Opaleye	<i>Girella nigricans</i>	2
Surfperch, white	<i>Phanerodon furcatus</i>	2
Escolar	<i>Lepidocybium flavobrunneum</i>	2
Rockfish, splitnose	<i>Sebastes diploproa</i>	1
Shad, threadfin	<i>Dorosoma petenense</i>	1
Smelt, whitebait	<i>Allosmerus elongatus</i>	1
Rockfish, group bolina	<i>Sebastes/group</i>	1
Shark, pelagic thresher	<i>Alopias pelagicus</i>	1
Shark, salmon	<i>Lamna ditropis</i>	1
Shark, horn	<i>Heterodontus francisci</i>	1
Urchin, red	<i>Strongylocentrotus franciscanu</i>	1
Senorita	<i>Oxyjulis californica</i>	1
Midshipman, plainfin	<i>Porichthys notatus</i>	1
Swordfish	<i>Xiphias gladius</i>	1
Eel, spotted cusk-	<i>Chilara taylori</i>	1
Eel, blenny	<i>Lumpenus anguillaris</i>	1
Echinoderm, unspecified	<i>Echinodermata</i>	1
Grouper, broomtail	<i>Mycteroperca xenarcha</i>	1
Anchovy, northern	<i>Engraulis mordax</i>	1
Surfperch, shiner	<i>Cymatogaster aggregata</i>	1

Table 9. Species present in the historical CPFV database in southern California (blocks 651-899) for the period 1936-1997, listed in order of abundance (number kept).

COMMON NAME	SCIENTIFIC NAME	NUMBER KEPT
Rockfish, unspecified	<i>Sebastes spp.</i>	44,856,745
Bass, kelp	<i>Paralabrax clathratus</i>	17,251,861
Bonito, Pacific	<i>Sarda chiliensis</i>	17,146,472
Mackerel, Pacific	<i>Scomber japonicus</i>	15,867,158
Barracuda, California	<i>Sphyræna argentea</i>	14,622,199
Bass, rock	<i>Paralabrax spp.</i>	11,520,145
Bass, barred sand	<i>Paralabrax nebulifer</i>	7,444,036
Scorpionfish, California	<i>Scorpaena guttata</i>	3,018,074
Halfmoon	<i>Medialuna californiensis</i>	2,620,058
Halibut, California	<i>Paralichthys californicus</i>	1,901,394
Yellowtail	<i>Seriola lalandi</i>	1,553,426
Whitefish, ocean	<i>Caulolatilus princeps</i>	1,533,344
Croaker, white	<i>Genyonemus lineatus</i>	1,370,571
Sheephead, California	<i>Semicossyphus pulcher</i>	1,360,706
Tuna, albacore	<i>Thunnus alalunga</i>	1,283,057
Seabass, white	<i>Atractoscion nobilis</i>	587,308
Mackerel, jack	<i>Trachurus symmetricus</i>	465,578
Lingcod	<i>Ophiodon elongatus</i>	353,775
Flounder, unspecified	<i>Pleuronectidae</i>	316,424
Fish, unspecified	<i>Osteichthyes</i>	241,469
Sole, unspecified	<i>Pleuronectiformes</i>	159,298
Sablefish	<i>Anoplopoma fimbria</i>	156,621
Cabezon	<i>Scorpaenichthys marmoratus</i>	145,621
Tuna, skipjack	<i>Katsuwonus pelamis</i>	139,628
Sanddab	<i>Citharichthys spp.</i>	120,128
Rockfish, cowcod	<i>Sebastes levis</i>	116,636
Tuna, yellowfin	<i>Thunnus albacares</i>	98,714
Tuna, bluefin	<i>Thunnus thynnus</i>	76,418
Scallop, rock	<i>Crassadoma gigantea</i>	66,927
Shark, unspecified	<i>Selachii spp.</i>	65,396
Croaker, yellowfin	<i>Umbrina roncadore</i>	54,169
Queenfish	<i>Seriphus politus</i>	51,212
Sargo	<i>Anisotremus davidsonii</i>	40,302
Squid, jumbo	<i>Doscidicus gigas</i>	39,602
Opaleye	<i>Girella nigricans</i>	38,799
Blacksmith	<i>Chromis punctipinnis</i>	38,111
Surfperch, unspecified	<i>Embiotocidae</i>	31,727
Mackerel, bullet	<i>Auxis rochei</i>	29,875
Smelts, true	<i>Osmeridae</i>	27,070
Lobster, California spiny	<i>Panulirus interruptus</i>	21,673
Shark, blue	<i>Prionace glauca</i>	19,881
Dolphin (fish)	<i>Coryphaena hippurus</i>	19,553
Rockfish, blue	<i>Sebastes mystinus</i>	19,049
Croaker, unspecified	<i>Sciaenidae</i>	16,762
Rockfish, group red	<i>Sebastes/group</i>	15,167
Eel	<i>Osteichthyes</i>	14,966
Bass, giant sea	<i>Stereolepis gigas</i>	14,892
Salmon	<i>Oncorhynchus spp.</i>	12,771
Salmon, chinook	<i>Oncorhynchus tshawytscha</i>	12,731
Squid, market	<i>Loligo opalescens</i>	10,284
Rockfish, olive	<i>Sebastes serranoides</i>	10,211
Sole, petrale	<i>Eopsetta jordani</i>	8,324
Shark, spiny dogfish	<i>Squalus acanthias</i>	8,318
Abalone, red	<i>Haliotis rufescens</i>	8,297
Jacksmelt	<i>Atherinopsis californiensis</i>	5,861
Urchin, white	<i>Lytechinus anamesus</i>	4,784
Lizardfish, California	<i>Synodus lucioceps</i>	4,391
Croaker, black	<i>Cheilotrema saturnum</i>	4,173
Mackerel, unspecified	<i>Scomber / Trachurus</i>	4,166

Table 9. Southern California species, 1936-1997 (continued).

COMMON NAME	SCIENTIFIC NAME	NUMBER KEPT
Rockfish, bocaccio	<i>Sebastes paucispinis</i>	4,156
Shark, shortfin mako	<i>Isurus oxyrinchus</i>	3,707
Whiting, Pacific	<i>Merluccius productus</i>	3,085
Cucumber, sea	<i>Holothuroidea</i>	2,771
Surfperch, barred	<i>Amphistichus argenteus</i>	2,447
Surfperch, black	<i>Embiotoca jacksoni</i>	2,233
Croaker, spotfin	<i>Roncador stearnsii</i>	2,134
Greenling, kelp	<i>Hexagrammos decagrammus</i>	2,072
Rockfish, yelloweye	<i>Sebastes ruberrimus</i>	1,726
Bass, spotted sand	<i>Paralabrax maculatofasciatus</i>	1,715
Triggerfish	<i>Balistidae</i>	1,627
Surfperch, rubberlip	<i>Rhacochilus toxotes</i>	1,453
Oyster, unspecified	<i>Ostreidae</i>	1,308
Chiton, unspecified	<i>Polyplacophora</i>	1,303
Urchin, red	<i>Strongylocentrotus franciscanu</i>	1,280
Octopus, unspecified	<i>Octopus spp.</i>	1,196
Shark, brown smoothhound	<i>Mustelus henlei</i>	1,185
Abalone, green	<i>Haliotis fulgens</i>	1,113
Rockfish, yellowtail	<i>Sebastes flavidus</i>	1,093
Salmon, coho	<i>Oncorhynchus kisutch</i>	1,080
Jacks, unspecified	<i>Carangidae</i>	959
Wahoo	<i>Acanthocybium solanderi</i>	942
Rockfish, black	<i>Sebastes melanops</i>	930
Rockfish, treefish	<i>Sebastes serriceps</i>	892
Kelpfishes	<i>Gibbonsia spp.</i>	762
Rockfish, starry	<i>Sebastes constellatus</i>	756
Abalone	<i>Haliotis spp.</i>	718
Guitarfish, shovelnose	<i>Rhinobatos productus</i>	716
Rockfish, vermilion	<i>Sebastes miniatus</i>	709
Grouper	<i>Mycteroperca / Epinephelus</i>	661
Surfperch, white	<i>Phanerodon furcatus</i>	645
Shark, horn	<i>Heterodontus francisci</i>	628
Marlin, striped	<i>Tetrapturus audax</i>	604
Wrasse, rock	<i>Halichoeres semicinctus</i>	584
Rockfish, China	<i>Sebastes nebulosus</i>	564
Ray, unspecified	<i>Rajiformes</i>	544
Shark, soupfin	<i>Galeorhinus zyopterus</i>	541
Silversides	<i>Atherinidae</i>	519
Shrimp, unspecified	<i>Crustacea</i>	504
Salema	<i>Xenistius californiensis</i>	487
Rockfish, grass	<i>Sebastes rastrelliger</i>	472
Sole, rock	<i>Pleuronectes bilineata</i>	442
Shark, thresher	<i>Alopias vulpinus</i>	435
Herring, Pacific	<i>Clupea pallasii</i>	411
Surfperch, redtail	<i>Amphistichus rhodoterus</i>	381
Surfperch, walleye	<i>Hyperprosopon argenteum</i>	362
Ray, bat	<i>Myliobatis californica</i>	352
Tuna, bigeye	<i>Thunnus obesus</i>	319
Abalone, pink	<i>Haliotis corrugata</i>	317
Needlefish, California	<i>Strongylura exilis</i>	315
Tuna, skipjack, black	<i>Euthynnus lineatus</i>	310
Ratfish, spotted	<i>Hydrolagus colliei</i>	307
Shark, leopard	<i>Triakis semifasciata</i>	293
Tuna, unspecified	<i>Scombridae</i>	287
Flyingfish	<i>Exocoetidae spp.</i>	266
Rockfish, flag	<i>Sebastes rubrivinctus</i>	261
Bonefish	<i>Albula vulpes</i>	257
Eel, California moray	<i>Gymnothorax mordax</i>	216
Skate, California	<i>Raja inornata</i>	195
Rockfish, black-and-yellow	<i>Sebastes chrysomelas</i>	188
Skate, thornback	<i>Platyrrhinoidis triseriata</i>	170
Snail, sea	<i>Gastropoda</i>	164

Table 9. Southern California species, 1936-1997 (continued).

COMMON NAME	SCIENTIFIC NAME	NUMBER KEPT
Shrimp, ghost	<i>Callinassa californiensis</i>	157
Corbina, California	<i>Menticirrhus undulatus</i>	155
Sturgeons	<i>Acipenseridae</i>	154
Rockfish, gopher	<i>Sebastes carnatus</i>	149
Rockfish, Pacific ocean perch	<i>Sebastes alutus</i>	146
Flounder, starry	<i>Platichthys stellatus</i>	143
Turbot	<i>Pleuronectidae</i>	143
Sole, sand	<i>Psettichthys melanostictus</i>	138
Halibut, Pacific	<i>Hippoglossus stenolepis</i>	131
Oyster, giant Pacific	<i>Crassostrea gigas</i>	124
Sierra, Pacific	<i>Scomberomorus sierra</i>	123
Shark, gray smoothhound	<i>Mustelus californicus</i>	122
Anchovy, slough	<i>Anchoa delicatissima</i>	112
Halibut, unspecified	<i>Pleuronectiformes</i>	104
Rockfish, squarespot	<i>Sebastes hopkinsi</i>	101
Rockfish, bank	<i>Sebastes rufus</i>	96
Sardine, Pacific	<i>Sardinops sagax caeruleus</i>	95
Rockfish, greenblotched	<i>Sebastes rosenblatti</i>	95
Shark, Pacific angel	<i>Squatina californica</i>	90
Skate, unspecified	<i>Rajidae</i>	88
Rockfish, honeycomb	<i>Sebastes umbrosus</i>	88
Crab, rock unspecified	<i>Cancer spp.</i>	82
Grouper, broomtail	<i>Mycteroperca xenarcha</i>	76
Surfperch, rainbow	<i>Hypsurus caryi</i>	76
Crab, spider	<i>Loxorhynchus spp.</i>	75
Sunfish, ocean	<i>Mola mola</i>	74
Senorita	<i>Oxyjulis californica</i>	74
Sanddab, Pacific	<i>Citharichthys sordidus</i>	72
Scallop, unspecified	<i>Pectinidae</i>	63
Kelpfish, giant	<i>Heterostichus rostratus</i>	58
Swordfish	<i>Xiphias gladius</i>	54
Topsmelt	<i>Atherinops affinis</i>	53
Surfperch, shiner	<i>Cymatogaster aggregata</i>	53
Smelt, whitebait	<i>Allosmerus elongatus</i>	51
Limpet, unspecified	<i>Archaeogastropoda</i>	51
Rockfish, brown	<i>Sebastes auriculatus</i>	50
Rockfish, chilipepper	<i>Sebastes goodei</i>	50
Opah	<i>Lampris guttatus</i>	47
Sole, bigmouth	<i>Hippoglossina stomata</i>	45
Rockfish, speckled	<i>Sebastes ovalis</i>	45
Rockfish, kelp	<i>Sebastes atrovirens</i>	41
Sole, English	<i>Pleuronectes vetulus</i>	40
Tuna, longtail	<i>Thunnus tonggol</i>	39
Stingray	<i>Dasyatidae</i>	39
Sole, butter	<i>Pleuronectes isolepis</i>	38
Shark, swell	<i>Cephaloscyllium ventriosum</i>	35
Anchovy, northern	<i>Engraulis mordax</i>	34
Sculpin, yellowchin	<i>Icelinus quadriseriatus</i>	32
Tomcod, Pacific	<i>Microgadus proximus</i>	31
Rockfish, group gopher	<i>Sebastes/group</i>	30
Eel, wolf (wolf-eel)	<i>Anarrhichthys ocellatus</i>	29
Midshipman, plainfin	<i>Porichthys notatus</i>	29
Shad, American	<i>Alosa sapidissima</i>	26
Herring, round	<i>Etrumeus teres</i>	25
Snapper -Mexico-	<i>Lutianidae</i>	24
Blackfish, Sacramento	<i>Orthodon microlepidotus</i>	23
Eulachon	<i>Thaleichthys pacificus</i>	23
Catfish, unspecified	<i>Siluriformes</i>	22
Clam, California jackknife	<i>Tagelus californianus</i>	22
Surfperch, pile	<i>Rhacochilus vacca</i>	22
Sharks, cow	<i>Hexanchidae</i>	21
Trout, rainbow	<i>Oncorhynchus mykiss</i>	21

Table 9. Southern California species, 1936-1997 (continued).

COMMON NAME	SCIENTIFIC NAME	NUMBER KEPT
Echinoderm, unspecified	<i>Echinodermata</i>	20
Jack, Pacific crevalle	<i>Caranx caninus</i>	20
Oilfish	<i>Ruvettus pretiosus</i>	20
Sculpin, staghorn	<i>Leptocottus armatus</i>	19
Mullet, striped	<i>Mugil cephalus</i>	18
Eel, monkeyface	<i>Cebidichthys violaceus</i>	18
Sanddab, speckled	<i>Citharichthys stigmaeus</i>	18
Rockfish, copper	<i>Sebastes caurinus</i>	17
Sea stars	<i>Asteroidea</i>	17
Shark, smooth hammerhead	<i>Sphyrna zygaena</i>	17
Mussel	<i>Mytilus spp.</i>	15
Escolar	<i>Lepidocybium flavobrunneum</i>	15
Rockfish, calico	<i>Sebastes dallii</i>	15
Crab, Dungeness	<i>Cancer magister</i>	12
Kelp	<i>Macrocystis spp.</i>	12
Sole, Dover	<i>Microstomus pacificus</i>	12
Shark, bigeye thresher	<i>Alopias superciliosus</i>	10
Sole, rex	<i>Errex zachirus</i>	9
Garibaldi	<i>Hypsypops rubicundus</i>	9
Jack, almaco (amberjack)	<i>Seriola rivoliana</i>	9
Killifish, California	<i>Fundulus parvipinnis</i>	8
Rockfish, splitnose	<i>Sebastes diploproa</i>	7
Sole, fantail	<i>Xystreurys liolepis</i>	7
Sea slug	<i>Opisthobranchia</i>	6
Crab, box	<i>Lopholithodes foraminatus</i>	6
Surfperch, calico	<i>Amphistichus koelzi</i>	6
Bass, striped	<i>Morone saxatilis</i>	5
Herring roe on kelp	<i>Clupea/algae</i>	5
Turtle	<i>Chelonia mydas</i>	4
Butterfish (Pacific pompano)	<i>Peprilus simillimus</i>	4
Smelt, surf	<i>Hypomesus pretiosus</i>	4
Ray, Pacific electric	<i>Torpedo californica</i>	4
Cabrilla, spotted	<i>Epinephelus analogus</i>	4
Shark, pelagic thresher	<i>Alopias pelagicus</i>	4
Shad, threadfin	<i>Dorosoma petenense</i>	4
Rockfish, greenstriped	<i>Sebastes elongatus</i>	3
Shark, dusky	<i>Carcharhinus obscurus</i>	3
Hagfishes	<i>Eptatretus spp.</i>	3
Shark, sevengill	<i>Notorynchus cepedianus</i>	2
Eel, blenny	<i>Lumpenus anguillaris</i>	2
Turbot, spotted	<i>Pleuronichthys ritteri</i>	2
Rockfish, rosy	<i>Sebastes rosaceus</i>	2
Crustacean, unspecified	<i>Crustacea</i>	2
Rockfish, canary	<i>Sebastes pinniger</i>	2
Rockfish, bronzespotted	<i>Sebastes gilli</i>	2
Clam, Pismo	<i>Tivela stultorum</i>	1
Abalone, threaded	<i>Haliotis assimilis</i>	1
Abalone, white	<i>Haliotis sorenseni</i>	1
Grenadiers	<i>Macrouridae</i>	1
Cod, Pacific	<i>Gadus macrocephalus</i>	1
Sanddab, longfin	<i>Citharichthys xanthostigma</i>	1
Skate, big	<i>Raja binoculata</i>	1
Goby, yellowfin	<i>Acanthogobius flavimanus</i>	1
Tuna, blackfin	<i>Thunnus atlanticus</i>	1
Mollusk, unspecified	<i>Mollusca</i>	1
Mudsucker, longjaw	<i>Gillichthys mirabilis</i>	1
Shark, white	<i>Carcharodon carcharias</i>	1
Zebraperch	<i>Hermosilla azurea</i>	1
Corvina, shortfin	<i>Cynoscion parvipinnis</i>	1
Shark, sixgill	<i>Hexanchus griseus</i>	1

Table 10. Species present in the historical CPFV database in Baja California (blocks >899) for the period 1947-1997, listed in order of abundance (number kept).

COMMON NAME	SCIENTIFIC NAME	NUMBER KEPT
Yellowtail	<i>Seriola lalandi</i>	2,363,106
Rockfish, unspecified	<i>Sebastes spp.</i>	2,335,280
Tuna, albacore	<i>Thunnus alalunga</i>	1,751,596
Bonito, Pacific	<i>Sarda chiliensis</i>	1,319,428
Barracuda, California	<i>Sphyræna argentea</i>	998,779
Bass, kelp	<i>Paralabrax clathratus</i>	692,404
Tuna, yellowfin	<i>Thunnus albacares</i>	652,408
Mackerel, Pacific	<i>Scomber japonicus</i>	554,619
Bass, rock	<i>Paralabrax spp.</i>	421,715
Scorpionfish, California	<i>Scorpaena guttata</i>	394,803
Tuna, skipjack	<i>Katsuwonus pelamis</i>	316,689
Bass, barred sand	<i>Paralabrax nebulifer</i>	288,897
Dolphin (fish)	<i>Coryphaena hippurus</i>	177,708
Whitefish, ocean	<i>Caulolatilus princeps</i>	165,726
Sheephead, California	<i>Semicossyphus pulcher</i>	113,973
Halfmoon	<i>Medialuna californiensis</i>	100,213
Tuna, bluefin	<i>Thunnus thynnus</i>	98,466
Lingcod	<i>Ophiodon elongatus</i>	90,136
Wahoo	<i>Acanthocybium solanderi</i>	85,094
Fish, unspecified	<i>Osteichthyes</i>	47,099
Seabass, white	<i>Atractoscion nobilis</i>	35,835
Halibut, California	<i>Paralichthys californicus</i>	34,239
Mackerel, jack	<i>Trachurus symmetricus</i>	29,901
Grouper	<i>Mycteroperca / Epinephelus</i>	18,150
Tuna, unspecified	<i>Scombridae</i>	13,721
Flounder, unspecified	<i>Pleuronectidae</i>	12,250
Tuna, bigeye	<i>Thunnus obesus</i>	9,144
Sole, unspecified	<i>Pleuronectiformes</i>	8,817
Bass, giant sea	<i>Stereolepis gigas</i>	7,306
Cabezon	<i>Scorpaenichthys marmoratus</i>	5,638
Croaker, white	<i>Genyonemus lineatus</i>	4,914
Mackerel, unspecified	<i>Scomber / Trachurus</i>	4,215
Rockfish, cowcod	<i>Sebastes levis</i>	3,630
Mackerel, bullet	<i>Auxis rochei</i>	3,202
Sanddab	<i>Citharichthys spp.</i>	2,844
Surfperch, unspecified	<i>Embiotocidae</i>	2,432
Marlin, striped	<i>Tetrapturus audax</i>	1,978
Opaleye	<i>Girella nigricans</i>	1,750
Cabrilla, spotted	<i>Epinephelus analogus</i>	1,727
Sargo	<i>Anisotremus davidsonii</i>	1,609
Rockfish, olive	<i>Sebastes serranoides</i>	1,505
Jacks, unspecified	<i>Carangidae</i>	1,496
Squid, jumbo	<i>Dosidicus gigas</i>	1,485
Squid, market	<i>Loligo opalescens</i>	1,480
Tuna, skipjack, black	<i>Euthynnus lineatus</i>	1,439
Shark, spiny dogfish	<i>Squalus acanthias</i>	1,310
Rockfish, group red	<i>Sebastes/group</i>	960
Rockfish, starry	<i>Sebastes constellatus</i>	828
Sierra, Pacific	<i>Scomberomorus sierra</i>	799
Snapper -Mexico-	<i>Lutianidae</i>	737
Smelts, true	<i>Osmeridae</i>	707
Rockfish, bocaccio	<i>Sebastes paucispinis</i>	585
Jack, almaco (amberjack)	<i>Seriola rivoliana</i>	573
Shark, unspecified	<i>Selachii spp.</i>	457
Shark, blue	<i>Prionace glauca</i>	370
Croaker, yellowfin	<i>Umbrina roncadore</i>	367
Jacksmelt	<i>Atherinopsis californiensis</i>	357
Shark, shortfin mako	<i>Isurus oxyrinchus</i>	314
Rockfish, blue	<i>Sebastes mystinus</i>	299

Table 10. Baja California species, 1947-1997 (continued).

COMMON NAME	SCIENTIFIC NAME	NUMBER KEPT
Triggerfish	<i>Balistidae</i>	255
Rockfish, treefish	<i>Sebastes serriceps</i>	226
Grouper, broomtail	<i>Mycteroperca xenarcha</i>	203
Croaker, unspecified	<i>Sciaenidae</i>	180
Rockfish, speckled	<i>Sebastes ovalis</i>	160
Surfperch, rubberlip	<i>Rhacochilus toxotes</i>	154
Rockfish, yellowtail	<i>Sebastes flavidus</i>	138
Salema	<i>Xenistius californiensis</i>	111
Rockfish, gopher	<i>Sebastes carnatus</i>	94
Opah	<i>Lampris guttatus</i>	86
Rockfish, flag	<i>Sebastes rubrivinctus</i>	71
Queenfish	<i>Seriphus politus</i>	70
Sablefish	<i>Anoplopoma fimbria</i>	68
Sailfish	<i>Istiophorus platypterus</i>	67
Rockfish, grass	<i>Sebastes rastrelliger</i>	66
Flyingfish	<i>Exocoetidae spp.</i>	60
Croaker, spotfin	<i>Roncador stearnsii</i>	60
Swordfish	<i>Xiphias gladius</i>	52
Flounder, starry	<i>Platichthys stellatus</i>	51
Surfperch, rainbow	<i>Hypsurus caryi</i>	49
Bass, spotted sand	<i>Paralabrax maculatofasciatus</i>	45
Jack, Pacific crevalle	<i>Caranx caninus</i>	42
Butterfish (Pacific pompano)	<i>Peprilus simillimus</i>	41
Rockfish, black	<i>Sebastes melanops</i>	38
Salmon, coho	<i>Oncorhynchus kisutch</i>	36
Garibaldi	<i>Hypsypops rubicundus</i>	27
Abalone, red	<i>Haliotis rufescens</i>	26
Salmon	<i>Oncorhynchus spp.</i>	26
Salmon, chinook	<i>Oncorhynchus tshawytscha</i>	25
Grunion, California	<i>Leuresthes tenuis</i>	24
Shark, smooth hammerhead	<i>Sphyrna zygaena</i>	20
Rockfish, kelp	<i>Sebastes atrovirens</i>	20
Ratfish, spotted	<i>Hydrolagus colliei</i>	19
Whiting, Pacific	<i>Merluccius productus</i>	19
Ray, bat	<i>Myliobatis californica</i>	18
Surfperch, black	<i>Embiotoca jacksoni</i>	17
Greenling, kelp	<i>Hexagrammos decagrammus</i>	17
Rockfish, splitnose	<i>Sebastes diploproa</i>	16
Eel, California moray	<i>Gymnothorax mordax</i>	13
Rockfish, copper	<i>Sebastes caurinus</i>	13
Shark, soupfin	<i>Galeorhinus zyopterus</i>	13
Rockfish, chilipepper	<i>Sebastes goodei</i>	12
Kelpfishes	<i>Gibbonsia spp.</i>	12
Sole, petrale	<i>Eopsetta jordani</i>	11
Blacksmith	<i>Chromis punctipinnis</i>	10
Shark, leopard	<i>Triakis semifasciata</i>	8
Needlefish, California	<i>Strongylura exilis</i>	8
Tuna, blackfin	<i>Thunnus atlanticus</i>	7
Lobster, California spiny	<i>Panulirus interruptus</i>	7
Sole, rock	<i>Pleuronectes bilineata</i>	7
Catfish, unspecified	<i>Siluriformes</i>	7
Shark, brown smoothhound	<i>Mustelus henlei</i>	7
Shark, gray smoothhound	<i>Mustelus californicus</i>	7
Octopus, unspecified	<i>Octopus spp.</i>	6
Shark, thresher	<i>Alopias vulpinus</i>	6
Ray, unspecified	<i>Rajiformes</i>	5
Trout, rainbow	<i>Oncorhynchus mykiss</i>	5
Eel, wolf (wolf-eel)	<i>Anarrhichthys ocellatus</i>	4
Mullet, striped	<i>Mugil cephalus</i>	4
Sunfish, ocean	<i>Mola mola</i>	4
Wrasse, rock	<i>Halichoeres semicinctus</i>	4
Tunicates	<i>Urochordata</i>	3

Table 10. Baja California species, 1947-1997 (continued).

COMMON NAME	SCIENTIFIC NAME	NUMBER KEPT
Turtle	<i>Chelonia mydas</i>	3
Guitarfish, shovelnose	<i>Rhinobatos productus</i>	2
Lizardfish, California	<i>Synodus lucioceps</i>	2
Kelpfish, giant	<i>Heterostichus rostratus</i>	2
Sanddab, Pacific	<i>Citharichthys sordidus</i>	2
Sanddab, speckled	<i>Citharichthys stigmaeus</i>	2
Scallop, rock	<i>Crassadoma gigantea</i>	1
Shrimp, unspecified	<i>Crustacea</i>	1
Shark, horn	<i>Heterodontus francisci</i>	1
Scallop, unspecified	<i>Pectinidae</i>	1
Crab, rock unspecified	<i>Cancer spp.</i>	1
Surfperch, barred	<i>Amphistichus argenteus</i>	1
Shark, white	<i>Carcharodon carcharias</i>	1
Corbina, California	<i>Menticirrhus undulatus</i>	1
Eel, blenny	<i>Lumpenus anguillaris</i>	1
Midshipman, plainfin	<i>Porichthys notatus</i>	1
Skate, thornback	<i>Platyrhinoidis triseriata</i>	1
Skate, unspecified	<i>Rajidae</i>	1
Shark, blacktip	<i>Carcharhinus limbatus</i>	1
Turbot	<i>Pleuronectidae</i>	1
Sole, fantail	<i>Xystreureys liolepis</i>	1

KIND OF FISH CAUGHT	NUMBER FISH	TOTAL WEIGHT
CABEZON (bullhead)	261	
FLOUNDER, SOLE, SANDAB	230	
HALIBUT (southern)	222	
HALIBUT (northern)	221	
LINGCOD	195	
MACKEREL (Pacific)	051	
MACKEREL (jack)	055	
YELLOWTAIL ROCKFISH	259	
BLACK ROCKFISH	252	
ROCKFISH (other)	250	
SALMON	300	
STRIPED BASS	335	
WHITE CROAKER (kingfish)	435	
OTHER FISH (show kind)		

KIND OF BAIT OR LURE USED

PLEASE MAKE A SEPARATE LOG FOR EACH TRIP OF THE DAY

..... Date...../...../.....
 (TOWN OF LANDING) MO. DAY YEAR

Daily Log of Boat..... F. & G. No.....

Area Fished..... Block No.....
 (LOCAL NAME OF PLACE)

No. of Fishermen..... Fishing Started.....a.m.....p.m.

Fishing Ended.....a.m.....p.m.

REMARKS:

Nº 67467

FG 623
 42906 9-56 101,250 DUP ① SPO

Figure 1. Commercial passenger fishing vessel logbook form used in northern-central California during the 1950's.

No. 843051

<u>Boat Name</u>	KIND OF FISH KEPT	NUMBER	AVERAGE WT.
	ROCKFISH (COD) 250		
	LINGCOD 195		
	CABEZON 261		
<u>Fish and Game No.</u>			
	SALMON 300		
<u>Town of Landing</u>			
	STRIPED BASS 335		
<u>BAIT</u>	STURGEON 470		
LIVE DEAD	MACKEREL (JACK) 055		
ANCHOVIES <input type="checkbox"/> <input type="checkbox"/>	MACKEREL (STRIPED GREENBACK) 051		
SQUID <input type="checkbox"/> <input type="checkbox"/>	HALIBUT 222		
	OTHER FLATFISH 230		
	NAMES OF OTHER FISHES	NUMBER	AVERAGE WT.

Skipper: Please make a separate log for each trip of the day.

Log must be completed prior to time passengers disembark.

FG 623 86 81211

Month Day Year

No. of Hours Fished
(Hours Lines in Water)

TOTAL	CUSTOMERS	OTHERS
=	+	

Number of Anglers

Block Number Where Most Fish Caught

OPERATOR'S INITIALS

Figure 3. Commercial passenger fishing vessel logbook form used in northern-central California during the 1980's.

Boat Name			SURFACE FISH			KIND OF FISH KEPT			NUMBER			AVERAGE WT.			No. 624601					
Fish and Game No.						BOTTOM FISH			ALBACORE			005						Month Day Year		
Town of Landing									BARRACUDA			130								
BAIT									BONITO			003								
LIVE									HALFMOON			478								
DEAD									KELP BASS (CALICO)			277								
ANCHOVIES									SAND BASS			278								
SQUID									MACKEREL (STRIPED GREENBACK)			051								
Number of Hours Fished									YELLOWTAIL			040						(Hours Lines in Water)		
Skipper: Please make a separate log for each trip of the day.						CABEZON			261						TOTAL CUSTOMERS OTHERS					
Log must be completed prior to time passengers disembark.			HALIBUT			222						= +								
FG 656			OTHER FLATFISH			230						Number of Anglers								
85 35594			LINGCOD			195						Block Number Where Most Fish Caught								
			ROCKFISH (COD)			250						OPERATOR'S INITIALS								
			SCULPIN			260														
			SHEEPHEAD			145														
			NAMES OF OTHER FISHES			NUMBER			AVERAGE WT.											

Figure 4. Commercial passenger fishing vessel logbook form used in southern California during the 1980's.

CENTRAL AND NORTHERN CALIFORNIA

SERIAL #94 N- 252901

VESSEL NAME			PORT OF LANDING					
VESSEL ID NUMBER		PORT CODE	TARGET SPECIES	FISHING METHOD	BAIT	LIVE	DEAD	
<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		<input type="text"/> <input type="text"/> <input type="text"/>	SALMON <input type="checkbox"/> ROCKFISHES <input type="checkbox"/> LINGCOD <input type="checkbox"/> STRIPED BASS <input type="checkbox"/> STURGEON <input type="checkbox"/> SHARKS <input type="checkbox"/> TUNA <input type="checkbox"/> POTLUCK <input type="checkbox"/> MISC. BAY OR ESTUARY <input type="checkbox"/>	TROLLING <input type="checkbox"/> MOOCHING <input type="checkbox"/> ANCHORED <input type="checkbox"/> DRIFTING <input type="checkbox"/> DIVING <input type="checkbox"/> LIGHT TACKLE <input type="checkbox"/>	ANCHOVIES <input type="checkbox"/> SARDINES <input type="checkbox"/> SQUID <input type="checkbox"/> OTHER <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MONTH DAY YEAR								
<input type="text"/> <input type="text"/> - <input type="text"/> <input type="text"/> - <input type="text"/> <input type="text"/>								
<input type="text"/> <input type="text"/> : <input type="text"/> <input type="text"/>		<input type="text"/> <input type="text"/> : <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> : <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	
DEPARTURE TIME		RETURN TIME	HOURS & MINUTES FISHED	NUMBER OF ANGLERS	BLOCK WHERE MOST FISH CAUGHT	SURFACE TEMPERATURE		

SPECIES	NUMBER KEPT	NUMBER THROWN BACK	LOST TO SEALS	SPECIES	NUMBER KEPT	NUMBER THROWN BACK	LOST TO SEALS
ALBACORE 005	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	STRIPED BASS 335	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
BARRACUDA 130	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	STURGEON 470	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
CABEZON 261	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	WHITE 435 CROAKER	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
CHINOOK SALMON 302	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	RED 702 ABALONE	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
COHO 304 SALMON	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	ROCK 718 SCALLOP	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
HALIBUT, CA 222	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	MISCELLANEOUS			
OTHER 230 FLATFISHES	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
JACK 055 MACKEREL	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
LEOPARD SHARKS 163	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
OTHER 150 SHARKS	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
LINGCOD 195	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
PACIFIC 051 MACKEREL	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
ROCKFISHES 250	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>

OPERATOR'S INITIALS

F&G 623 (2/94)

Figure 5. Commercial passenger fishing vessel scannable logbook forms used in northern-central California since 1994.

SOUTHERN CALIFORNIA

SERIAL # 94 S 259001

VESSEL NAME				PORT OF LANDING											
VESSEL ID NUMBER		PORT CODE		TARGET SPECIES		FISHING METHOD		BAIT		LIVE		DEAD			
[][][][][]		[][][]		TUNA <input type="checkbox"/>		TROLLING <input type="checkbox"/>		ANCHOVIES <input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>			
				SHARKS <input type="checkbox"/>		MOOCHING <input type="checkbox"/>		SARDINES <input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>			
				ROCKFISHES <input type="checkbox"/>		ANCHORED <input type="checkbox"/>		SQUID <input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>			
				LINGCOD <input type="checkbox"/>		DRIFTING <input type="checkbox"/>		OTHER <input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>			
				SALMON <input type="checkbox"/>		DIVING <input type="checkbox"/>		BIRD INTERACTION		<input type="checkbox"/> YES <input type="checkbox"/> NO					
				MISC. COASTAL <input type="checkbox"/>		LIGHT TACKLE <input type="checkbox"/>									
				MISC. OFFSHORE <input type="checkbox"/>											
MONTH DAY YEAR				HOURS & MINUTES FISHED		NUMBER OF ANGLERS		BLOCK WHERE MOST FISH CAUGHT		SURFACE TEMPERATURE					
[][] - [][] - [][][]				[][] : [][]		[][][]		[][][]		[][]					
DEPARTURE TIME				RETURN TIME											
SPECIES				NUMBER KEPT				NUMBER THROWN BACK				LOST TO SEALS			
ALBACORE 005				[][][]				[][][]				[][]			
BARRACUDA 130				[][][]				[][][]				[][]			
BARRED 278 SAND BASS				[][][]				[][][]				[][]			
BLUEFIN TUNA 004				[][][]				[][][]				[][]			
BLUE 167 SHARK				[][][]				[][][]				[][]			
BONITO 003				[][][]				[][][]				[][]			
CABEZON 261				[][][]				[][][]				[][]			
DOLPHINFISH 481				[][][]				[][][]				[][]			
HALFMOON 478				[][][]				[][][]				[][]			
HALIBUT, CA 222				[][][]				[][][]				[][]			
OTHER 230 FLATFISHES				[][][]				[][][]				[][]			
JACK 055 MACKEREL				[][][]				[][][]				[][]			
KELP BASS 277				[][][]				[][][]				[][]			
LINGCOD 195				[][][]				[][][]				[][]			
BONITO/MAKO SHARK 151				[][][]				[][][]				[][]			
PACIFIC 051 MACKEREL				[][][]				[][][]				[][]			
ROCKFISHES 250				[][][]				[][][]				[][]			
								SCULPIN* 260				[][][]			
								SHEEPHEAD 145				[][][]			
								SKIPJACK 002				[][][]			
								WAHOO 057				[][][]			
								WHITE 435 CROAKER				[][][]			
								OCEAN 490 WHITEFISH				[][][]			
								WHITE 400 SEABASS				[][][]			
								YELLOWFIN TUNA 001				[][][]			
								YELLOWTAIL 040				[][][]			
								RED 702 ABALONE				[][][]			
								GREEN 703 ABALONE				[][][]			
								ROCK 718 SCALLOP				[][][]			
								LOBSTER 820				[][][]			
								*CALIFORNIA SCORPIONFISH				[][][]			
								MISCELLANEOUS				[][][]			

F&G 656 (9/94)

ORIGINAL = DEPT. OF FISH & GAME COPY *** DUPLICATE = SKIPPER'S COPY

OPERATOR'S INITIALS

94 85535

Figure 6. Commercial passenger fishing vessel scannable logbook form used in southern California since 1994.

SPORTCATCH ANALYSIS

YEAR 1936 ORGIN 720

Number of Fish by Species

Month	Angler Days	Total Fish	Bonito	Bluefin	Albacore	Yellow-tail	Pacific Mackerel	Jack Mackerel	Barra-oude	Sheep-head
1	5	207	7							
2	39	755	6				31			
3	27	245								31
4	90	839					3			29
5	45	6								
6	505	7857	3			61	26		3511	158
7	572	8774	27			4	268		5618	168
8	496	7718	136			17	74	25	4991	154
9	228	1524	9				249		250	35
10	363	3769	94				268		86	64
11	16	71					29			6
12										
Total	2386	37765	282			82	448	25	14456	645
	Shark	Smelt	Lingcod	Halibut	Flatfish	Rookfish	Sculpin	Cabezon	Kelp Bass	W. Seabass
1						200				
2					179	512				
3							4		210	
4				25	39	49	61	11	612	
5				1			1		4	
6				124	2		230	12	3712	10
7				37		20	167	11	2405	33
8				238		9	167	14	1712	36
9				389		60	25	12	285	6
10				599	2		93	18	2356	80
11								1	35	
12										
Total				1413	222	890	748	79	11331	160
	White Croaker	Ocean Whitefish	Misc.							
1										
2	15		12							
3										
4	10									
5										
6	8									
7		14	2							
8	136	36	2							
9	189	15								
10	69	40								
11										
12										
Total	427	105	14							

FG 419 3-54

Figure 7. Sample of commercial passenger fishing vessel archival data Report VI format used from 1936-1957.

				# FISH	FMG. DYS	BT. DYS.
59	720	RECAP	01	23087	3185	102
			02	21462	3515	121
			03	27330	6114	202
			04	22467	4021	171
			05	32222	4067	146
			06	28811	3303	135
			07	29702	3550	126
			08	25708	3263	116
			09	22961	2748	111
			10	13951	1484	71
			11	12600	1551	74
			12	10358	1204	53
				270659*	38005*	1431*
	720	003	01	13627		
			02	12198		
			03	6898		
			04	7625		
			05	3594		
			06	5220		
			07	7427		
			08	10270		
			09	14729		
			10	6609		
			11	2978		
			12	2459		
				93634*	*	*
	720	040	01	854		
			02	1116		
			03	3715		
			04	844		
			05	1393		
			06	751		
			07	1393		
			08	827		
			09	2019		
			10	807		
			11	113		
			12	798		
				14630*	*	*

Figure 8. Sample of commercial passenger fishing vessel archival data Report VI format used from 1957-1959.

				# FISH.	AVG. DYS.	# ANGLERS	AVG. HRS.	BT DYS
60	720	RECAP	01	6106	776	1219		41
			02	9027	1778	2815		62
			03	30053	6904	9822	1485	219
			04	23007	6547	9159	397845	209
			05	39967	6094	7962	338663	232
			06	43459	4644	6792	269071	177
			07	20623	2666	3668	156570	113
			08	11987	1103	1794	67505	43
			09	21039	2262	3361	137155	80
			10	25005	2543	3553	158988	104
			11	14294	797	1771	50165	55
			12	12893	392	1625	24390	60
				257460*	36506*	53541*	1601837*	1395*
	720	003	01	2984				
			02	4306				
			03	8156				
			04	1741				
			05	10524				
			06	13938				
			07	9144				
			08	7969				
			09	14640				
			10	17896				
			11	7508				
			12	7283				
				106089*	*	*	*	*
	720	040	01	371				
			02	309				
			03	14615				
			04	6659				
			05	1479				
			06	2187				
			07	759				
			08	232				
			09	2070				
			10	1545				

Figure 9. Sample of commercial passenger fishing vessel archival data Report VI format used from 1960-1961.

Year	Origin Species 1/ 720 RECAP	Month	No. of Fish by Mo. and Total by Origin	No. of Ang. by Mo. and Total by Origin	No. of Ang. Hours by Mo. and Total by Origin (1. dec.)	No. of Boat Days by Mo. and Total by Origin
64	720 RECAP	01	6650	1103	30640	64
		02	12933	2112	70015	104
		03	6022	1722	51045	84
		04	3755	1118	34685	50
		05	2758	1392	45345	61
		06	15087	2755	87575	141
		07	20971	3165	112767	118
		08	35569	3896	127145	132
		09	24529	2844	99220	118
		10	20517	2503	89981	121
		11	3775	523	16290	34
		12	6435	645	27745	43
			159001*	23778*	792453*	1070*
720	003	01	4036			
		02	2544			
		03	2313			
		04	1722			
		05	177			
		06	7707			
		07	10122			
		08	21250			
		09	18132			
		10	14576			
		11	1779			
		12	1			
			84359*	*	*	*
720	040	06	7			
		08	30			
		09	73			
		10	94			
		11	1			
			205*	*	*	*
720	051	01	519			
		02	4273			
		03	1082			
		04	298			
		05	238			
		06	429			

Figure 10. Sample of commercial passenger fishing vessel archival data Report VI format used from 1962-1978.

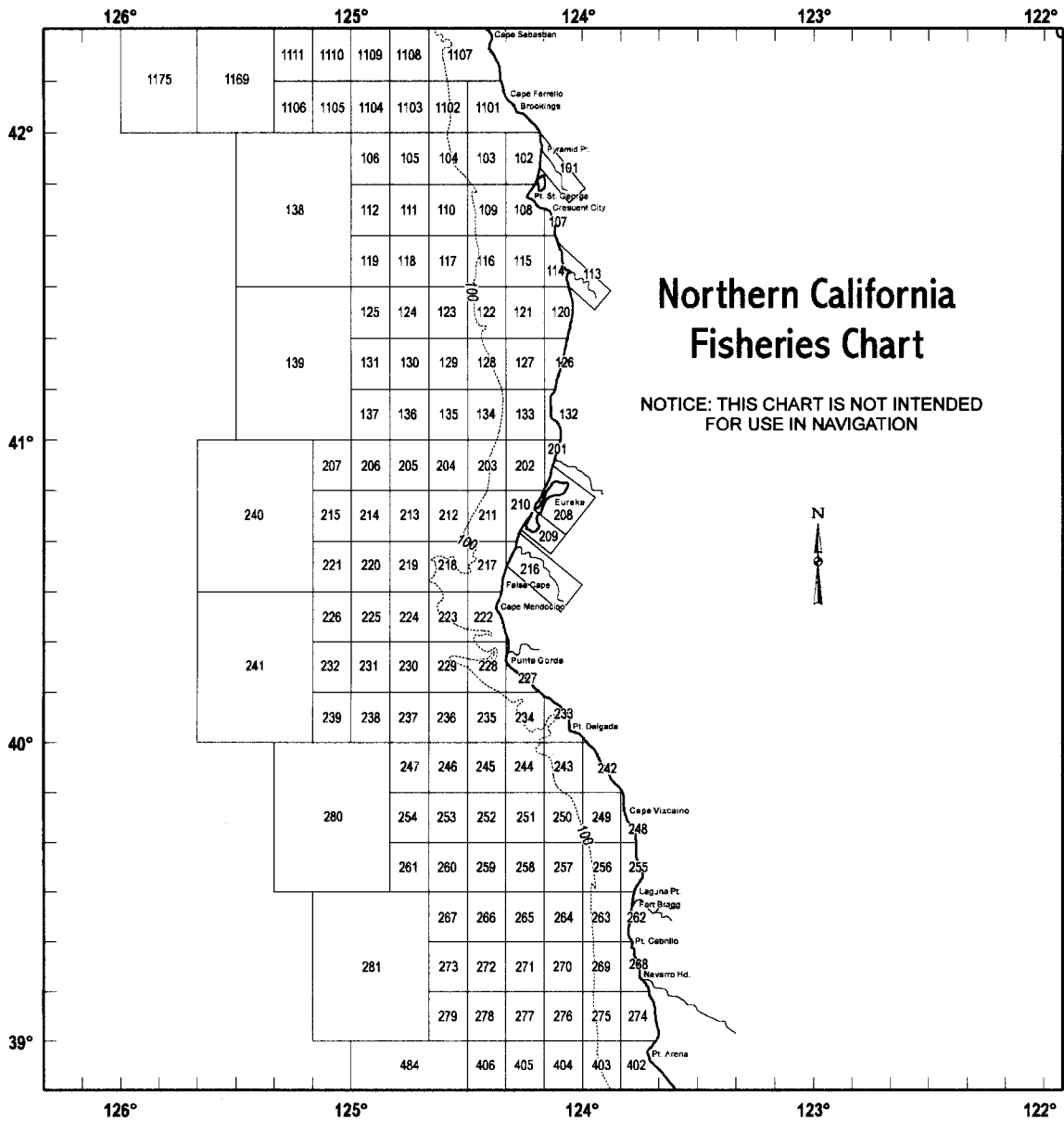


Figure 11. CDFG statistical block system for northern California fishing areas.

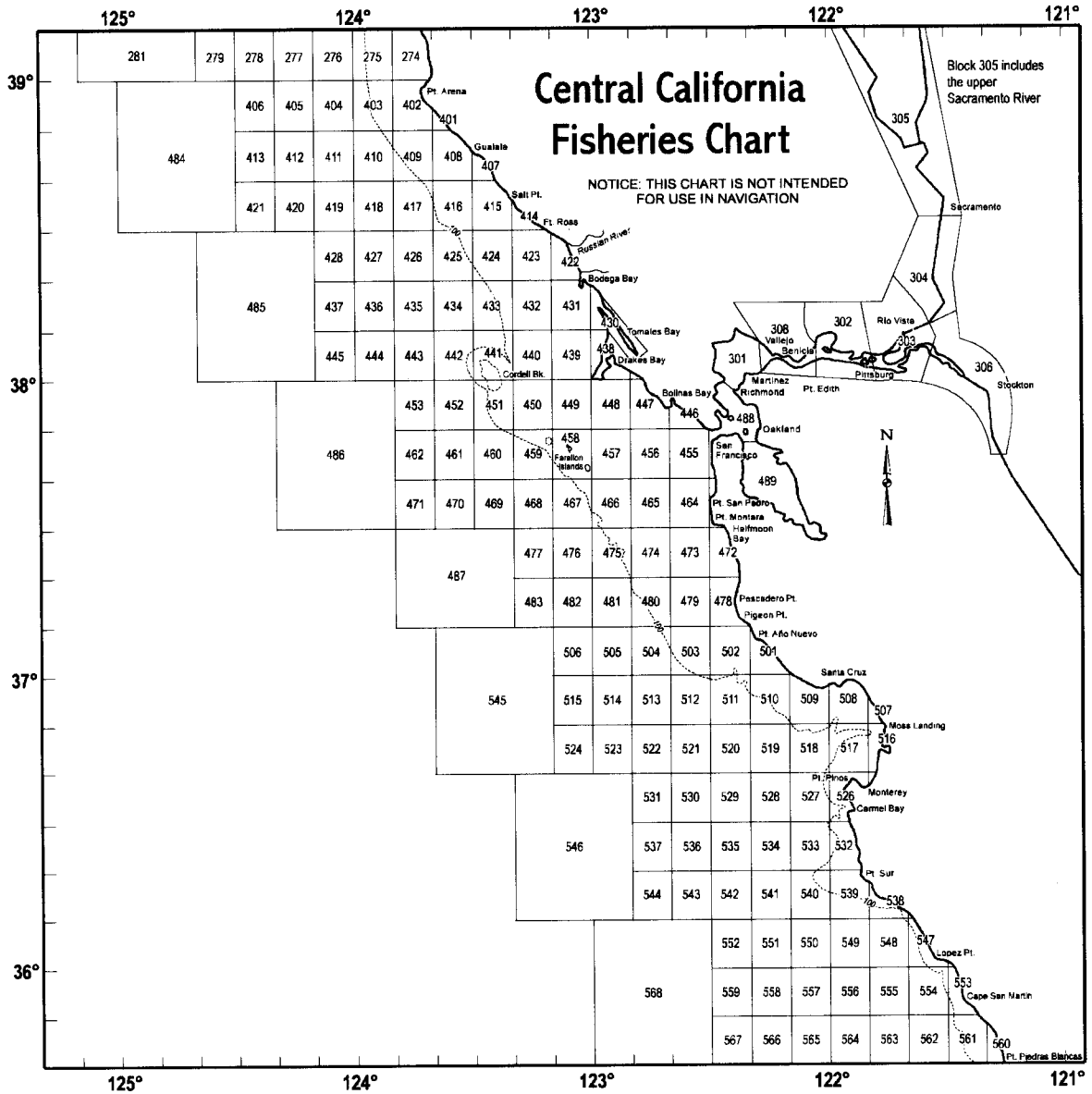


Figure 12. CDFG statistical block system for central California fishing areas.

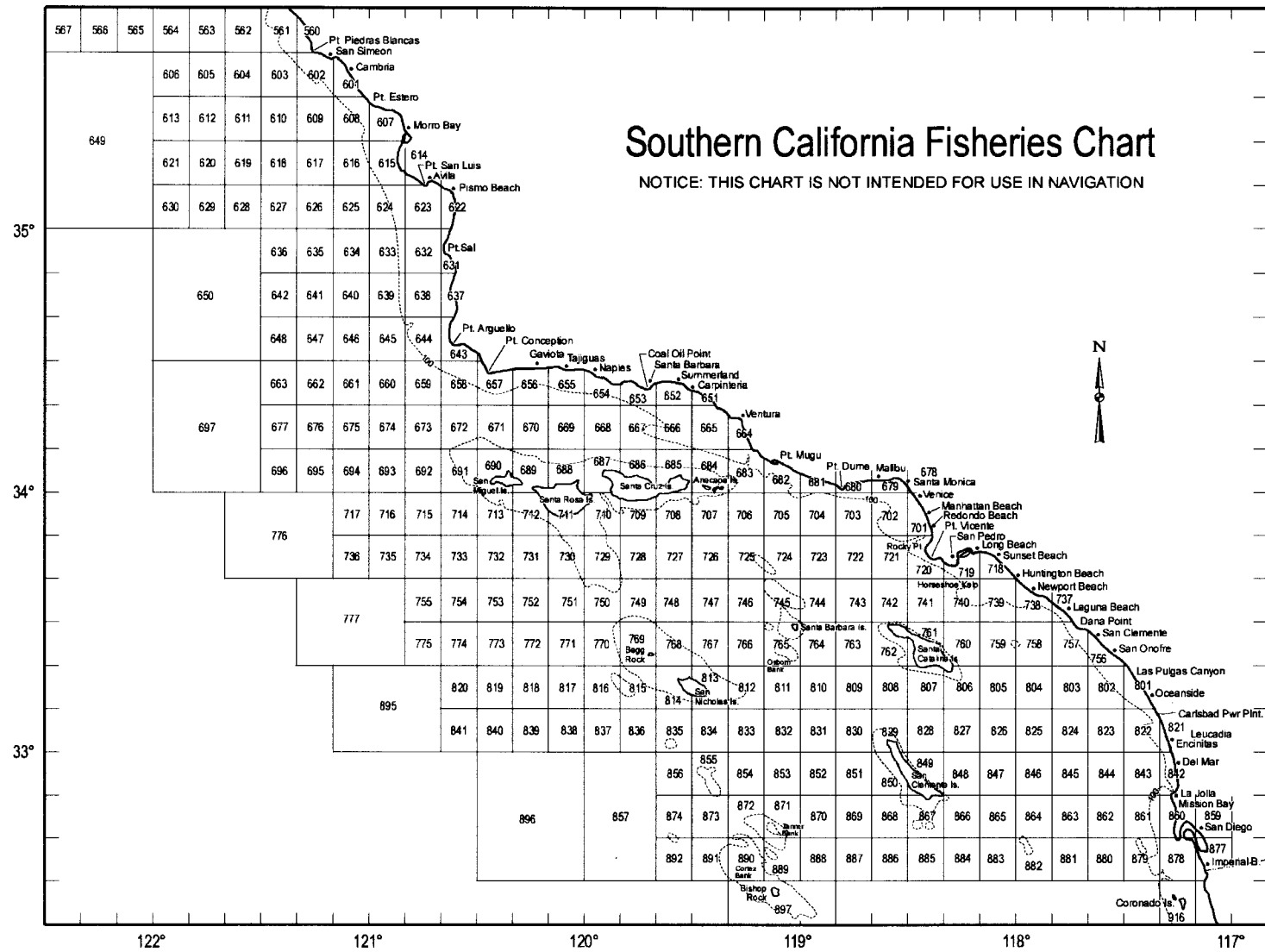


Figure 13. CDFG statistical block system for southern California fishing areas.

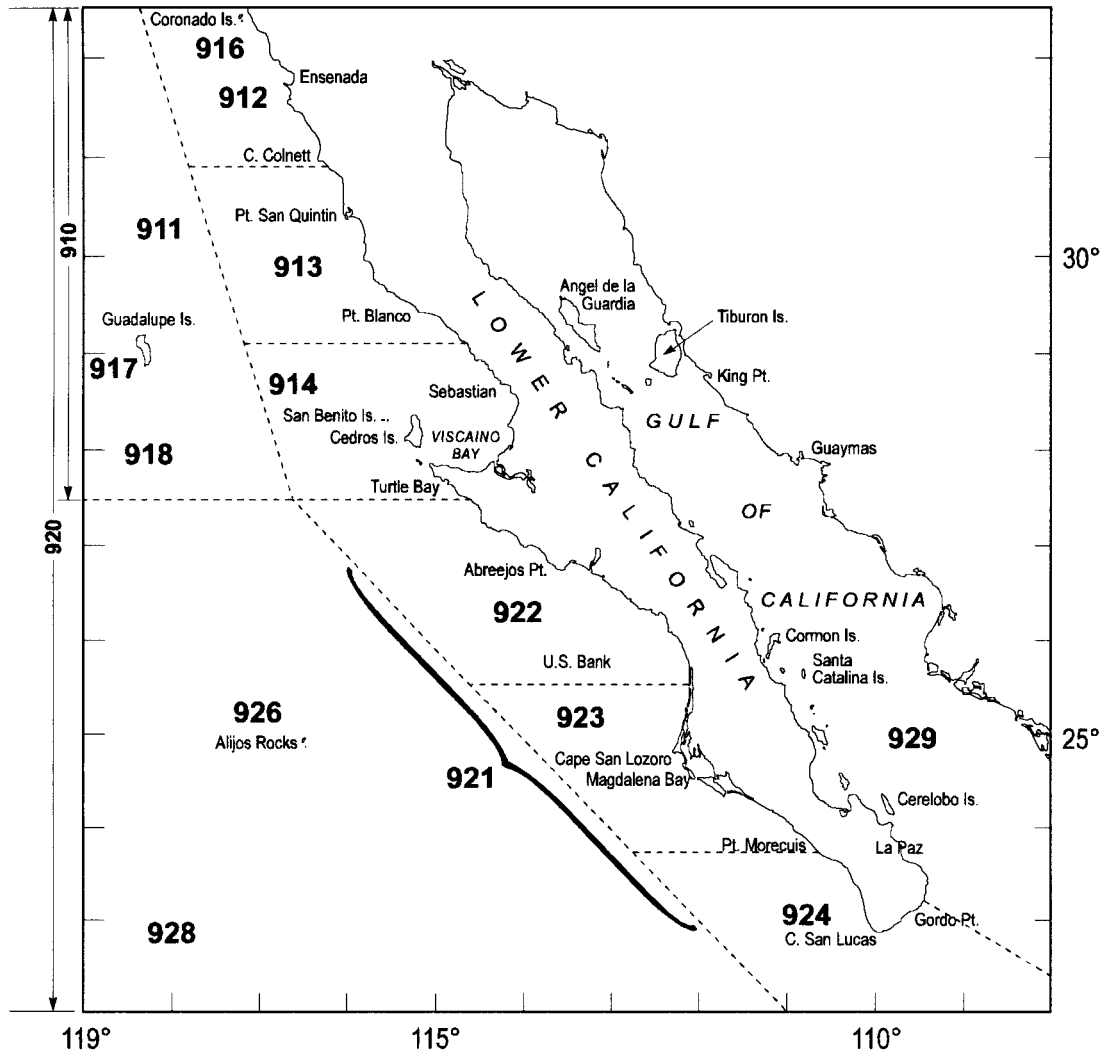


Figure 14. CDFG statistical block system for Baja California fishing areas.

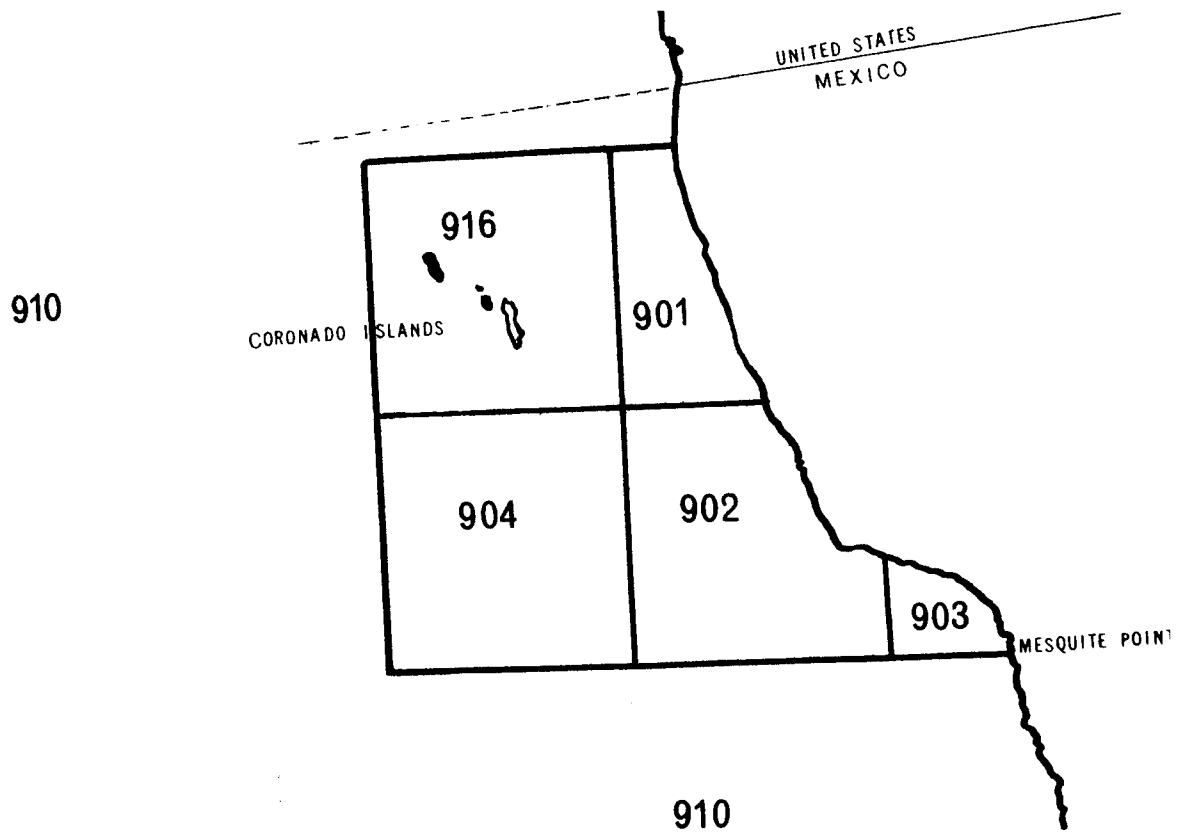


Figure 15. California Department of Fish and Game statistical block system for northern Baja California fishing areas (adapted from Roedel and Frey, 1968).

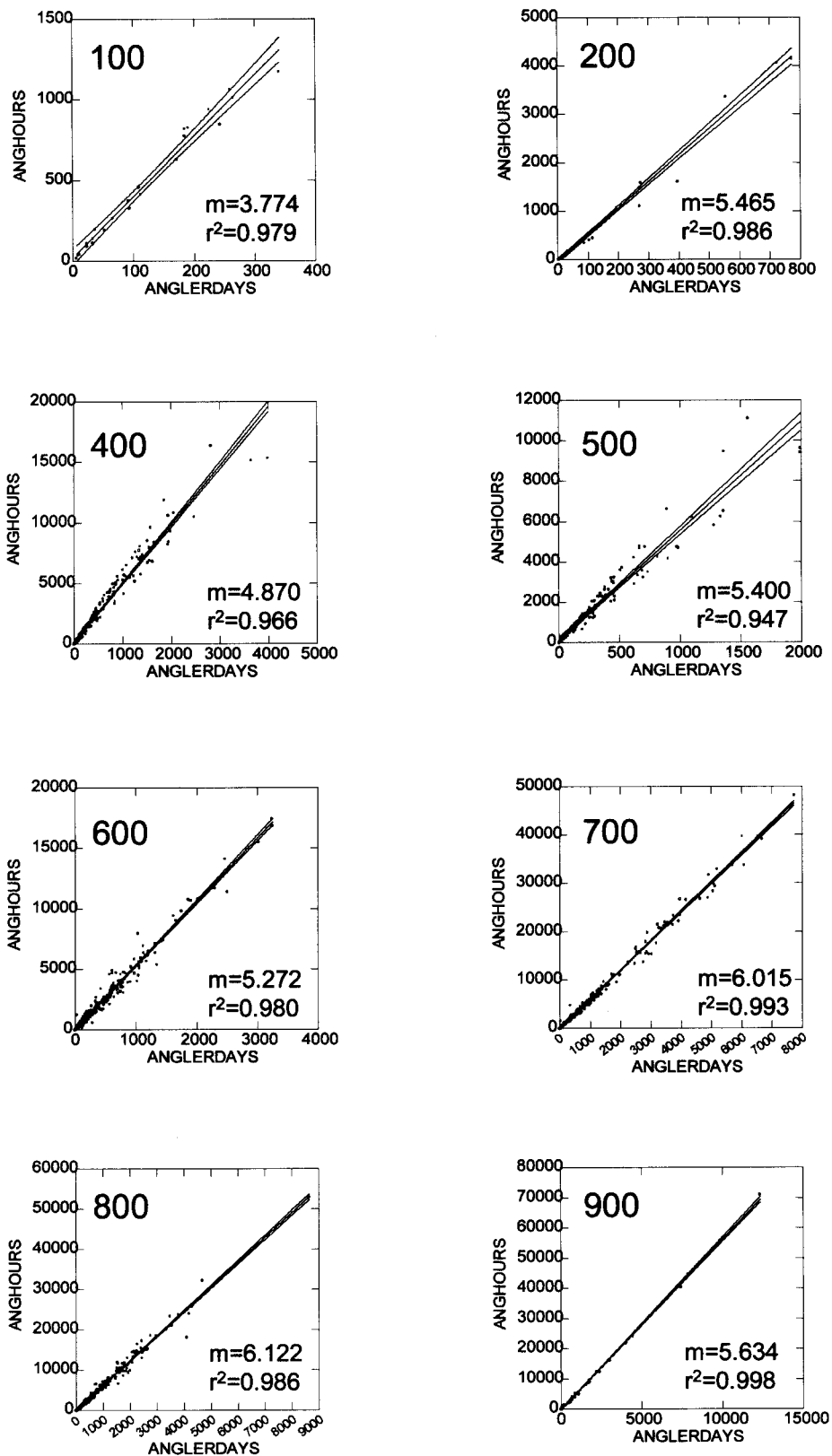


Figure 16. Linear regression of corresponding angler-day and angler-hour data from Report VI, 1960-1961, stratified by general block areas. Regression coefficients (m) were used to convert these two effort types for all other years.

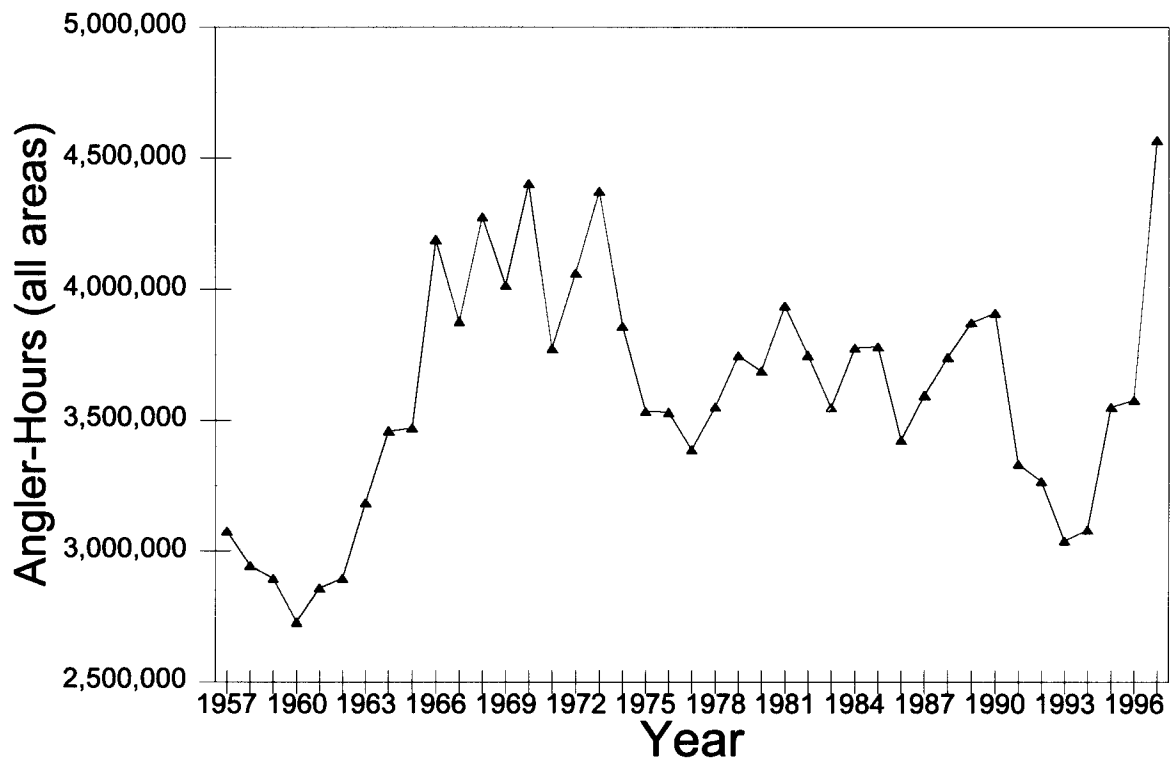


Figure 17. Annual trend in total commercial passenger fishing vessel effort (angler-hours) off California and Baja California, 1957-1997.

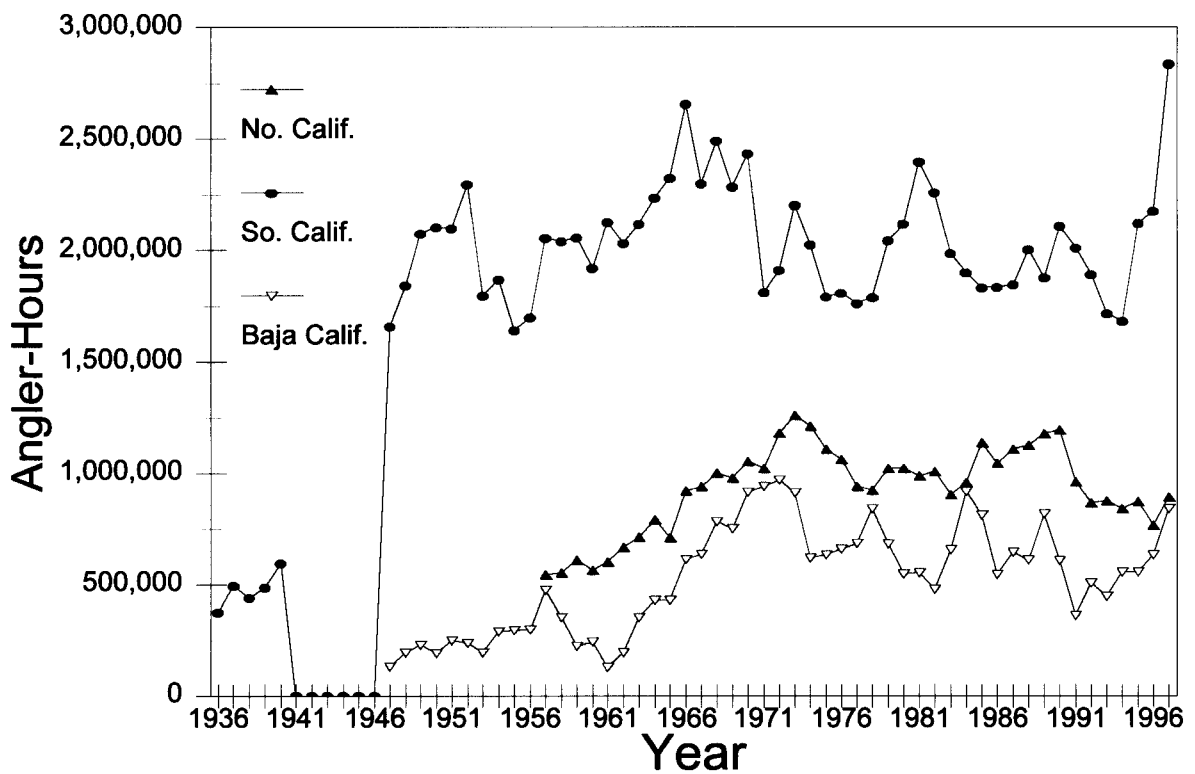


Figure 18. Annual trends in commercial passenger fishing vessel effort (angler-hours) off northern-central California (blocks<651), southern California (blocks 651-899), and Baja California (blocks>899). Time coverage varies by area.

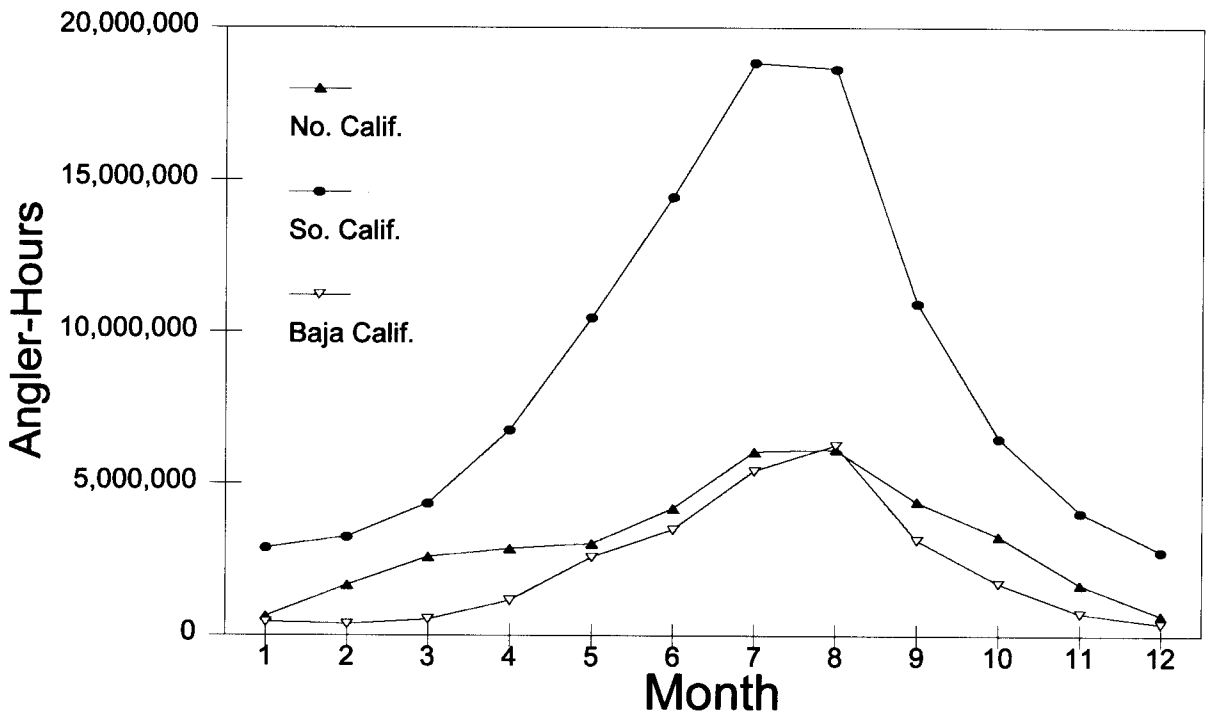


Figure 19. Monthly sums of commercial passenger fishing vessel effort (angler-hours) for northern-central California (blocks<651), southern California (blocks 651-899), and Baja California (blocks>899), from 1957-1997.

Figure 20. Distribution of monthly commercial passenger fishing vessel effort off southern California, 1936-1940.

Angler Hours, 1936-1940

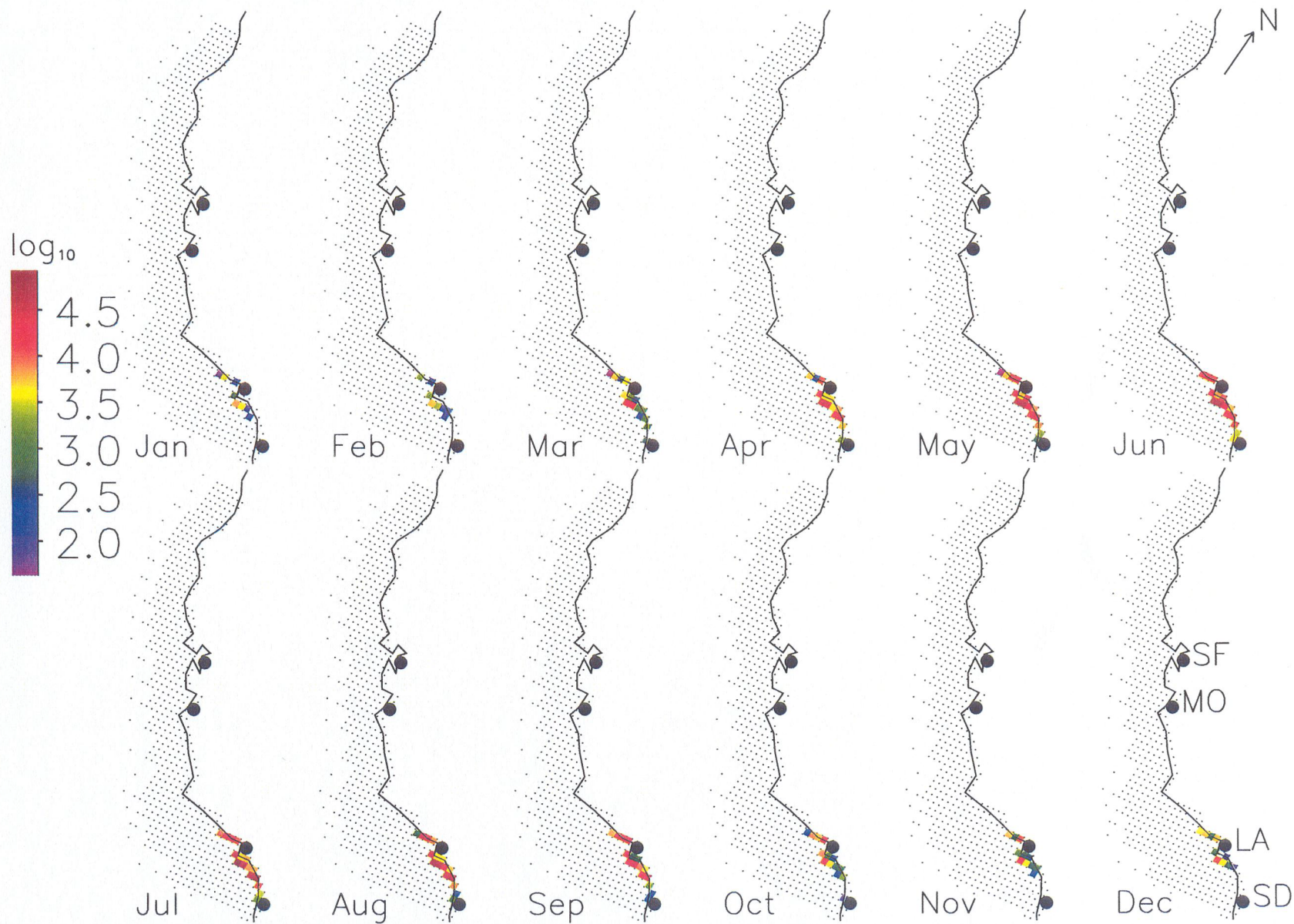
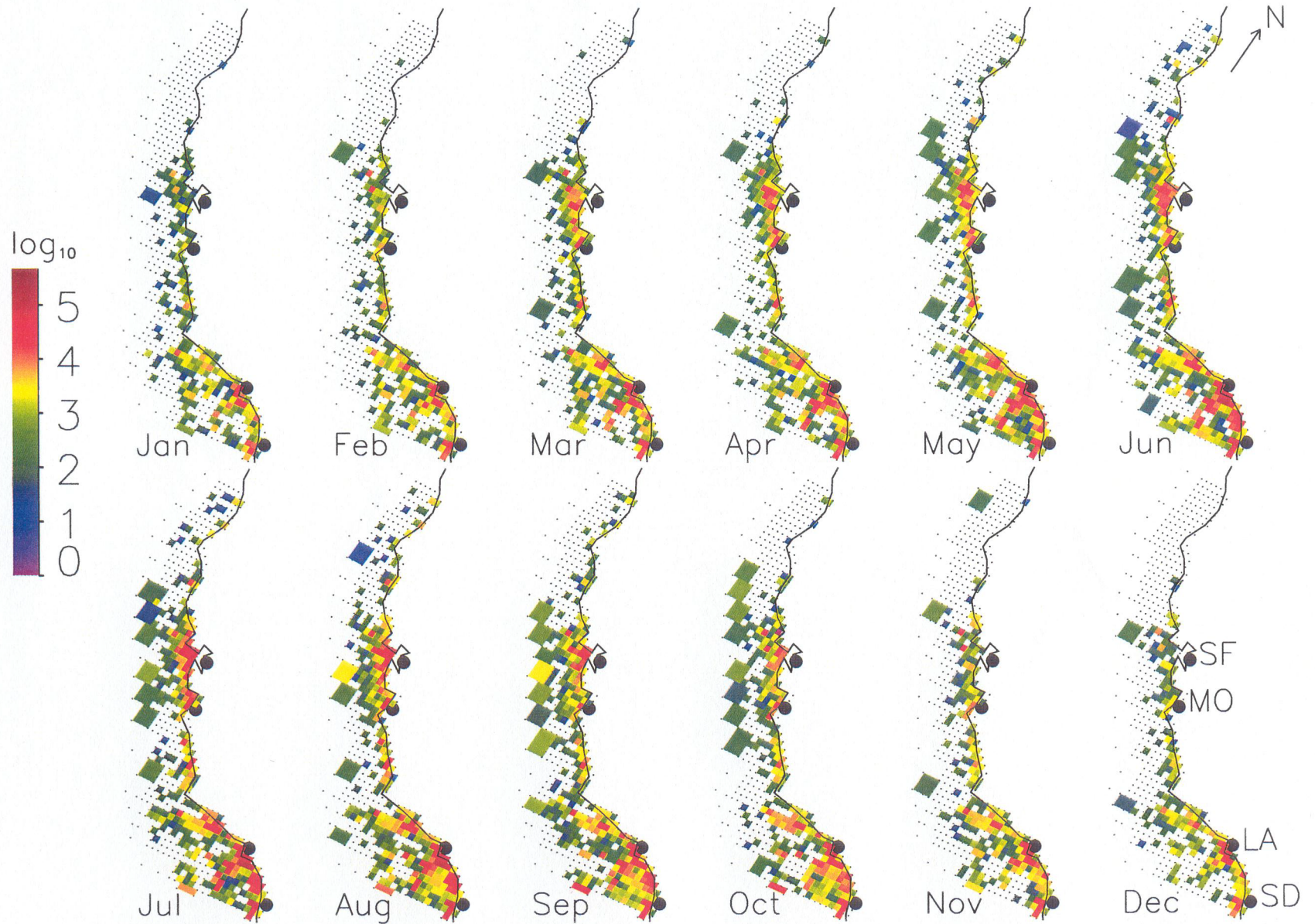


Figure 21. Distribution of monthly commercial passenger fishing vessel effort off California, 1993-1997.

Angler Hours, 1993-1997



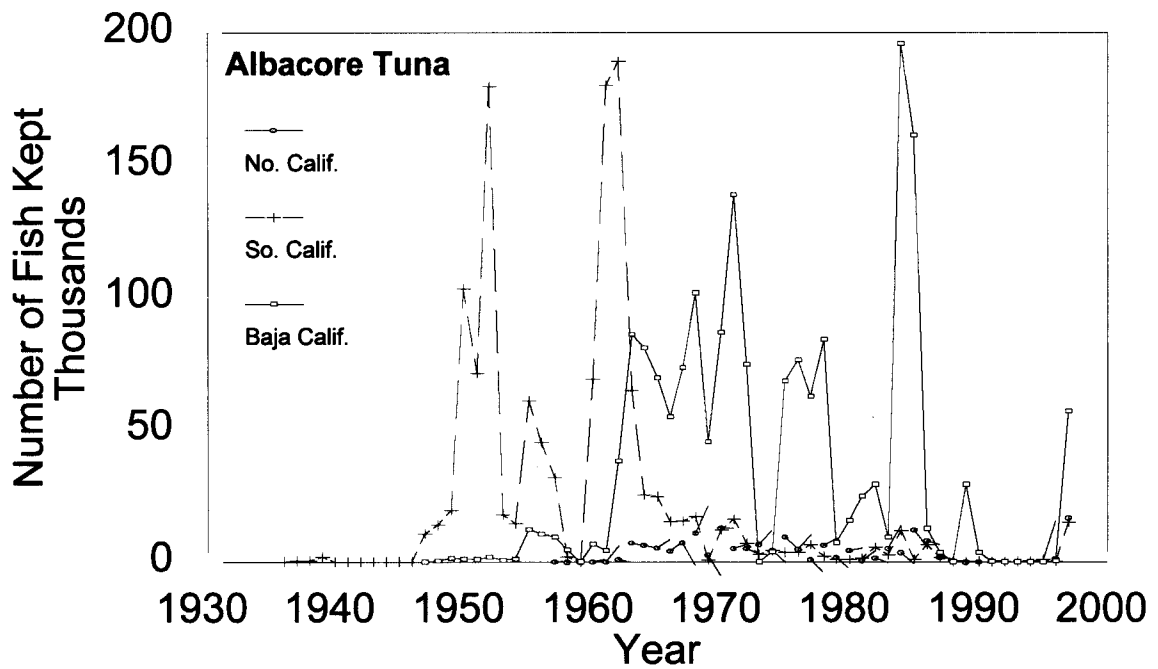


Figure 22. Reported CPFV logbook catch (number kept) of albacore tuna (*Thunnus alalunga*) off northern-central California (1957-1997), southern California (1936-1997), and Baja California (1947-1997).

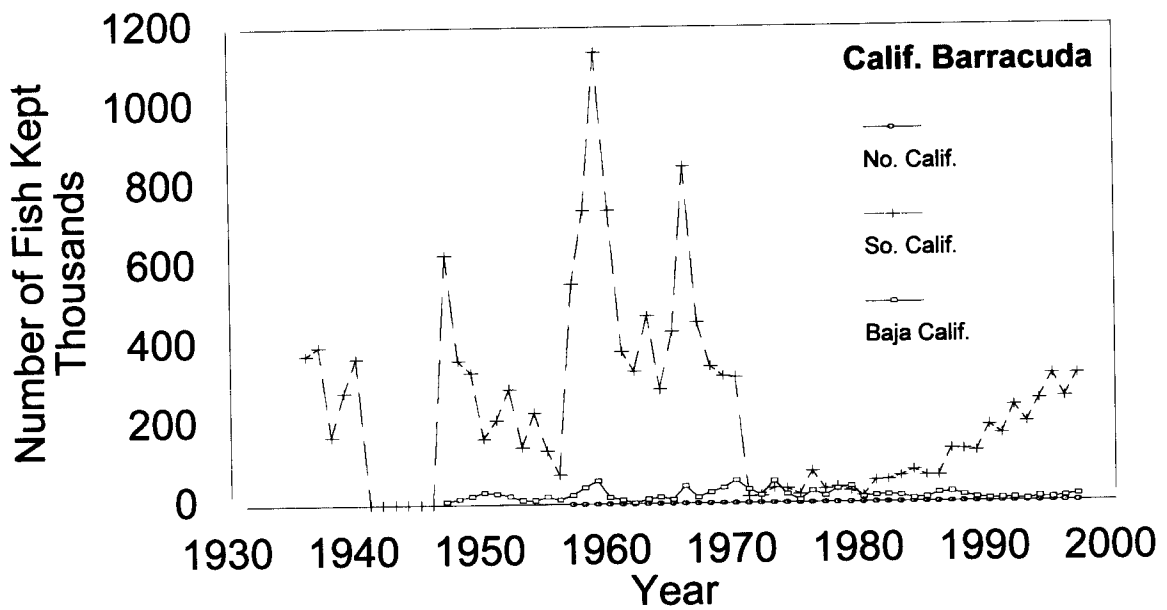


Figure 23 Reported CPFV logbook catch (number kept) of California barracuda (*Sphyraena argentea*) off southern California (1936-1997) and Baja California (1947-1997).

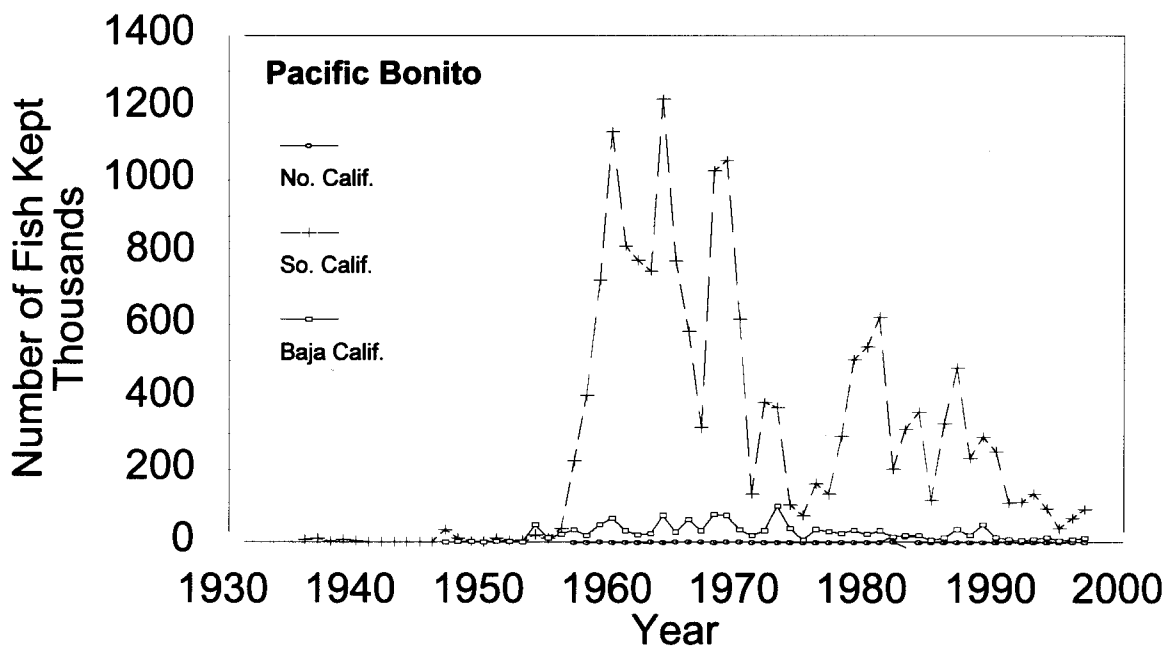


Figure 24. Reported CPFV logbook catch (number kept) of Pacific bonito (*Sarda chiliensis*) off southern California (1936-1997) and Baja California (1947-1997).

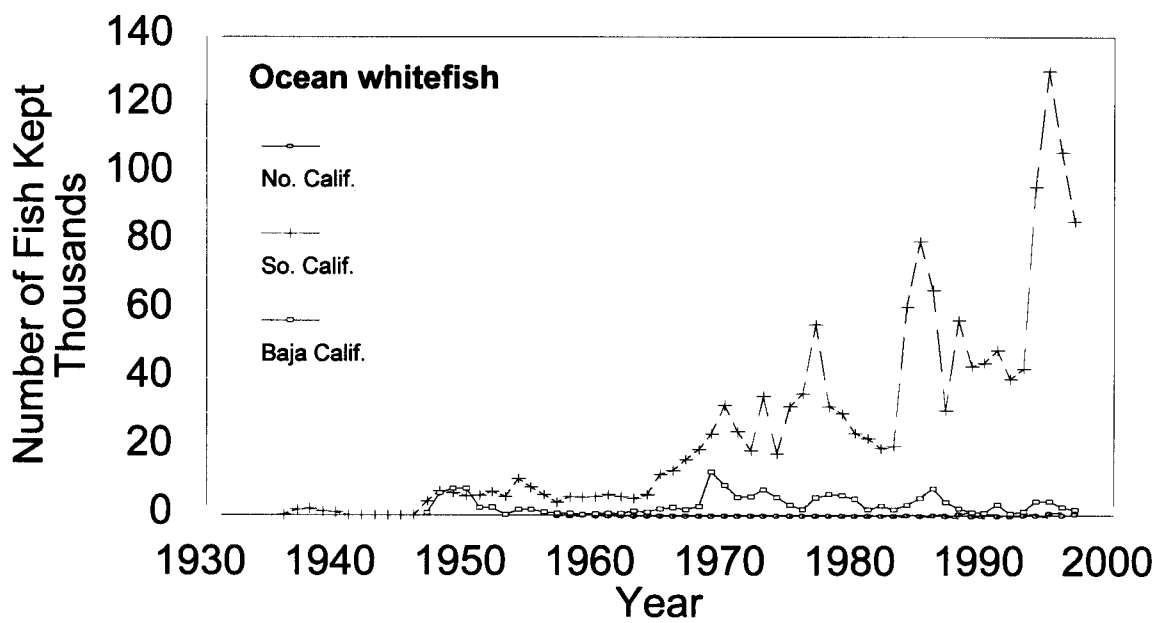


Figure 25. Reported CPFV logbook catch (number kept) of ocean whitefish (*Caulolatilus princeps*) off southern California (1936-1997) and Baja California (1947-1997).

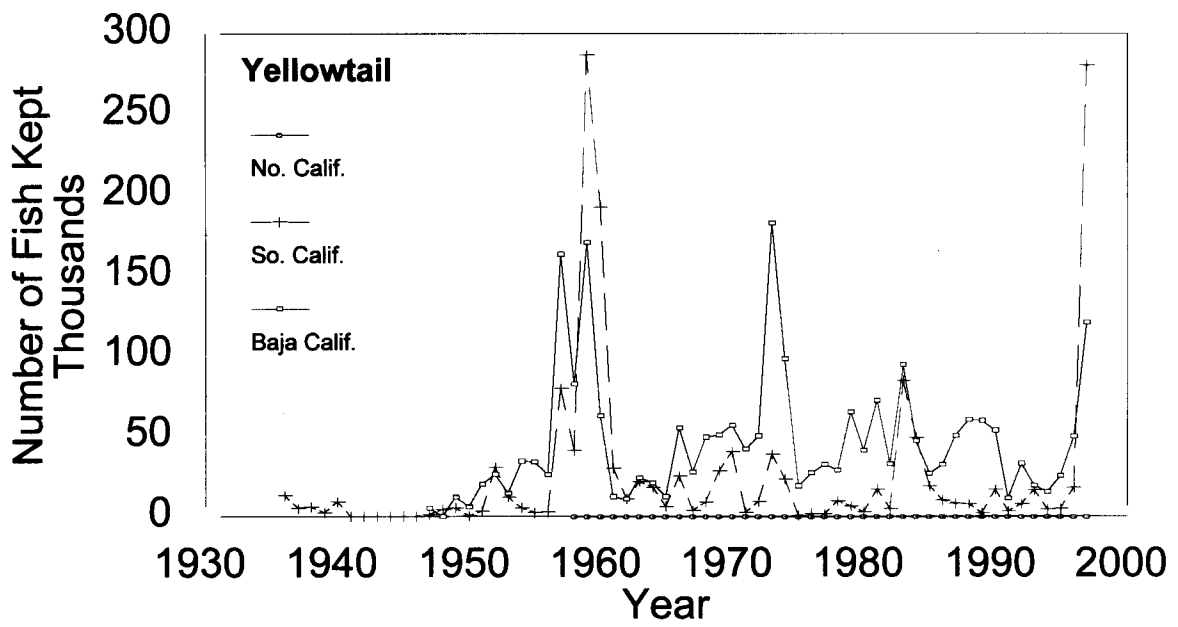


Figure 26. Reported CPFV logbook catch (number kept) of yellowtail (*Seriola lalandi*) off southern California (1936-1997), and Baja California (1947-1997).