

# UC Office of the President

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NRS

NATURAL  
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UNIVERSITY OF CALIFORNIA

# Transect

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## DIRECTOR'S REPORT

As this century draws to a close, the UC Natural Reserve System is experiencing a renewal: new director, new commitment to purpose, new will to self-sufficiency, and a whole new look for our outstanding publications series.

The NRS is 32-going-on-33 years old, and this is an exciting time to be able to participate in its life. Though its nature is not always readily apparent, the NRS is actually a huge collaborative effort — the result of the scientific, managerial, and administrative labors of hundreds of individuals on each of its 33 sites, at all nine UC campuses, within the UC Office of the President, throughout many, many state and federal agencies, as well as a

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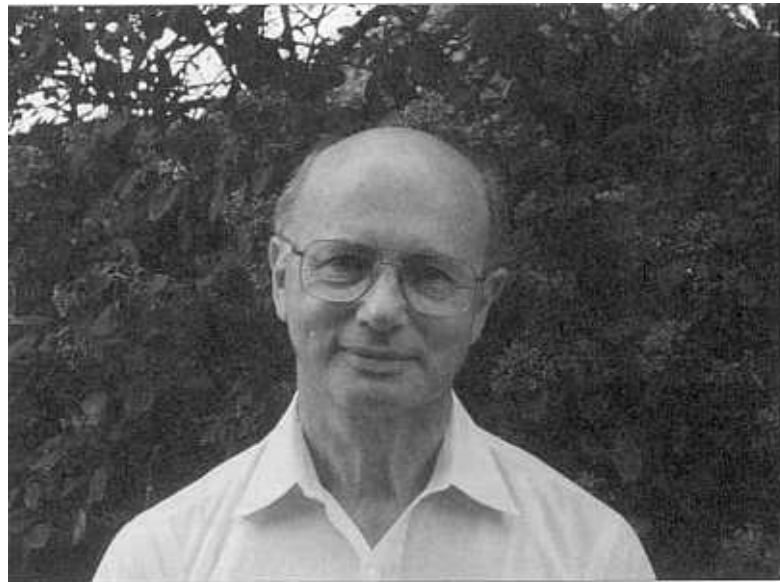
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5 Santa Cruz Island home to nine newly listed plants

6 Research takes root at Sedgwick Reserve



WORLD-CLASS SCIENTIST AND LONG-TIME UC ADMINISTRATOR ALEX GLAZER LOOKS FORWARD TO STEPPING INTO HIS NEW ROLE AS NRS DIRECTOR WHEN THE NEW YEAR BEGINS. PHOTO BY KATHLEEN JAY

## NEW DIRECTOR NAMED FOR THE NRS

With his depth of scientific expertise, height of international stature, and breadth of UC experience, multidimensional Alexander A. Glazer is well suited to assume the leadership mantle for the Natural Reserve System (NRS) in January 1998.

Glazer entered the UC faculty in 1964. He taught in the Department of Biological Chemistry at UCLA's School of Medicine until 1976, then joined UC Berkeley's Department of Microbiology and Immunology. Currently, at UC Berkeley, he is co-chair of the Department of Molecular and Cell Biology. He was chosen to be the next director of the NRS following a nationwide search. His long-standing studies on the photosynthetic light-harvesting systems of cyanobacteria (blue-green algae) and red algae first led Glazer to his interest in environmental biology. Now he is able to bring important perspective to the

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## NEW DIRECTOR

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NRS: a profound understanding of science from the level of its most basic components and processes on up. Glazer greets this micro-to-macro shift of scale with enthusiasm, praising the opportunities that the NRS's diverse habitats offer both scientists and the general public for learning about ecology.

"Environmental problems are among the most important challenges facing society," Glazer says, naming the concerns that surround global warming, ozone depletion, clean water supplies, and preservation of biodiversity as especially pressing.

"The NRS is more than a nature conservancy — it's an outdoor laboratory," he says. "It offers researchers the capability to study environmental problems at relatively or completely undisturbed field sites with controlled access. These are slowly developing problems that will still be with us in 20 years. UC is fortunate to have a large number of very high-caliber faculty with research projects at the cutting edge of their fields. They train talented graduate students, people who will be the next leaders in addressing environmental problems. It's a fantastic operation."

Glazer believes one strength of the research coming from the NRS's 33 sites is in the diversity of academic expertise drawn from the many different departments — biology, botany, geology, geography, archaeology, ecology, environmental planning, public health, and so on — housed on UC's nine campuses.

"To optimize the resources of the NRS and the talent pool of the faculty," Glazer says, "one needs funds to support graduate students in doctoral programs, whose research will exploit the resources made accessible by the reserves.

"One goal is to obtain an endowment for the NRS which would allow effective day-to-day operations and maintenance of the system. A second goal is to obtain support for the educational objectives so the system can be used to the best advantage."

The wide geographical distribution of the NRS's reserves can complicate coordination of the system as a whole. On the positive side, however, Glazer points out that this wide distribution also serves to bring the University to communities distant from any UC campus. He explains: "Both kids and adults from these communities can interact with talented investigators in the context of their work and gain an understanding of the value of undisturbed environments for research and what is being learned about such environments."

Glazer, a man with strong faith in "the power of ideas," has experience putting together multidisciplinary programs. In the 1980s, he participated in the reorganization of the biological sciences at UC Berkeley; in the 1990s, he went on to administer a department with five divisions in very different areas of the biological sciences. Meanwhile, in the ever-increasingly important area of fundraising, Glazer served on the committee that raised some \$75 million for the biosciences.

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PHOTO BY DAVID J. GUBERNICK

## GETTING TO KNOW THE NRS

**T**hese days there are many ways for site users and friends to learn about the NRS.

Two recent additions to our ongoing reserve brochure series describe the Heath and Marjorie Angelo Coast Range Reserve, in Mendocino County, and the Burns Piñon Ridge Reserve, in San Bernardino County. Similar brochures are available for 20 other NRS sites.

A new systemwide flyer describes the entire NRS, outlining its research, teaching, and public service mission. Augmenting text with a visual display of the system's wealth of resources are photographs taken by David J. Gubernick (whose splendid bobcat appears above), Galen Rowell, Bruce Bannerman, Elizabeth Riddle, Ike Eastvold, Dan Costa, Wayne Ferren, and Jim André.

All NRS publications — including current and back issues of the *Transect*, are available by request and sent free of charge. Contact the systemwide office (see page 12).

Finally, for those with Internet access, the entire NRS awaits you in cyberspace at: <<http://nrs.ucop.edu>>. This Web site is regularly updated and well linked. Questions? — contact Web mistress Jennifer Bello at: [jennifer.bello@ucop.edu](mailto:jennifer.bello@ucop.edu).

## HASTINGS SCIENTISTS HOPE NEW SIGNS WILL SAVE LIVES

Last February, a graduate student and the reserve manager of the Hastings Natural History Reservation, in Monterey County, posted a half-dozen specially made signs along Carmel Valley Road in an effort to call motorists' attention to some small lives creeping undertire. The signs, which read, "Please Avoid Newts Crossing Road," refer to the California newt (*Taricha torosa*). This amphibian needs ponds in which to reproduce, and it will travel long and hard to get to them.

Peter Trenham, a Ph.D. candidate at UC Davis, began studying California newts at Hastings in January 1995 as an offshoot of his work with California tiger salamanders (*Ambystoma californiense*), a state species of special concern and a candidate for federal listing.

The California newt, far more common than the California tiger salamander, has a range that extends almost the entire length of the state, along the coast and in the Sierra Nevada foothills. Adults can be 5 to nearly 8 inches long when fully grown. However, each newt begins its life as a tiny, aquatic, gill-breathing hatchling that looks like a fish and feeds on zooplankton. It remains in its home pond, gradually metamorphosing — growing limbs, losing gills and tail fins, and developing its fine-grained bumpy skin — until it is about six months old and 2 inches in length.

When the juvenile newt leaves the pond, it enters its first terrestrial phase. For the rest of its life, it will pass through alternating terrestrial and aquatic phases, which are accompanied by morphological changes: rough skin becoming smooth, the tail grow-



PHOTO BY DAVID J. GUBERNICK

ing larger and developing a fin (though no return of the early gills), the body acquiring a gelatinous layer that is most pronounced in males and gives them a bloated look. Five years must pass before a newt reaches maturity; some individuals may live as long as 20 years.

Trenham studies the newts' travels by marking all individuals to identify the pond where they are first captured. Marking is accomplished by clipping a toe, which slowly regenerates, but still identifies an individual for two to five years. In each of the past two winters, more than 10,000 adult newts have been marked as they entered the largest of the local breeding ponds. When fall rains begin, usually in late September or early October, the newts head home to breed. Males arrive first, stay three months, and are gone again by February; females show up later, linger about a month, then leave behind their egg masses — each mass a gelatinous superball that can contain from 20 to 30 eggs. Large numbers of marked newts have been resighted on area

roads as far as two miles from their "home" ponds.

It's not known for sure if newts always return to the pond where they hatched, but another study on a different species of newt revealed some newts willing and able to creep as far as five miles to get home. Along their journey, they are guided definitely by their sense of smell (as blindfolding studies have shown) and possibly by polarized light or magnetic fields. In the spring of 1996, Trenham and research zoologist Walter Koenig individually marked 200 male newts from each of two ponds. They then displaced half of each group to two different ponds located approximately three miles away, to see how many could find their way back. As of spring 1997, three of these animals had made it back to their "home" pond, and several more were captured in ponds along the return route. Monitoring for these displaced animals will continue this winter.

The journey between the newts' terrestrial and aquatic homes can be extremely hazardous to their health, because Carmel Valley Road lies in

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PHOTO BY DAVID J. GUBERNICK

## HASTINGS SCIENTISTS

*Continued from page 3*

between and must be crossed at some point during the course of their two-mile trek. Multiplying the peril is the fact that formidable numbers of newts go on the move at the same time, forming large groups that are vulnerable to mass-flattenings. On the single rainy night that occurred last February-March at Hastings, a pile-up of hundreds of determined newts overflowed the 10-inch-high, aluminum flashing fence that is supposed to facilitate their capture from one local pond. During a one-month period in November-December 1996, Trenham collected 1,500 road-killed adult newts within a 2.7 kilometer (2-mile) stretch of highway that extends about 1 kilometer before and 1.7 kilometers after the reserve's entrance gate.

A mortality episode of this magnitude suggests the newt population might benefit from some human intervention. However, an initial plan to create safe corridors for the newts was rejected as too expensive: 6-inch tunnels were proposed at 500-foot intervals underneath the road, to be accompanied by three-miles' worth of foot-high fencing along the road that would funnel the newts and other vulnerable animals into the tunnels.

So, instead, Hastings Reserve Manager Mark Stromberg, used funds donated by local wildlife enthusiast Helen Johnson to produce and post the newt-crossing signs. He hopes the signs will at least make people aware of the problem and perhaps generate some concern for the newts, who can't stay clear of traffic moving 55 miles per hour. Trenham will continue his investigations and ultimately intends to make an estimate of the impact the road has on the greater newt population. — SGR

*For more information, contact:*

Peter Trenham  
UC Davis, Evolution & Ecology  
Phone: 916-752-1112  
E-mail: pctrenham@ucdavis.edu  
— or —  
Mark Stromberg, Reserve Manager  
Hastings Natural History  
Reservation  
Phone: 408-659-2664  
E-mail: stromber@socrates.berkeley.edu



PHOTO BY DAVID J. GUBERNICK

## STUNT RANCH ANT STUDY UNCOVERS SPECIES SELDOM SEEN

**O**n March 15, Peter Nonacs, a UCLA assistant professor, and Smadar Gilboa, a postdoctoral researcher at UCLA, were surveying ant species at the Stunt Ranch Santa Monica Mountains Reserve in Los Angeles County. They were monitoring colonies of honey-pot ants (*Myrmecocystus* spp.). Instead, what they found, when they excavated one nest entrance of *M. ewarti*, was something very different: army ants.

Nonacs and Gilboa observed small, blind, yellowish workers and larger soldiers with sickle-shaped jaws — characteristics immediately suggesting army ants. Phil Ward, a professor at UC Davis, examined collected specimens and later confirmed the individuals belonged to the species *Neviamyrmex leonardi*. All species in the genus *Neviamyrmex* are considered army ants in that they hunt for insect prey by forming raiding columns.

Army ants in the tropics are common and stunningly apparent. However, although *Neviamyrmex* species are common throughout the southern and western United States, little is

known about the genus. They are not readily apparent, since they live underground and conduct their raids mostly at night.

*N. leonardi* is an especially cryptic member of the genus, and there is only one other record of the species in California, from San Diego County. Moreover, the species has very rarely been found anywhere else either. Most often it has been noted only when the occasional dead worker is collected within colonies belonging to other ant species.

Nothing is known of *N. leonardi*'s overall life-history, usual colony size, or foraging preferences. Consequently, its presence at Stunt Ranch Santa Monica Mountains Reserve may provide the opportunity to encounter other colonies more regularly and to explore this unique species' distribution and interactions with other ants at that site. — SGR

*For more information, contact:*  
Peter Nonacs, Assistant Professor  
UCLA, Biology  
Phone: 310-206-7332  
E-mail: pnonacs@biology.ucla.edu

## NEW RULING LISTS ISLAND'S ENDANGERED PLANTS

Looking up at the steep slopes that rise from Christy Ranch on the west end of Santa Cruz Island, you can see a few dozen pink-flowered shrubs scattered among the coastal scrub and chaparral. You are looking at half the world's population of Santa Cruz Island bush mallow, one of nine plant species on the island that recently have been federally listed as threatened or endangered.

The new listings follow a series of studies of rare plants in the Channel Islands conducted by scientists from the Santa Barbara Botanic Garden, the National Park Service, the U.S. Geological Survey, and the Santa Cruz Island Reserve.

Although spared much of the development that has impacted plant communities on the mainland, Santa Cruz Island has been dramatically affected by grazing

livestock since their introduction in the 1850s. Up to 50,000 sheep once grazed Santa Cruz Island. Although they have been removed from the island over the last 15 years, more than a century of overgrazing has reduced the distribution of many island plants.

Long isolation of island plants from their mainland counterparts has created some unique endemic characteristics, encouraging not only the evolution of new species but also the shedding of physical defenses that would otherwise protect plants from predation. Research comparing similar plant species from Santa Cruz Island and the mainland has shown that livestock consistently prefer to eat island

plants, all of which possess fewer spines or chemical defenses compared to their mainland cousins.

Researchers are concerned about this and other effects of introduced species on island endemics. Consider another of the newly listed species, the Santa Cruz Island fringe-pod. Fifty years ago, botanists described its occurrence as "frequent from the north shore to the southwest portion of the island." Subsequent surveys located fewer and fewer populations. By 1993, no individuals could be found anywhere, and surveyors recorded seeing evidence of feral pigs at all of the sites that were originally documented.

Recognizing the threat feral pigs pose to rare plants, managers have built enclosures around some of the populations of endangered species. Researchers have built additional

enclosures around suitable sites where currently no endangered populations exist in order to conduct *in situ* tests of different propagation methods. Understanding what limits reproduction of plants in their native habitat will help managers design recovery plans tailored to specific local conditions.

Researchers from the Santa Barbara Botanic Garden have discovered significant differences in the reproductive capacity of the bush mallows at Christy Ranch compared with two other populations of the shrub located elsewhere on the island. Although all three populations produce com-

### Will the Santa Cruz Island Live-Forever Live Forever?

The U.S. Fish and Wildlife Service has recently listed 13 plant taxa from the northern Channel Islands as threatened or endangered. Nine of these occur on Santa Cruz Island:

#### Endangered

- Hoffmann's rock cress (*Arabis hoffmannii*)
- Island barberry (*Berberis pinnata* ssp. *insularis*)
- Island bedstraw (*Galium buxifolium*)
- Santa Cruz Island bush mallow (*Malacothamnus fasciculatus* var. *nesioticus*)
- Santa Cruz Island malacothrix (*Malacothrix indecora*)
- Island malacothrix (*Malacothrix squalida*)
- Santa Cruz Island fringe-pod (*Thysanocarpus conchuliferus*)

#### Threatened

- Santa Cruz Island live-forever (*Dudleya nesiotica*)
- Island rush-rose (*Helianthemum greenii*)

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## NEW RULING

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parable flowers, the Christy shrubs were far less likely to develop fruit and, therefore, to seed. Researchers noticed that, although bees were common elsewhere, pollinating insects were apparently absent above Christy Ranch, underscoring concerns about the fate of native pollinators on Santa Cruz Island.

Regular monitoring of rare plants is an important part of understanding the biology of endangered species. For example, island rush-rose, a small chaparral shrub listed as threatened in this recent ruling, is known from 14 sites on Santa Cruz Island and one on Santa Catalina. Each population has had from a few to a few dozen individuals. In 1994, a fire swept across part of Santa Cruz Island, killing all existing rush-roses at four sites. Yet by cracking seeds in the soil and opening the site to sunlight and nutrients, the fire made it possible for seeds long-dormant to germinate, regenerating 500 to 1,000 new plants in each burned population. Such events provide researchers with new understanding about the role of natural disturbance in the life history of some island endemics.

Historic records and ongoing monitoring of island rare plants and endemics are now housed in a new GIS-linked database created for the long-term ecological monitoring program at Channel Islands National Park. — *MLH*

*For more information, contact:*

Dieter Wilken, Director of Research  
Santa Barbara Botanic Garden  
1212 Mission Canyon Road  
Santa Barbara, CA 93105  
Phone: 805-682-4726  
E-mail: wilken@lifesci.lscf.ucsb.edu

## RAISING RESEARCH AT SEDGWICK



OAKS, LIKE THIS ONE AT HASTINGS RESERVE, ARE A QUINT-ESSENTIAL FEATURE OF THE CALIFORNIA LANDSCAPE — BUT IN MANY AREAS, THEY ARE NOT REGENERATING. NOW SCIENTISTS AT SEDGWICK ARE TRYING TO FIND OUT WHY.

Only in its second year as part of the NRS, the Sedgwick Reserve is building an impressive research program. Located in the Santa Ynez Valley near Santa Barbara, Sedgwick contains extensive oak woodlands and grasslands similar to the landscape that covers nearly a quarter of California. It is a landscape familiar to every Californian, and one that faces many threats.

Throughout much of California, oak woodlands are not regenerating. In 1971, research ecologist Jim Griffin published one of the first papers documenting the shortage of young oaks based on his work at the Hastings Natural History Reservation in Carmel Valley. In a more recent study using historical aerial photos of Sedgwick, scientists from UCSB found no new recruits to the oak woodland canopy during the 46 years recorded in the photos. Such findings have raised questions about the fate of California's oaks and native grasslands, and have brought together a remarkable group of researchers at Sedgwick Reserve to study the problem.

Two of the authors of the aerial photo study, Frank Davis (UCSB Dept. of Geography) and Bruce Mahall (UCSB Dept. of Ecology, Evolution, and Marine Biology), along with Claudia Tyler (UCSB Dept. of Ecology, Evolution, and Marine Biology), have be-

gun a long-term study to investigate the factors affecting recruitment of oaks and to recommend the best low-maintenance management approaches to promote oak restoration. Considering that more than 75 percent of California's oak woodland and savanna ecosystems are grazed by cattle, the researchers are particularly interested in the role of cattle grazing in oak recruitment.

Sedgwick Reserve is an ideal site for such research. Three species of oaks occur in its mixed woodlands and savanna. Cattle, maintained at Sedgwick through a cooperative agreement with California Polytechnic State University, San Luis Obispo, can be moved among research plots to experimentally control grazing intensity. And because Sedgwick is a research and teaching reserve, rather than a private ranch, it is possible to conduct long-term experiments that would be difficult elsewhere.

In 33 experimental plots, Mahall, Davis, and Tyler have planted acorns collected on site from valley oak

(*Quercus lobata*) and coast live oak (*Q. agrifolia*). Half of the plots are open to grazing; the others exclude either large mammals (such as cattle, deer, and pigs) or small mammals (such as gophers and ground squirrels). Over the next ten years, researchers will map the survival of oaks from plantings and natural establishment.

It is not only what sprouts above ground that is of interest to Sedgwick researchers. The oak regeneration study has provided an experimental structure to test below-ground processes and to link them with patterns of landscape use and topography. Availability of nitrogen and water is central to the productivity of oak woodlands and grasslands. However, requirements vary for different species.

For example, the success of annual grasses is dependent on available nitrogen, and invasive weeds are often associated with disturbed areas high in nitrogen. Perennial bunchgrasses also require nitrogen, but may be more limited by the amount of water they receive during the dry season. Oak productivity may be more a function of how much water is available throughout the year. It is these differences that interest Josh Schimel (UCSB Dept. of Ecology, Evolution, and Marine Biology) and others who are examining the relationship between cattle grazing and the cycling of water and nutrients in soils.

Schimel's team has placed 70 soil water samplers in grazed and ungrazed areas both under oaks and in the open grassland to track water chemistry at different depths within the soil. The samplers measure movement of nitrate solutes through the soil; additional samplers monitor soil moisture, temperature, and gas flux. All these probes and monitors will help Schimel un-

derstand cattle's effect on the cycling of nitrogen from plants to soil and even to waterways in different parts of the landscape.

Cattle have been a part of the California landscape for a long time, cutting paths and compacting soils that diminish the amount of water absorbed into the ground. Gophers and ground squirrels have had an opposite effect, loosening the soil and opening conduits for surface water to seep deep into the ground. This burrowing activity both affects and is affected by soil condition. Jim Reichman (National Center for Ecological Analysis and Synthesis, UCSB) has begun to study the effect of gophers on soil chemistry and the flow of nutrients through the soil. His team is using old agricultural fields at Sedgwick to study interconnected patterns of gopher burrows, soil dynamics, and the growth of native grasses.

These small interconnected patterns are linked with larger patterns of landscape structure, where ridges shed soil and water to collect in pockets downhill. Small changes in topography can cause significant differences in soil properties and productive capacity. Until recently, the tools were not available to winnow out such variability across ridges and hollows; landscape models simply flattened the earth and averaged the variation. At Sedgwick, researchers are working to describe the complexity of topographic variation related to emerging patterns of soil structure, nutrient availability, gopher populations, and plant communities.

This is the goal of Oliver Chadwick (UCSB Dept. of Geography) and Paul Gessler (University of Idaho), who are working to develop an integrated model that will describe the existing interrelationships of soil, communities, and topography across the entire Sedgwick landscape. Mapping ecological patterns and processes across a landscape of hills and valleys may provide a way to locate areas with high potential for oak regeneration, for example, or where cattle grazing would have the least impact on soil and water.

Building an integrated soil-landscape model is only possible where research is coordinated and where individuals from many disciplines work in collaboration. Similar collaboration will be necessary to understand the complexity of what is required to successfully reestablish California's oak woodlands and native grasslands. The research program at Sedgwick Reserve represents a promising collaboration.

— MLH

*For more information, contact:*

Mark Reynolds and  
Virginia ("Shorty") Boucher  
Reserve Managers  
Sedgwick Reserve  
Phone: 805-686-1941  
E-mail: m\_reynol@lifesci.ucsb.edu  
— or — V\_bouche@lifesci.ucsb.edu



PHOTO BY N. H. (DAN) CHEATHAM



## SCHOOLKIDS VISIT VALENTINE FOR 3RD SUCCESSFUL YEAR

This fall another 1,000 children from Mono and Inyo county schools visited the Valentine Eastern Sierra Reserve, near Mammoth Lakes, to learn science firsthand in the field. The Outdoor Science Education Program, created by Leslie Dawson, is now in its third year.

At Valentine Camp, second-graders learned about bears, their life cycle and ecology. This lesson incorporated the bear management plan created by the Town of Mammoth Lakes, teaching children how they can keep bears wild and out of trouble through such actions as taking the time to close bear-proof dumpsters. Fifth-graders were taught forest ecology, including conifer identification and fire ecology. At the Sierra Nevada Aquatic Research Laboratory (Valentine Eastern Sierra

Reserve's other site popularly known as SNARL), fourth-graders studied ants and ant ecology; they also learned aboriginal life skills, such as rope-making and hunting.

Another 1,000 children from other grades will visit in the spring. Since only 10,000 people live in Mono County, this grassroots science program reaches a significant percentage of the local population.

Designed to keep students fully involved in their science lesson, each reserve visit includes lots of hands-on activities and a hike. A tour lasts two to two-and-a-half hours. Students are taught and supervised by coordinator Dawson, teaching assistant Sherry Taylor, and, when a visiting group is especially large, reserve steward Cabot

Thomas.

This year a pilot project was developed for the Mammoth school groups: a follow-up visit by Dawson and Taylor to the classroom. Second-graders studied another forest mammal, the porcupine, while fourth-graders learned how to create traditional pottery, an extension of the aboriginal life skills they acquired at the reserve.

Funding for the Outdoor Science Education Program comes from the Eastern Sierra Interpretive Association, the Environmental Protection Agency (EPA), and the Valentine Endowment. The EPA funds were a science education grant in partnership with the Inyo National Forest. —SGR

*For more information, contact:*

Leslie Dawson

Education Coordinator

Valentine Eastern Sierra Reserve

Phone: 760-935-4334

E-mail: dawson@icess.ucsb.edu

## NONBIOLOGISTS GET A TASTE OF FIELD TRAINING

A new class at UC Santa Barbara introduces future engineers, artists, physicists, and lawyers to the biology of their coastal backyard. The course, *Natural History of Coal Oil Point*, provides students with their first, perhaps only, experience with field-based environmental observation and experimentation.

Cristina Sandoval, who teaches biology in UCSB's College of Creative Studies, developed the course in order to extend the experience of field biology to nonbiology majors. She teaches the entire 10-week course in what is, quite literally, her own backyard: the Coal Oil Point Natural Reserve, where she and her husband, marine biologist Kevin Lafferty, are resident scientists. For three hours each week, Sandoval introduces students to the patterns of life amid the shoreline, coastal dunes, lagoon, marsh, and uplands of the reserve, encouraging them to consider the processes that affect those patterns.



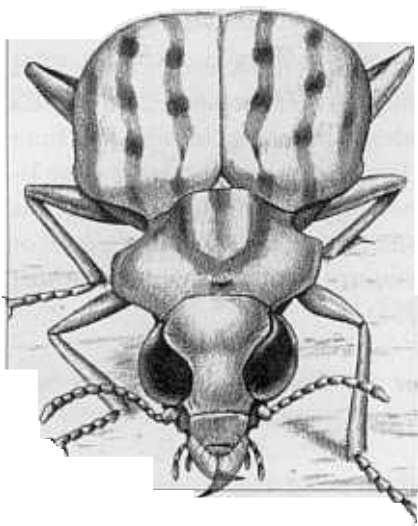
THIS BEAR SKIN, WITH ITS LONG, SHARP TEETH, (POSING NO DANGER TO STUDENT JOHNNY MELACK HERE) IS A VISUAL AND TACTILE LEARNING AID THAT BRINGS HOME THE REALITY OF THE BEAR ECOLOGY AND MANAGEMENT LESSON AT VALENTINE RESERVE. PHOTO BY LESLIE DAWSON

Equipped with new powers of observation, Sandoval's students then pose research questions and design experiments in the field to help answer those questions. For example, students have pursued basic questions of biology, such as the association between salinity changes and the diversity of aquatic arthropods. Other students have designed more applied experiments, such as testing different techniques to restore native dune vegetation. Others have used their new skills to observe interactions between human and natural elements, such as quantifying human-related disturbances on the behavior of snowy plovers, a species federally listed as threatened.

Such research contributes to a growing database at Coal Oil Point Natural Reserve. But even more important to Sandoval is the opportunity to educate future professionals about the value of understanding and preserving natural environments. — *MLH*

*For more information, contact:*

Cristina Sandoval  
UC Santa Barbara,  
College of Creative Studies  
Phone: 805-893-8249  
E-mail: sandoval@lifesci.ucsb.edu



ART BY KENDAL MORRIS



ART BY MELISSA LIGON

## JEPSON PRAIRIE PLACED IN NEW HANDS

This summer, The Nature Conservancy (TNC) transferred ownership and management of Jepson Prairie Reserve to the Solano County Farmlands and Open Space Foundation (SCFOSF), which currently owns and manages over 6,000 acres of diverse habitats in Solano County. Since 1983, the NRS has had a use and management agreement with TNC to promote research and teaching on Jepson Prairie.

The Jepson gift to SCFOSF is the result of TNC's effort to reduce its role in land management and to expand large-scale conservation projects in the region, part of a statewide trend to move land management responsibilities to locally based organizations. In a similar move in 1994, TNC gave UC title to the Angelo Coast Range Reserve in Mendocino County.

TNC will establish a permanent stewardship endowment for the 1,556-acre reserve, with a \$70,000 challenge grant pledged by TNC to be matched by SCFOSF in the next three years. The new landowner, SCFOSF, will continue to support the Jepson Docents; the site will remain open to the public on a docent-led tour basis. SCFOSF and UC will seek to establish a cooperative agreement so the land will continue to be available to NRS researchers and instructors.

Jepson Prairie's many supporters will officially celebrate the acquisition on Saturday, May 2, 1998. Participants will include: SCFOSF, the UC NRS, TNC, the state Department of Fish and Game, Solano County municipalities, state and local legislatures, Jepson docents, and friends and neighbors.

Jepson Prairie represents one of this state's best remaining examples of claypan vernal pools and offers significant examples of California native grass prairie. Its unique soils and mima mound topography make the area rich in biological diversity and endemism. This reserve and a few surrounding vernal pools are the only known occurrence of the Delta green ground beetle (*Elaphrus viridus*), a federally listed threatened insect (illustrated left). — *SGR*

*For more information, contact:*

Solano County Farmlands and Open Space Foundation (SCFOSF)  
Phone: 707-428-7580; fax: 707-428-7673  
E-mail: SCFOSF@earthlink.com

## MARSH RESERVE APPROVED FOR RESTORATION

**S**an Joaquin Freshwater Marsh Reserve, located near UC Irvine, recently got the go-ahead for restoration of its natural environment. The California State Coastal Conservancy approved spending \$1,925,000, using contributions from several organizations, to benefit this largest freshwater marsh in Southern California.

Restoration will include replacement of exotic vegetation with native plants and reestablishment of wetland and upland habitats, including coastal sage scrub. Marshes that have filled with sediment as a result of agricultural and urban development will be dredged, and a new water-delivery system will be developed to provide supplemental water from the adjacent San Diego Creek. Sediment in the creek will be trapped to prevent it from entering the reserve's marshes and Upper Newport Bay.

This restoration project is a long-term effort by many public agencies and private organizations. Funding for the current improvements includes \$700,000 from the Coastal Conservancy, \$700,000 from the League for Coastal Protection (a private nonprofit organization), \$400,000 from the San Joaquin Hills Transportation Corridor Authority, and \$125,000 from the Irvine and Clarke Foundation.

The project is supported by, among others, state Senator Ross Johnson, Assemblywoman Marilyn Brewer, the U.S. Fish and Wildlife Service, the California Department of Fish and Game, the California Coastal Commission, and the Friends of Upper Newport Bay.

Restoration work, managed by the Huntington Beach Wetlands Conservancy, is expected to begin in 1998. Additional planned improvements, for which funding is not yet available, include restoring a series of wet meadow ponds and connecting channels in an adjacent area of the reserve.

Although the wetlands within San Joaquin Freshwater Marsh Reserve cover over 200 acres, they are only a remnant of the once-extensive system of marshes formed by the Santa Ana and San Diego rivers and Upper Newport Bay. — SGR

*For more information, contact:*  
William Bretz, Reserve Manager  
UC Irvine, Office of Natural Reserves  
Phone: 714-824-6031  
E-mail: wlbretz@uci.edu



PRISONERS HARBOR AT SANTA CRUZ ISLAND RESERVE.  
ART BY M. L. HERRING

## ERA OF NO-COST TRAVEL TO SANTA CRUZ ISLAND ENDS

**A**s a result of downsizing operations on Santa Cruz Island, the U.S. Navy ceased their free boat transportation on December 31, 1996. The twice-weekly boat runs had transported students, faculty, and other reserve visitors to and from the island since the station was established in 1964. Now, most travel is via commercial air or boat charter. Common departure points are Camarillo, Ventura, Oxnard, and Santa Barbara.

To offset this added cost of using the reserve, a Santa Cruz Island Reserve Travel Fund has been established using NRS Blakey Travel Grant funds and matching contributions from the UC Santa Barbara Foundation and the Santa Cruz Island Foundation. This new fund will provide travel stipends to UC graduate and undergraduate students at the level of one-half of the current minimal commercial round-trip boat ticket (approximately \$55).

*For information about the Travel Fund, air and boat charterers, rates and scheduling, contact:*  
Donna Moore  
UCSB campus NRS office  
Phone: 805-893-4127  
E-mail: donnam@msi.ucsb.edu

## WITH YOUR HELP

In the 32 years that have elapsed since the University of California Natural Reserve System (NRS) was formally established in 1965, private support has made a big difference in sustaining its growth and well-being. Gifts have funded the needs of both individual sites and systemwide programs, helping to complete the NRS, which now comprises 33 sites representing over 100,000 acres throughout California.

We could not have achieved the goal of creating a world-class system of natural reserves without the generosity of private citizens and organizations committed to natural land values and solving environmental problems.

The NRS needs private support today as much as ever before. Reductions in state funding for UC, widely publicized in the early 1990s, affected the NRS, too. As UC budgets contracted, NRS site conservation and management, research and teaching, and public activities had to be severely limited.

Now far too many programs have been curtailed and far too many long-range plans for many sites have languished unfulfilled. It is only because

of the generous support of past donors that the NRS has been able to maintain even basic levels of support for all of its current reserves.

Ironically, in this same difficult period of fiscal cutbacks, environmental challenges have emerged among the most important problems facing society today. Indeed, they have become a focal point of both UC academic programs and public concern. In the last three years alone, use of NRS sites by researchers, students, and community groups has *tripled*. We are concerned that many NRS sites still lack the basic infrastructure of modest facilities and equipment needed to sustain such use.

So once again, we turn to friends, asking them to help us help the NRS achieve its promise to a great university and the citizens of California.

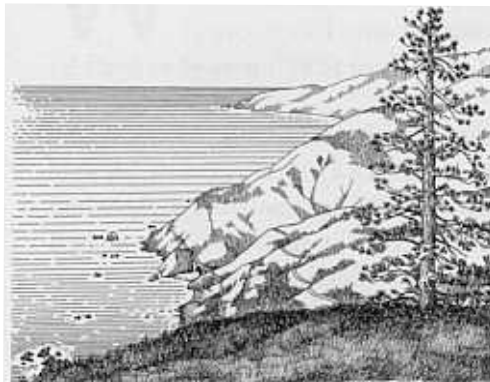
Please join us, won't you?

*For further information on how you can make a gift to the UC NRS, contact:*  
 Kathleen Gilcrest, Special Assistant  
 UC Natural Reserve System  
 300 Lakeside Drive, 6th Floor  
 Oakland, CA 94612-3560  
 Phone: 510-987-0161  
 E-mail: [kathleen.gilcrest@ucop.edu](mailto:kathleen.gilcrest@ucop.edu)

*In Grateful Memory of  
 Big Creek Benefactor  
 Fred Farr*

*Former state senator  
 Pioneering environmentalist  
 Father of  
 California's scenic highways*

*1910 - 1997*



ART BY JENNY WARDRIP

## Private Gifts 1996-97

We gratefully acknowledge gifts of \$100 or more received by the UC NRS systemwide office during the last fiscal year:

Robert Berman  
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*This report acknowledges all donors to the UC Natural Reserve System from July 1, 1996 through June 30, 1997.*

*We have made every attempt to include all donors accurately. We apologize for any omissions or errors and ask that you contact us if our records need to be corrected.*

*The information you provide will be used for University business and will not be released unless required by law. To review your record, please contact the NRS systemwide office in Oakland (address left).*

*The UC Natural Reserve System thanks all alumni, parents, faculty, staff, students, and friends who support its efforts.*

*All gifts are tax-deductible as prescribed by law.*



## NEW DIRECTOR

*Continued from page 2*

“We feel fortunate to have secured a recognized scientist and able administrator of Dr. Alexander Glazer’s world-class stature,” says W. R. Gomes, vice president of UC’s Division of Agriculture and Natural Resources. “He is a rare individual whose intelligence, experience, commitment, and humor make him especially well-equipped to guide our precious Natural Reserve System safely into the next millennium.”

Born in Poland, Glazer earned his bachelor’s and master’s degrees at University of Sydney, Australia, in 1957 and 1958, respectively. He received his Ph.D. in biochemistry at University of Utah in 1960. He is the author of nearly 200 research papers and more than 30 reviews. The textbook he co-authored with Hiroshi Nikaido, *Microbial Biotechnology: Fundamentals of Applied Microbiology*, was published in 1994 and is now being used by universities in the United States, Canada, England, and Japan. Glazer was a Guggenheim fellow in 1970-71 and, again, in 1982-83. He became a fellow of the American Academy of Arts and Sciences in 1996. Among the numerous honors he has received, he was awarded the National Academy of Sciences Scientific Reviewing Prize in 1991.

Glazer remains a professor in UC Berkeley’s Graduate School and will continue working on ultra-sensitive methods for detecting and sequencing DNA. Although he is not scheduled to assume the NRS directorship until January, he has already begun visiting the 33 NRS reserves and meeting scores of key faculty and staff. During this period and until the new year begins, assistant director Elizabeth Riddle continues as acting director of the NRS. — SGR

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## DIRECTOR’S REPORT

*Continued from page 1*

great variety of private organizations, and with the help of scores of concerned and generous friends.

The NRS — there’s nothing else like it in the world. And each year, as California’s population soars, impacting our air, water, and lands, NRS resources and opportunities become ever more important. Research at our reserves may be key to solving environmental dilemmas, and NRS-trained students will shepherd our future. The many teachers and researchers who use our “outdoor classrooms and laboratories” are contributing to the understanding and wise management of the earth’s natural systems and resources — and we all need them to continue doing just exactly that.

The future belongs to us, if we support the NRS now.

— Elizabeth Riddle  
*Acting Director of the NRS*



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Natural Reserve System  
University of California  
300 Lakeside Drive, 6th Floor  
Oakland, CA 94612-3560  
510-987-0150

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