The NRS
# Transect

Volume 5, No. 1 | University of California Natural Reserve System | Fall 1986

## *In this issue:*



## Systemwide Office Column:

### Eagle Lake available for research and teaching

**Located about an hour's drive north of Susanville in Lassen County is the Eagle Lake Field Station, operated by the California State University at Chico. The Natural Reserve System, through the UC Davis campus, has entered a three year use agreement with CSU, Chico to evaluate the potential of this northeastern California site for more formal long-term inclusion in the NRS.**

**UCD Professor Peter Moyle—a fisheries biologist and interim faculty manager for the station—has written an excellent description of Eagle Lake and its potential for teaching and research. What follows is a condensation of his report:**

#### Eagle Lake

With a surface area of approximately 11,500 hectares (28,370 acres), Eagle Lake is the fourth largest freshwater lake in California. Its drainage basin of about 1,500 square kilometers (580 square miles) is relatively small, and its water clear and cool, seldom exceeding 20°C. The lake consists of three interconnected basins, each with its own limnological characteristics. The northern two basins are shallow—6 to

*continued on p. 6*

K. Cole

**An osprey (*Pandion haliaetus*) nesting at the Eagle Lake Field Station.**

### Last call for tax savings?

Not really, but with the changing tax laws it may be advantageous for you to consider a gift of appreciated property or securities to the NRS before year end.
Benefits may include:

- Capital gains tax savings
- Income tax deduction
- Life income agreements
- Pooled income funds
- Elimination of property ownership costs

For more information, write or call Dr. C. Ronald Carroll, NRS Associate Director, at the systemwide office (see back page).

## NRS presents itself to Regents

The NRS made a special presentation to the Board of Regents at its September 19 meeting in San Francisco. Following introductory remarks by then VP-ANR James B. Kendrick, Jr., the 30-minute presentation opened with Dr. Mildred Mathias, UC Los Angeles Professor Emeritus of Botany. She gave an illustrated overview of the scope and diversity of the Reserve System.

Two 'products' of the NRS then spoke about their experience on reserves and the effects it has had on their careers. Larry Ford, a student in wildland resource science at UC Berkeley who's doing his doctoral research at the Landels-Hill Big Creek Reserve, discussed the importance of the reserves for teaching. In the early '80s, while Ford was manager of the Big Creek Reserve, he helped coordinate a quarter-long field course of UC Santa Cruz undergraduates that visited several NRS sites. Stimulated by that teaching experience, Ford organized a graduate seminar in conservation biology on the Berkeley campus this fall. More than a dozen guest speakers attended the seminar, addressing the theory and practice of nature conservation from genetic and ecological perspectives.

Dr. Marlyce Myers, who received her Ph.D. in botany from UC Riverside, followed with a discussion of the importance of reserves for research. Her doctoral work at the Motte Rimrock Reserve on post-fire dynamics in coastal sage scrub is applicable to resource managers across the state.

Associate Director Dr. C. Ronald Carroll closed the presentation with a discussion of the future direction of the Natural Reserve System. He emphasized plans to improve facilities, initiate programs that encourage and support graduate field research on NRS sites, and promote involvement with similar programs internationally.

# Reserve Highlights

## UCSB Implements Wetland Plan

In July, scientists from the UC Santa Barbara herbarium and vertebrate museum began collecting baseline data on the botanical and zoological resources of the Coal Oil Point Reserve and adjacent wetlands as part of the Storke and Devereux Campus Wetland Enhancement Plan (WEP).

Mandated by the campus long-range development plan, the WEP was prepared under the guidance of a wetlands advisory committee consisting of representatives from the Santa Barbara campus and various federal, state, and county resource management agencies. The California Coastal Commission accepted the plan in March.

Phase one calls for one to two years of monitoring to establish reliable baseline data on the physical and biological parameters of campus wetlands, the bulk of which are included in the Coal Oil Point Reserve. These data will be used to evaluate the effects of recommended restoration activities, which include removing sediments to increase wetland habitats, using hydraulic structures to control freshwater inflow and storage, and controlling exotic plants. The baseline data will also aid the campus planning office in its efforts to improve public access to wetlands without compromising their reserve status.

With funding from the Office of the Chancellor, the monitoring team has inventoried all wetland plant species, noted their general distribution patterns, and set up permanent vegetational transects. The researchers have also begun surveying vertebrates to determine how wildlife use the wetlands throughout the year. Extensive monitoring of hydrology and water quality will also be performed, pending funding.

©1986 Kendal Morris green heron (*Butorides striatus*)

## Three Reserves Get New Managers

### *Granite Mountains Reserve*

"I feel like we've just won the Publisher's Clearing House Sweepstakes," says Dr. Philippe Cohen of his new job as resident manager of the Granite Mountains Reserve in the eastern Mohave Desert. "Cindy and I have been coming to the Granite Mountains to unwind and do field work since before the University acquired the Reserve. We have a special affection for the place and have always had a fantasy of actually living and working out here." Philippe has been working on site since September 1. He and his wife, Cindy Stead, live in the Ranch House in Granite Cove.

Philippe received his Ph.D. in geography with a specialty in land use planning from the University of Minnesota. For the past five years, he's also worked for the Minnesota Department of Natural Resources, helping to administer its Shoreland Management Program.

After producing a management plan for the Granite Mountains Reserve, Philippe plans to put together a resource data base on the site's new HP computer. His long-term plans include completing the Reserve's herbarium, which contains only 33 percent of the species present, compiling surface profile maps of the site, and beginning some studies on vegetational succession and the impact of grazing on vegetation.

Cindy, who was certified in the University of Minnesota Alcohol and Drug Counseling and Education Program, has spent the last few years as a chemical dependency counselor, specializing in nutrition and women's issues. She is particularly interested in ethnobotany and archaeology. Together, she Philippe plan to compile an oral history of the Granite Mountains region.

"This is really a spectacular area," says Philippe. "The Reserve has a lot of potential and a lot of needs. I'd like to help attract people concerned with maintaining it and using it for purposes of teaching and research."

Look for a column by Philippe on the Reserve and its educational potential in the next issue of the *Transect*.

### *Landels-Hill Big Creek Reserve*

Dr. John Smiley first learned of the Big Creek Reserve as an Assistant Professor in the Department of Ecology and Evolutionary Biology at UC Irvine. As a teacher of UCI's 'supercourse' in field biology, he traveled with a 15-member class to this Big Sur site, staying for a week each spring. He was struck then by the Reserve's rich habitat and species diversity. "If you're looking for something to study," he says, "you'll probably find it here."

Smiley became resident manager of this diverse 8,000-acre site on September 15, leaving the assistant professorship at Irvine he'd held for 7 years. He and his wife, Kim, are living in the Gatehouse, located just inside the Reserve's main entrance.

Smiley's immediate plans for the Reserve include continuing to rebuild camps and bridges lost in the 1985 wildfire (see *Transect*, Volume 4, No. 1) and converting the storage shed near the Gatehouse into a temporary library/laboratory for Reserve users. In the long-term, his main management goal is to help develop plans for permanent Reserve headquarters, which will include a laboratory, a dormitory, cabins for long-term researchers, and a manager's residence.

Smiley, who received a Ph.D. in zoology from the University of Texas in 1978 defines his general field as plant-insect interactions. He has a number of specific research plans for the Reserve, beginning with a study of the relationship between a black grass bug found on site and some of its toxin-producing host plants, primarily cucurbits and lupines. "This is a neat system because it's one of the few cases where it's very clear that the insect, which is ancestrally a grass feeder, is also feeding on noxious plants that provide defense," says Smiley. "We can make the argument that it's switching plants specifically to get those defensive chemicals, but we don't really know. That's something I'd like to work on."

Smiley also plans to continue work he's done in the Sierra Nevada at Big Creek by studying the herbivores of the Reserve's two species of willows, one of which is rich in salicin, a mildly toxic chemical. His work on salicin was recently published in *Science*.

Kim Smiley also has plans for the Reserve. A science teacher with a background

in ecology, she recently worked for the Department of Education in Orange County developing an intensive outdoor education program for fourth graders. Though Big Creek is too remote for many primary school classes to visit, she feels it's a good site for teaching teachers, and would like to develop a Reserve-based program for teaching outdoor educators.

In the meantime, the Smiley's main project is to begin attracting more people to the Reserve. "Big Creek's varied topography and biological diversity make it an incredible site for both teaching and research," says John. "Now that I'm here, I'd really like to help out with logistics—locating field sites, setting up facilities, or just talking science—whatever it takes to help people use the Reserve most effectively."

### *Bodega Marine Reserve*

Dr. Peter Connors brings 15 years of research experience in the Bodega area to his new job as manager of the Bodega Marine Reserve, a diverse coastal site surrounding the Bodega Marine Laboratory. Connors began this half-time position September 1.

In addition to taking care of immediate maintenance needs, Connors is working on a plan to control ice plant, an introduced species invading the Reserve's coastal prairie vegetation. He also intends to update and expand the site's database of information on plant and animal species, and will begin by establishing a series of photo-monitoring stations.

"I'd eventually like to reach a position where we have a lot more information on the Reserve in terms of what is here and what we know about it," says Connors. "I want to be able to retrieve that information easily so I can supply it to people who want to do research here."

Connors received his Ph.D. in molecular biophysics at the University of Wisconsin. By the time he'd finished his dissertation, he'd become more interested in field biology, particularly ornithology, than in physics. He came to Bodega in 1971 on a post-doctoral fellowship to begin some studies of the pollution ecology of seabirds, and stayed to work on more basic problems in shorebird ecology, behavior, and evolution.

While he's not managing the Reserve, Connors will continue his ornithological work, and begin some research in areas related to vegetation management.


## Workshop Addresses TBT Pollution Problem

On October 27, more than 35 key researchers and agency personnel gathered at the Bodega Marine Laboratory to address growing concern over the water pollution impacts of tributyltin (TBT) and to design a statewide research and monitoring program to better understand and assess its ecological effects.

An organo-tin compound, TBT is the most effective biocide ever devised for use in paints to protect boat hulls from barnacles and other fouling organisms. It is also among the most toxic of substances ever deliberately introduced into natural waters—a mere 100 parts per trillion (ppt) is sufficient to kill many organisms.

Signs of TBT pollution are beginning to crop up in California's coastal waters. In the past year, Dr. Edward Goldberg of the Scripps Institution of Oceanography conducted a preliminary survey of 60 California marinas, documenting TBT levels in excess of 500 ppt at some sites.

At such levels, TBT threatens natural systems and possibly commercial fisheries. With marinas just a few hundred yards from their boundaries, two NRS sites—the harbor mudflats of the Bodega Marine Reserve and the Kendall-Frost Mission Bay Marsh Reserve in San Diego—could be affected.

Some data exist on the effects of TBT on oysters, mussels, and pen-reared salmon, but little is known about its impacts on non-commercial species— both vertebrate and invertebrate. The recent TBT workshop took a first step towards addressing this information vacuum. After researchers from Johns Hopkins University, Harbor Branch Oceanographic Institution, and the University of California presented their findings, participants compiled a list of agreed-upon scientific findings and areas of uncertainty.

The group then came up with a menu of research and monitoring needs. For example, researchers have clearly documented that TBT is toxic to non-target organisms. Unlike chemicals such as DDT, however, TBT degrades fairly quickly (6 to 19-day half-life) to by-products that are successively less harmful. Yet because plankton and molluscs accumulate TBT from water very quickly, the potential for bio-magnification up the food chain needs to be assessed, particularly with regard to birds and mammals.

Little is known about how TBT is partitioned between the water column, sediment, and biota, or how these agents modify the toxin in the environment. Moreover, since TBT is toxic in extremely low concentrations, the analytical methods used to address these questions must themselves be refined.

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# News and Notes

## *Upcoming events*

### Join the *Friends*, See the Reserves

The newly formed *Friends* group now has over 120 members throughout California. Through newsletters and activities, members are becoming more familiar with the NRS, and are able to participate in field trips and other events on site. This fall and winter, activities are planned for the following reserves: James San Jacinto Mountains, San Joaquin Freshwater Marsh, and Stebbins Cold Canyon, including an overnight at the James Reserve on December 13. In addition, the Jepson Prairie Reserve is starting this year's docent training program and welcomes new volunteers.

For details and other information about the *Friends*, contact the systemwide NRS office (see back page).

### Coming Up: the Third California Islands Symposium

The 1987 California Island Symposium is scheduled for March 2-6 in Santa Barbara. This meeting is the third major conference since 1965 focusing exclusively on research on the islands off the coasts of California and Baja California, Mexico.

Sponsored by the Southern California Academy of Sciences, the Santa Barbara Museum of Natural History, and the Santa Barbara Botanic Garden, this multidisciplinary symposium will provide a forum for researchers to present papers and posters on all aspects of research and resource management on the California Islands.

The deadline for abstracts is December 12; pre-registration at a reduced rate of $40.00 is due by January 15.

For more information, contact Dr. F. G. Hochberg, Santa Barbara Museum of Natural History, 2559 Puesta del Sol Rd., Santa Barbara, CA 93105, (805)682-4711.

## *Past events*

### Reserve Managers Gather for Third Annual Workshop

The Santa Cruz Island Reserve hosted the third annual NRS Reserve Managers' Workshop on October 16-18. Thirty people attended part or all of this year's meeting, which was split between the Island and the mainland.

The workshop convened at the National Parks Service Headquarters in Ventura, where personnel from the Park Service, The Nature Conservancy, and the Natural Reserve System discussed opportunities for coordinating research and management programs between state and federal agencies and private organizations, using the Santa Barbara Channel Islands as an example of a multiply managed resource. Dr. Mike Hamilton, Resident Director of the James San Jacinto Mountains Reserve, followed with a presentation on the Macroscope, an interactive videodisc system of images and data describing the Reserve that he's developing for management-related research and environmental education.

NRS personnel then sailed to the University Field Station on Santa Cruz Island for the bulk of the meeting, which included a day-long tour of the Island and its facilities, presentations on the White Mountain Research Station and the Cedar Point Biological Station in Nebraska, and discussions of instrument design for environmental monitoring and database management, hazardous waste management, and reserve facilities and research.

### OBFS Holds Annual Meeting

The 1986 annual meeting of the Organization of Biological Field Stations (OBFS) was held September 25-28 at the University of Nebraska's Cedar Point Biological Station on the North Platte River. Three NRS personnel attended.

Highlighting the meeting was a presentation on the National Science Foundation's Special Competition for Facilities Improvements at Inland and Freshwater Field Stations by Dr. James Edwards, Program Director NSF's Biological Research Resources Program. This special competition will make approximately one million dollars in grant funds available for fiscal year 1987-88.

OBFS is the primary professional organization for North America's field station directors and private individuals interested in field stations. The 1987 OBFS annual meeting will be hosted by the Bodega Marine Laboratory and Reserve here in California.

### Trailfinders Reunite for James Reserve Anniversary

On June 1, more than 30 alumni of the Trailfinders school and camp gathered at one of their former classrooms—the James San Jacinto Mountains Reserve—to celebrate the site's 20th year in the Natural Reserve System. The alumni and their families toured the Reserve facilities, hiked the site's nature trail, viewed films of the school's camping trips, explored the Reserve by computer, and shared memories over a picnic lunch.

Operated by Reserve benefactors Harry and Grace James from the early '20s through 1950, The Trailfinders stressed

Looking southwest from the west end of Santa Cruz Island. NRS personnel toured this reserve as part of the recent Reserve Manager's Workshop.

learning from the natural world, including the environs of the James Reserve. The 29-acre site became part of the NRS in 1966 when the James' sold their property to the University. Seventeen years later, the Trailfinders Lodge, built primarily with funds raised by alumni, was completed. The Reserve's major support facility, this 20-bunk dorm and classroom is used throughout the year by students, researchers, and conferences.

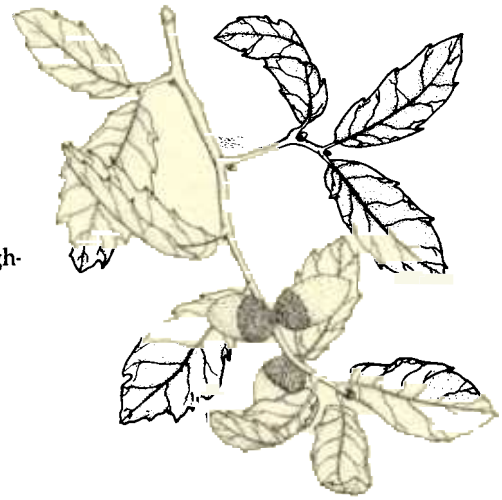
## Frances Ryan Christens Tree for its Centenary

"Mighty oaks from little acorns grow" is Frances Ryan's favorite saying. For years, she has been helping to make it come true.

In 1973, Frances and her late husband, Lewis, donated their 15-acre hillside near Escondido to the NRS. The site features a healthy stand of Engelmann oak, an endemic species becoming rare in southern California whose acorns once served as a major food source for the area's nomadic Indian tribes. Since 1981, Frances has germinated acorns from the Reserve's trees, donating more than 1,000 seedlings to citizens, schools, and public groups. Last April, the National Arbor Day Foundation honored Frances with the Lawrence Enerson award for her on-going effort to re-establish the Engelmann oak in her community.

Recently Frances reciprocated by honoring one of the mighty oaks that makes her work possible, a tree the 84-year-old says was on the Reserve when her family arrived in 1886. On April 26, in conjunction with the Reserve's 11th birthday, Frances christened the tree "Quella," a native American term thought to mean "acorn." Nearly 150 people attended the ceremony, including representatives from the Audubon Society, the Soil Conservation Service, the California Native Plant Society, the local native tribe of Rincon Indians, the Escondido Garden Club, the Hidden Valley Girl Scouts, San Pasqual High School, and the Natural Reserve System.

Quella, who was christened with rainwater rather than champagne, is 40 feet tall, with a 19-foot, 4-inch girth, and branches that spread out over 70 feet. Its size and age qualify it for membership in the Louisiana-based Live Oak Society.



**Engelmann oak (*Quercus engelmanni*)**


**Trailfinders and their families reunited at the James San Jacinto Mountains Reserve.**

# *Donations and Additions*

## A Lot of Help from our Friends

In the last six months, four private sources have contributed a total of $21,000 to the Natural Reserve System.

Three of these grants will aid in restoring the facilities of the Landels-Hill Big Creek Reserve that were destroyed in last summer's wildfire: $2,500 from National Pro-Am Youth Fund, $2,500 from the Times Mirror Foundation, and $1,000 from Pacific Gas and Electric Company.

In addition, Atlantic Richfield Foundation continued its long-time support of the NRS with a grant of $15,000 to be used for the Santa Barbara campus-administered reserves.

The Natural Reserve System depends on private contributions for many of its resources and programs. We thank the above-mentioned organizations for their generosity and support.

## Deep Canyon Ends Water Woes

After being plagued by a series of water problems caused by over-use of old equipment, the Philip L. Boyd Deep Canyon Desert Research Center revamped its water system this past spring. With $11,000 in emergency funding from the NRS, the Center replaced its old cistern-pressure pump-pressure tank system with a 3,000-gallon hydro-pneumatic pressure tank system. In addition to having a larger storage capacity and steady pressure, this new system operates quietly and will maintain flow during power outages until the tank is drained.

# *People*

## Farrell to be New ANR VP

Kenneth R. Farrell has been selected as the University of California's Vice President for Agriculture and Natural Resources, effective no later than January 1, 1987. Farrell will replace James B. Kendrick, Jr., who retired October 1 after 18 years in the position. *continued on p. 6*

**News and Notes** *continued from p. 5*

Since 1981, Farrell has been associated with Resources for the Future, a private, non-profit organization based in Washington, D.C. For the past two years, he has served as director of its National Center for Food and Agriculture Policy—a program of research, policy analysis, communication, and leadership development on national public policies for food, agriculture, natural resources, and the environment. From 1971 to 1981, he headed the Economic Research Service in the U.S. Department of Agriculture.

His background also includes 13 years as an economist and administrator at UC Berkeley and at UC Davis, much of it with the Giannini Foundation of Agricultural Economics, headquartered on the Berkeley campus.

"We feel extremely fortunate in having gained the services of a former Californian who has distinguished himself nationally and internationally as a respected and informed leader in agriculture," says UC President David Gardner.

## Boyds Honored at Riverside Convocation

Philip L. and Dorothy Marmon Boyd received The University Award for their commitment to UC Riverside at the campus' first annual Founder's Day Convocation held October 8. Philip Boyd, while a member of the State Assembly, introduced legislation to establish a UC campus in Riverside, and later served on the Board of Regents. And as benefactors of the Philip L. Boyd Deep Canyon Desert Research Center in Palm Desert, the Boyd's have generously supported the NRS since its inception.

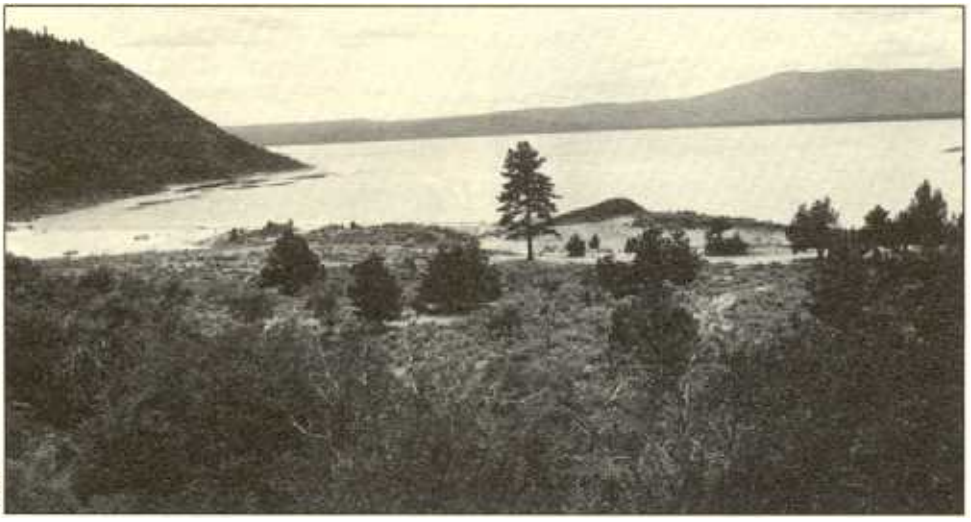
## In Memoriam

Dr. John Davis, former resident director and research zoologist of the Hastings Natural History Reservation, died May 1 at the age of 69 after a long illness. A well-known avian biologist, ecologist, and naturalist, Davis was affiliated with UC Berkeley's Museum of Vertebrate Zoology and stationed at the Reservation from 1953 until his retirement in 1982. He was also a lecturer in zoology on the Berkeley campus.

Davis was best known for his studies of avian distribution and systematics in Mexico, along with his ecological and behavioral research on birds near his home base on the Hastings Reservation. In particular, he contributed significantly to basic knowledge of annual cycles in birds, examining relationships of behavior to basic features of reproduction and molt. In addition to authoring more than 50 scientific papers and reviews, he co-wrote *The Bird Year*, published in 1981, with Alan Baldridge, librarian at Stanford University's Hopkins Marine Station.

In 1958 Davis was elected a Fellow in the American Ornithologist's Union (AOU) and, in 1967, an Honorary Member of the Cooper Ornithological Society (COS). In 1959 he was awarded a Guggenheim Fellowship. Over the years he served in editorial roles for several professional journals and held offices in both the AOU and the COS. He was also active in several conservation organizations in central coastal California.

*—Dr. Frank A. Pitelka*
*Associate Director*
*Museum of Vertebrate Zoology*
*UC Berkeley*



Looking west across Eagle Lake from a hill about 200 yards southeast of the Field Station.

**Eagle Lake** *continued from p. 1*

10 meters (20 to 33 feet)—while the larger southern basin (where the station is located) deepens to 30 meters (98 feet), thermally stratifying each summer.

### Facilities

The station facilities are simple wood-frame, tin-roofed buildings scattered about an old beach terrace, but largely hidden from the lake by a grove of pine and juniper. They include: a 5-room laboratory with bench space sufficient for sorting field samples or setting up simple experiments; a building containing compact dormitory space for 12 in one half and a small library/discussion area in the other; a 28-bunk dorm; a dining hall with a functional, well-equipped kitchen; and a cluster of five cabins, one used by the caretakers and the rest available for visiting faculty and special guests. Only the caretakers' cabin and one other are winterized.

An isolated station, Eagle Lake is 16 kilometers (10 miles) from the nearest paved road. The access road is rough; though generally passable (with care) for a passenger car in the dry summer, a four-wheeldrive vehicle may be required in the winter and early wet springs. The nearest phone is half an hour away by boat or car, but a CB radio is available on-site for emergencies.

### Research and Teaching Opportunities

***Geology:*** The landscape around Eagle Lake is primarily volcanic in origin. Basalt outcroppings form its shore and nearby Black Mountain is an ancient caldera. The lake was created by a combination of faulting and lava flows damming Willow Creek, the natural outlet. During the Pleistocene, the lake was connected to the immense Lake Lahontan. Although sediment cores have never been taken from the Eagle Lake, the ancient age of the basin suggests that such cores should be of interest.

***Aquatic Environments:*** Peter Maslin and students at CSU, Chico have conducted basic descriptive limnological studies of the lake and state agencies monitor its water chemistry. Despite its high alkalinity (pH 9), the lake has impressive populations of zooplankton and aquatic insects such as caddisflies, mayflies, and aquatic moths.

In the sage-covered hills around the lake are several ponds containing rich invertebrate faunas (including concostraceans and anostraceans) and abundant

One of five cabins at the Eagle Lake Field Station.

amphibian larvae. Willow Creek is rich in aquatic life, with dense macrophyte beds that contain abundant snails, dragonfly larvae, and other invertebrates, as well as rainbow trout and Paiute sculpin.

*Plant Communities:* Several distinct plant communities are readily accessible from the station: fir forest, pine forests, mixed conifers, juniper and sagebrush scrub, and mountain mahogany on the lava flats. More localized assemblages include manzanita and ceanothus brushfields, riparian woodlands with alders, cottonwoods and willows, wet meadows and freshwater marshes. A key to the plants of the region is available. For the study of plant succession, there are numerous sites regenerating from old burns, the closest being the Willow Creek burn of 1985.

*Vertebrate Assemblages:* Seven species of amphibians and 22 species of reptiles inhabit the region. The three species of garter snakes here have been the subject of intensive work by Steve Arnold and his students from the University of Chicago.

Eagle Lake is home to five species of fish, all native and all abundant. Tui chub, the most common species, and the Tahoe sucker reach 50 centimeters (13.5 inches) in length. Two small minnow species—speckled dace and Lahontan redsides—occur mainly in the shallows. A variety of rainbow trout, uniquely adapted to alkaline waters, also inhabit the lake. Within two hours of the station, it is possible to sample streams and reservoirs of the Pit River drainage, which contains species native to the Sacramento River drainage, as well as many introduced species.

Because of its varied habitats and its location on major migratory routes, the Eagle Lake region has a rich avifauna. During June and July of 1986, a fisheries class recorded over 100 species of birds, most breeding in the area and many breeding at the station. The native fish support unusually large breeding populations of western and eared grebes and osprey, as well as healthy populations of bald eagles, cormorants, pelicans, and other fish-eating birds. Osprey, which nest close to the station, are continually visible due to the Osprey Management Area located across the lake.

Though more than 70 species of mammals occur in the region, most have been poorly studied. Of special interest around the station are the number of black tail deer, two abundant species of deer mice, the presence of Heerman's kangaroo rat, a bat cave, two abundant species of woodrats, and large concentrations of porcupines.

## Conclusions

The Eagle Lake area's abundance and diversity of life makes it a good place to teach field biology. And, because so little has been done in the region, it is an excellent place to conduct basic research in ecology and systematics.

For more information, contact Peter Moyle, Wildlife and Fisheries Biology, University of California, Davis CA 95616, (916)752-3576.

—*C. Ronald Carroll*
*Associate Director*
*Natural Reserve System*

# Publications

### Need information on the NRS?

The following publications are available at no charge from the systemwide NRS office:

### Back issues of the Transect :

- Volume 1, No. 1 (Spring '82)
- Volume 2, No. 1 (Fall '83)
- Volume 3, No. 1 (Fall/Winter '84)
- Volume 3, No. 2 (Spring/Summer '85)
- Volume 4, No. 2 (Spring '86)

### Reserve Brochures:

Pygmy Forest Reserve, Ryan Oak Glen Reserve, San Joaquin Freshwater Marsh Reserve, Philip L. Boyd Deep Canyon Desert Research Center, and Santa Cruz Island Reserve. Designed for prospective reserve users, these publications describe the natural resources of the sites and contain information on access, facilities, and use.

### Systemwide brochure:

This 24-page document contains vital statistics on every site in the Reserve System. It now comes with an update sheet listing major changes made in the NRS since the brochure was published in 1980.

### Twentieth Anniversary Report:

*Natural Reserve System: The First Twenty Years*. This 4-color 24-page booklet published earlier this year describes the purpose and history of the NRS, and highlights various teaching, research, and public service projects based on reserves. It features color photographs by Galen Rowell, whose images have appeared in such publications as *Natural History* and *National Geographic*.

**TBT workshop** *continued from p. 3*

Workshop participants also emphasized the immediate need to study the extent of the risk TBT poses to California's oyster fishery in Humbolt Bay. In France and England, TBT from marinas near commercial oyster beds resulted in a 50 percent mortality of transplanted oysters within 3 months, as well as a 25-fold decrease in meat production. In 1982, France banned the use of TBT on boat hulls less than 25 meters in length, and the following year England regulated TBT paint formulations to keep resulting concentrations in sea water to less than 20 ppt.

Resource management agencies in the United States are also considering various ways to regulate TBT's use. A resolution before the House calls for a temporary ban on the use of TBT, pending the findings of a special reveiw being conducted by the U.S. Environmental Protection Agency. Regulation itself poses yet another research need identified at the TBT workshop: determining the socio-economic factors involved.

Among the workshop participants were representatives from the Coastal Conservancy, the California Department of Fish and Game, the Office of Senate Research, and the Water Resources Control Board, as well as scientists from five major institutions. The meeting was co-sponsored by the Bodega Marine Laboratory, the Point Reyes-Farallon Islands National Marine Sanctuary, the UC Toxic Substances Research and Teaching Program, the California Sea Grant College Program, and the Natural Reserve System.

# Opportunities

### Island Research Fund

Would you like to do research on Santa Cruz Island? The Nature Conservancy and the Santa Barbara Museum of Natural History will help by providing grants of up to $20,000 for research projects that address questions related to terrestrial and freshwater flora and fauna, geology, and ecology of the Island.

A total of $150,000 is available through the fund, and applications will be reviewed as they are received. For more information, including a list of high-priority research topics, contact: Santa Cruz Island Project Director, The Nature Conservancy, 213 Stearns Wharf, Santa Barbara, CA 93101 (805)962-9111; or Director, Santa Barbara Museum of Natural History, 2559 Puesta del Sol Rd., Santa Barbara, CA 93105, (805)682-4711.

# Editor's Note

Welcome to the first electronically produced *Transect*! This issue of our newsletter was written, edited, designed, and layed out on an Apple Macintosh computer with the help of Microsoft Word and Aldus PageMaker. Each page, with all copy and design elements already in place, was then photo-typeset on an Allied Linotype Linotronic printer.

Using money saved on typesetting costs, we also set out to make the *Transect* more attractive and more readable by incorporating color into a new design. We hope you like the changes.

We plan to produce the remaining reserve brochures and future issues of the *Transect* using these new time- and money-saving methods. As always, we appreciate your comments on NRS publications, and would like to know what we can do to make them more useful to you.

# Wish List

When's the last time you used that old shovel in the garage? How about the pick-up truck standing next to it?

If such items have outlived their usefulness for you, perhaps it's time you passed them along to someone who can put them to work. Someone like a reserve manager, who's always on the lookout for tools of the trade, from small shovels to large vehicles. Personal computers, particularly IBM compatibles or Macintoshes, are also in great demand on-site.

In future issues of the *Transect*, this space will be devoted to listing particular needs of particular reserves, and the first reserve-specific holiday gift catalog will be published by the *Friends* this winter. In the meantime, if you'd like to make a tax-deductable donation of equipment to a specific reserve or the Reserve System in general, please contact the *Friends of the NRS*, care of the systemwide office. Your garage will be neater for it!

# Where are you now?

Have you studied or done research on any NRS sites? If so, we'd like to know which sites you've visited, what kind of work you've done on them, and how the experience has affected your career. We'd also like to know if you're interested in using NRS reserves, but are unable to do so because they lack the habitats or accommodations you require.

Such information helps us document both the value of the reserves to the academic community and the need to improve their facilities and provide support services.

So please write us about your experiences with the Natural Reserve System. In return, we'll use the information you provide to make the sites more useable. And, as a token of our appreciation, we'll send you our twentieth anniversary poster—an 11" X 17"" color picture of a mohave mound cactus in bloom at the Granite Mountains Reserve.

# Free Subscription

**tran · sect** (tran'sekt), ***n.*** **1.** *Field Science.* A line along which physical and biological data are collected. **2.** *Tech. Slang.* A cross-sectional slice of the environment under study.

In a broad sense, the Natural Reserve System is also a transect. It encompasses a cross-section of California's natural diversity in a system of natural areas and field stations specifically reserved for teaching and research. Recognizing this, we have chosen to call our newsletter the *Transect*. For a free subscription—two issues per year— write or phone the systemwide NRS office: (415)644-4211; ATSS 8-532-4211.

● **100% Recycled paper**
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