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UC Looks to Prop 111 to Ease Funding Problems

If Proposition 111 fails to pass in the upcoming June ballot, state funds will not be sufficient over time to sustain the University of California's programs in their present form, including the Agriculture Experiment Station, Cooperative Extension, and the Natural Reserve System, says Kenneth R. Farrell, UC Vice President—Agriculture and Natural Resources.

Prop. 111, known as "The Traffic Congestion Relief and Spending Limitation Act of 1990," would increase gas taxes to improve roads and public transportation. It would also modify the current rate-of-inflation formula used to set the state's spending limit. The proposed formula in Prop. 111 would allow spending to match percentage-of-growth in the state's population and personal income. That change would allow the state budget to grow at the same rate as state revenues, about 8.7 percent per year.

The University estimates its budget must grow by 8.5 percent annually to accommodate new students and keep pace with inflation. The current spending cap limits growth in the state budget to an estimated average of just under 7 percent per year—even though the state collects more under current tax rates.

The University's budget shortfall will grow cumulatively worse each year under current funding rates, says William Baker, UC Vice President—Budget and University Relations. In 15 years, the University's budget would cover only two-thirds of its needs, says Baker, adding that the failure of

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Sarah S. Gustafson

Looking east towards the steep sandstone outcrops of Cold Creek Canyon from the headquarters at the Santa Monica Mountains Reserve, the newest Natural Reserve System site.

Santa Monica Mtns Reserve Joins NRS

After many years without an NRS reserve, the UC Los Angeles campus will soon administer the system's 30th site, the Santa Monica Mountains Reserve. Also known as Stunt Ranch, this 310-acre parcel lies on the north central flank of the Santa Monica Mountains, the southernmost of the state's transverse ranges. The reserve straddles Cold Creek Canyon, a rugged and relatively undisturbed watershed that harbors one of the most diverse associations of plants of any in the range. The Santa Monica Mountains Conservancy, a state agency that currently owns the property, will formally convey the site to the University for incorporation into the NRS at a ceremony on June 18.

Also available for study will be the 760-acre Cold Creek Canyon Preserve owned by the Mountains Restoration Trust. It consists of two parcels, one directly east of the reserve and the other just upstream, adjoining its southern boundary. Together, the Stunt Ranch property and Cold Creek Canyon Preserve offer an important resource for teaching, research, and public education in

the midst of the heavily urbanized Los Angeles area, less than an hour from UCLA.

Natural Features: Cold Creek—one of the few perennial streams in the Santa Monica Mountains—drains the north-facing slopes of 2,805-foot Saddle Peak, one of the highest points in the range. Like much of coastal Southern California, Cold Creek Canyon receives relatively little precipitation, almost all of it falling as rain in the cooler winter months. The canyon is high enough in elevation to escape much of the coastal fog, yet close enough to the ocean to be protected by sea breezes from the air pollution of the Los Angeles Basin.

The creek runs north and west through the middle of the reserve, dividing landslide deposits to the southwest from steep walls and dramatic outcrops of Topanga Formation sandstone on the northeast. Also present on site are small areas of Sespe Formation sedimentary strata, narrow bands of pillow basalts, and isolated outcrops of volcanic rock.

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Reserve People



Norden H. (Dan) Cheatham

Mathias Bids Adieu to NRS Committee Chair

During the summer of 1958, Mildred Mathias developed an earache. She was teaching at a remote site in the Rocky Mountains at the time, so she was unable to see a doctor until she returned to UCLA in the fall. By then, she says, she realized she'd lost much of the hearing in her right ear. After washing out her ear, the doctor proceeded to remove a fully engorged tick, measuring more than a third of an inch across. Ever the scientist, Mathias left the tick at the campus entomology lab for identification.

The next day a member of the entomology faculty tracked down Mathias at the herbarium. He wanted to know where she'd found the tick, which he thought might be an undescribed species. When she said she'd found it in her own ear, he exclaimed, "But that tick's known only from the ears of higher mammals!" "And what do you think I am!" Mathias replied, causing the entomologist to turn several shades of red. Mathias is fairly sure she picked up the tick while camping out on a plant-collecting trip to Baja California the previous spring.

As the legend goes, the entomologist wrote up the find, listing its type locality as "Mildred Mathias's right ear."

Like many stories about Mathias, this one illustrates the spirit of adventure, scientific curiosity, and wit she brings to all her work, including her involvement with the Natural Reserve System. After 22 years as chair of the NRS Universitywide Faculty Advisory Committee, Mathias will retire from the

Mildred Mathias on one of the many UC Extension trips she has led to the Amazon Basin.

post this summer when the committee is restructured.

Says Mathias of her NRS role, "I'm sort of the memory of the organization," which she often describes as "an educational innovation born of necessity." "When I first came to UCLA [1947]," she says, "there were places on campus I used for collecting and classes all the time. Then, all of a sudden, freeways went through, dormitories went up, and we lost all the teaching sites that were close by." This same scenario was being played out all over the state, compelling UC field scientists to organize the Reserve System in 1965.

Mathias has overseen NRS growth from a fledgling program of 8 reserves in 1968 to a nearly complete system of 30 sites used by thousands of scholars each year. Though pleased with its progress, Mathias hopes the NRS will become better integrated into the University at large. "The reserves are fixed in many people's mind as places where biologists go to collect butterflies, look at birds, and identify plants," she says. "We have to get across the fact that the system has uses far beyond those—that it offers unparalleled resources for a broad range of disciplines, from public health to geology to literature. It can play important roles in establishing biological *and* physical baselines; in doing comparative studies with ecosystems in Mexico, Central, and South America; and in addressing environmental problems at many levels."

While guiding the growth of the NRS has taken a good deal of Mathias's time over the last two decades, she's also managed to further an impressive academic and public service career. One of the nation's foremost authorities in botanical taxonomy, Mathias received her Ph.D. from Washington University in 1929, at age 22. She spent the next several years raising four young children while doing botanical research at the Missouri and New York Botanical Gardens and at UC Berkeley. In 1947, she joined the faculty at UCLA, where she's been based ever since. Though she retired in 1974, she never slackened her pace; in fact, the most recent of her many awards came from the UCLA Emeriti Association, which just named her Emeritus of the Year for her post-retirement contributions to the University.

Mathias' specialty is the carrot family, Umbelliferae, which she has studied throughout the Americas. She's also helped UCLA's pharmacology department locate and identify plants in Peru and East Africa that might affect the central nervous system,

as possible sources for new drugs. One genus and five species of plants bear her name.

Countless organizations devoted to horticulture, conservation, and education at the local, state, and international levels have benefitted from Mathias's service. Among her most satisfying involvement is her work as a founder, former board president, and teacher with the Organization for Tropical Studies, which has grown tremendously over the past several years.

To further satisfy her wanderlust, Mathias has led more than 40 UC Extension courses in natural history and horticulture to the Amazon, Costa Rica, and other parts of the world. Her summer 1990 trip to Peru is already overbooked.

Through such courses, along with her classes at UCLA, Mathias has spread knowledge and appreciation of ecology to thousands of people. In recognition of her influence on students—and to thank her for her decades of leadership—the Natural Reserve System will name its Student Research Grants Program after her (see page 3).

"Mildred's contributions to the development of the NRS are beyond measure," says NRS Director Roger Samuelsen. "She has addressed Regents, persuaded donors, evaluated proposals, mediated conflict, and motivated fellow committee members and staff with equal aplomb and dignity. All of us who have been privileged to work with her will forever be in her debt—and so will future generations of students and faculty who will utilize and build upon her legacy."

*Sarah Steinberg Gustafson, Senior Editor
Natural Reserve System*

Editor's Note: Two other long-time members of the NRS Faculty Advisory Committee will also retire from their committee posts this summer: Wilbur Mayhew of UC Riverside (see profile in *Transect* 8(1):4) and Kenneth S. Norris of UC Santa Cruz (to be profiled in the fall 1990 *Transect*).

Dan Cheatham: Retired But Never Retiring

An NRS era ended when Field Representative Norden H. (Dan) Cheatham retired on March 31, 1990. Cheatham joined the NRS full-time in 1970 as the third member of its original team.

During nearly 20 years with the NRS, Cheatham found his greatest satisfaction in three areas: (1) his interactions with students and reserve users (particularly in establishing and administering the Mead Grants and



When Dan Cheatham wasn't in the field, he was often on the phone, facilitating the field work of others. "Getting a call from Dan is like eating a truffle," says a colleague. "It peps me up and inspires me to conquer the world."

NRS Student Research Grants Program), (2) his problem-solving at the individual reserve level, and (3) his networking with numerous government agencies, conservation organizations, and resource management entities. By founding and organizing informal gatherings of the Natural Areas Breakfast, Chowder, and Marching Society, Cheatham was responsible for helping many resource management professionals meet face to face. He also played an early, pivotal role in the evolution of the Inter-agency Natural Areas Coordinating Committee (INACC), whose members include representatives from state and federal agencies, The Nature Conservancy, and the NRS.

Cheatham grew up in Hawaii, but has long been associated with the University of California, starting in 1946 as water boy for UC Berkeley's marching band. He worked his way up to drum major in 1957-58, making the band's first overseas trip to the Brussels World Fair and returning to march in Cal's last Rose Bowl appearance in January 1959. He graduated from UC Berkeley in 1958 with a degree in forestry.

His ROTC training carried him briefly into the service, followed by a position as assistant forester in Maui and a year of graduate schooling in watershed management in Tucson, Arizona. For three years, he was forestry-conservation officer for the Trust Territory of the Pacific Islands, a territory that includes the 2,100 islands and 3 million square miles of ocean known as Micronesia. Prior to joining the NRS, Cheatham worked in Berkeley for the Pacific Southwest Forest and Range Experiment Station, a research arm of the U.S. Forest Service.

Cheatham's first post-retirement goal was to go home and clean his house. However, his friends and former colleagues expect to

see him reincarnated shortly as a travel photographer and writer. Cheatham's photos have already appeared in *Natural History*, *Pacific Discovery*, *Cal Monthly*, *Fremontia*, the Scottish games programs of the Caledonia Club, and, of course, many NRS publications. In addition, he will continue to work with the California Native Plant Society and UC Marching Band.

NRS Director Roger Samuelsen said of Cheatham: "No one has brought more energy, enthusiasm, and innovation to the NRS than Dan"—and all who know him can only agree. He will be sorely missed.

Susan Gee Rumsey, Editor
Natural Reserve System

In Memoriam

Woodrow ("Woody") Sampson, the caretaker of Valentine Camp at the time of its acquisition as an NRS reserve, died January 17, 1990, three weeks after his 77th birthday. A rancher, handyman *extraordinaire*, and amateur naturalist, Woody maintained the site for 25 years.

The son of a potato farmer, Woody was born in Caribou, Maine, in 1912. His family moved to Los Angeles while he was a boy where he attended Manual Arts High School. On a camping trip to the Mammoth area in the early fifties, Woody met a local contractor who commissioned him to do some work on the cabins at "Valentine Camp." Ed Valentine was pleased with the work and offered Woody regular summer employment. Woody worked for the Valentine family from 1954 until the property was donated to the University in 1972. He then worked for the University as the reserve's first caretaker from 1972 to 1979.

Woody was well known in the community both to old timers and to errant hikers who trespassed on the reserve. He refurbished the three cabins that house University researchers, and is fondly remembered by those who used the property during the seventies for his extensive knowledge of the flora and fauna, his selfless dedication to protecting the resources, and the help he provided. Woody had a joke or a humorous expression for every occasion.

Woody is survived by his wife, Jane, two sons, one daughter, and eight grandchildren. A plaque in his memory, identifying the location of "Woody's Meadow," will be placed at Valentine Camp this spring.

Dan Dawson, Manager
Valentine Eastern Sierra Reserve

Highlights

Student Grant Program Picks a Dozen Winners

The Natural Reserve System is proud to announce the award of 11 grants totalling over \$19,000 to 12 UC graduate students conducting research on NRS sites.

Gwendolyn C. Bachman, Biology, UC Los Angeles, received \$2,000 to study the influence of stored fat on foraging behavior in Belding's ground squirrels at the Sierra Nevada Aquatic Research Laboratory (SNARL).

Amos Bouskila, Zoology, UC Davis, received \$2,000 to investigate the effects of predation risk from snakes on micro-habitat use by kangaroo rats at the Granite Mountains Reserve.

Craig L. Frank, Ecology and Evolutionary Biology, UC Irvine, received \$600 to examine the nutritional limitations and requirements of ground squirrels for hibernation at the San Joaquin Freshwater Marsh and Burns Piñon Ridge reserves.

Kim William Kratz, Biological Sciences, UC Santa Barbara, received \$2,000 to analyze the impacts of invertebrate predators on colonization dynamics of prey populations at SNARL.

Jane Claire Marks, Integrated Biology, UC Berkeley, received \$2,000 to investigate factors that structure algal assemblages in the Eel River at the Northern California Coast Range Preserve (NCCRP).

Steven R. Morey, Biology, UC Riverside, received \$1,800 to study the life history of the Great Basin spadefoot toad at SNARL.

Gretchen Barrow North, Biology, UC Los Angeles, received \$1,150 to analyze patterns of water stress-induced embolism and recovery in three species of arid-land vines at the Motte Rimrock Reserve.

Adrian Laurence O'Loughlen, Biological Sciences, UC Santa Barbara, received \$2,000 to investigate vocal development and dialect maintenance in the brown-headed cowbird at the Valentine Eastern Sierra Reserve.

Steven Pennings and Ragan Callaway, Biological Sciences, UC Santa Barbara, received \$1,350 to research how biotic factors affect zonation of two species of perennial salt-marsh vegetation at the Carpinteria Salt Marsh Reserve.

Stephen M. Secor, Biology, UC Los Angeles, received \$2,000 to investigate the influence of differing foraging modes on the activities, thermal biology, and energy expenditures of two desert snakes, the sidewinder and coachwhip, at the Granite Mountains Reserve.

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News and Notes

Reserve Research

James Reserve Receives GIS Grants, Markets Macroscopic

Mike Hamilton, resident director of the James San Jacinto Mountains Reserve in Riverside County, recently received three grants related to his work with geographic information systems (GIS) and interactive video (see *Transect* 5(2):1).

Two grants come from the United Nations Environmental, Scientific, and Cultural Organization through its Man and the Biosphere Program (MAB). MAB awarded a total of \$46,000 to Hamilton and five other investigators to begin a transnational study of the Peninsular Range of the Californias. The group will compare the ecology and management of the montane forests of the San Jacinto Mountains of Southern California with the San Pedro Martir in Baja California, where fire has not been suppressed. Hamilton will manage data collection on the San Jacinto Mountains and help build a new GIS on the Baja range to complement his system at the James Reserve.

Hamilton also received a copy of PC ARC/INFO—a \$13,000 GIS software package—from Environmental Systems Research Institute. This donation will allow him to create a microcomputer version of the San Jacinto Mountains GIS, which is now based on a UC Riverside mainframe. Eventually, he hopes to make this stand-alone GIS a multimedia system that incorporates video and sound, as well as maps, text, and numerical data.

Another source of revenue for the reserve will soon be available from the sale of Hamilton's *Macroscopic Ecology Laser Disc*, which compares ecological diversity of mountain ranges on two continents. It covers the San Joaquin Mountains, Rancho Grande Biological Station in Venezuela, and numerous secondary study sites throughout Venezuela and the southwestern U.S.

The *Macroscopic* package consists of a laser disc packed with 25,000 still images of ecological subjects, along with several floppy discs of demonstration hypercard stacks linked to the images. Hamilton will market the package primarily to schools that wish to use multimedia technology in teaching. A portion of the profits will go back into the project, partly to enlarge the videodisc database.

Hamilton's *Macroscopic* will also be included in a demo produced by Apple Computer. Scheduled for release this summer, Apple's *Higher Education CD-ROM/Videodisc*

Sampler will include samples of 60 multimedia projects from educational institutions around the world; Hamilton's will be one of two contributions from the University of California.

Contributions and Additions

Hastings Scientists Explore New Ground

Researchers at the Hastings Natural History Reservation are making good use of Fanny Hastings Arnold's most recent gifts to the NRS: 60 acres and access to a nearby house to lodge researchers working on this upper Carmel Valley reserve.

At present, the new property is being used by researchers studying native bees, wasps and cobalt leaf beetles, and deer mice. The parcel also supports acorn woodpeckers and brings an important riparian area to the reserve.

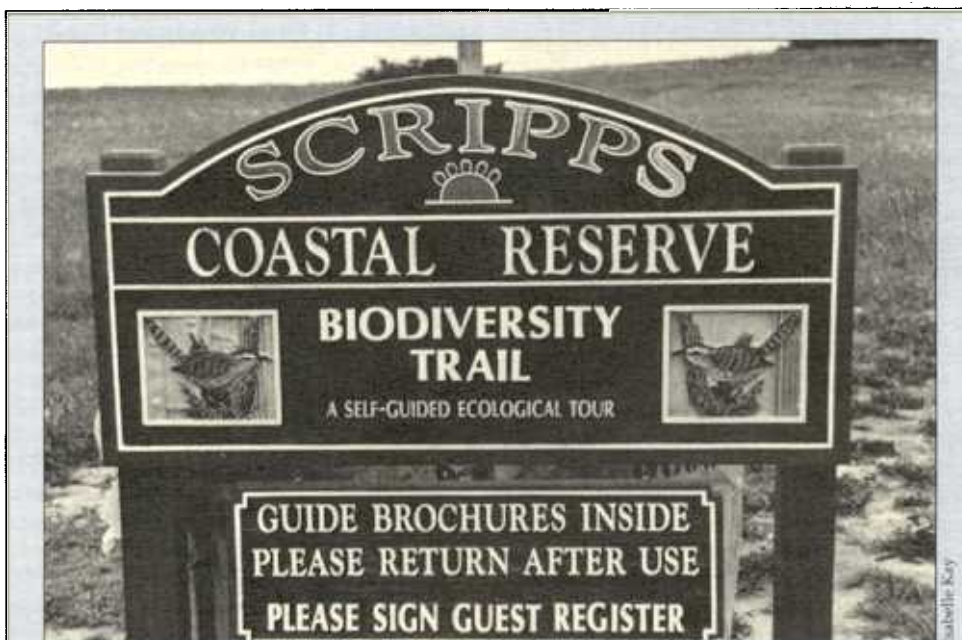
Mrs. Arnold has been involved with the Hastings Reservation for over half a century. In 1937, her family offered use of their land to Joseph Grinnell of UCB; in 1963, the land was willed to the University. Mrs. Arnold

continued her family's support. In 1985, she purchased the Robinson Place, a 316-acre wildlands area east of the Hastings Reservation, with plans to donate it to the University in parcels over time. This most recent 60-acre gift is her third such donation to the NRS. She has already donated two 40-acre parcels.

The Robinson Place has a long and varied history. An 1862 survey map labels the parcel as "Mrs. Robinson's House and Garden." The Carmel-King City Road ran through the property, and the original road base still exists. From about 1890 to 1910, the property was used as a dairy and independent farm. More recently, prior to Mrs. Arnold's purchase, the property had been a party site for Hell's Angels. Mrs. Arnold financed the complete restoration of the Robinson house.

Motte Grows, Gets Lab

The Motte Rimrock Reserve grew in size and facilities this winter, thanks to gifts from Charles L. and Oattie Mae Motte. In December, the Mottes donated 10 acres to this Perris Valley reserve, bringing the total to 480 acres. And in February, the reserve converted part of a house donated by the Mottes two years ago into a laboratory. The 368-square-foot structure now provides counter and storage space, water, and refrigeration



Visitors to the Scripps Coastal Reserve on the UC San Diego campus can now take a self-guided tour of the terrestrial portions of the site using its new biodiversity trail. The half-mile-long trail guides users through five habitats on the "knoll"—an uplifted marine terrace flanked by two coastal canyons. Numbered trail markers correspond to sections in an accompanying brochure that describes the knoll's geography, flora, and fauna. This portion of the Scripps Coastal Reserve is open to the public; reserve management constructed the trail to inform visitors that the site is not a park but an educational resource.

to on-site researchers. The systemwide NRS office and the Riverside campus funded the conversion.

Eagle Lake "Wins" Boat

Funds from the California State Lottery will soon provide the Eagle Lake Biological Field Station with a new 25- by 10-foot pontoon-style deck boat. Equipped with a 90-horsepower engine, this boat is designed to hold 30 people and withstand the lake's high winds. It will be available starting in June to classes and researchers for work in the lake and on its far shore.

The Eagle Lake Field Station lies on the eastern shore of a large mesotrophic lake located at the juncture of the Sierra Nevada, Cascade, Great Basin, and Modoc Plateau Geologic Provinces. The 80-acre site is owned by California State University, Chico, and cooperatively managed by the Natural Reserve System through the Davis campus.

Granite Mtns Picks Up Truck

The Granite Mountains Reserve recently acquired a new three-quarter-ton, four-by-four pickup truck with an eight-foot bed and extended cab. The vehicle greatly increases the safety of field work in this remote, 8,950-acre Mohave Desert reserve. Funding for the truck came from the systemwide NRS office and the Riverside campus.

NCCRP Adds Equipment

The Northern California Coast Range Preserve, located on the South Fork of the Eel River in Mendocino County, has added a Macintosh SE/30 computer and a Munroe copy machine to its headquarters building. Both are available to reserve users free of charge.

Events

Natural Areas Week Will Celebrate Past, Plan Future

Prospects for the future of natural areas will be discussed this fall at a global issues symposium sponsored by the Natural Areas Association and Yosemite National Park. The week-long event joins the 17th Annual Natural Areas Conference with a Yosemite centennial celebration.

The Yosemite celebration will take place the weekend of October 13-14 in the park. The symposium will continue October 15-19

at the Sheraton Conference Center in Concord, CA, where between 500 and 700 people are expected.

A special symposium highlight will be a luncheon sponsored by the NRS to celebrate its 25th anniversary. Symposium participants will also have the opportunity to join field trips to several NRS reserves and other Bay Area natural areas.

Presentations will focus on natural areas protection and management, natural and cultural resources research and management, landscape preservation, natural areas interpretation and education, art and literature in natural areas, and conservation of biological diversity. The final keynote address will be delivered by Gilbert Grosvenor, president of the National Geographic Society, and broadcast on National Public Radio in conjunction with the Commonwealth Club of California.

Interested in attending this event? Contact: Jerry Edelbrock, coordinator, NA/Yosemite Centennial Symposium, GGNRA, Fort Mason Bldg. 201, San Francisco, CA 94123; (415) 556-1009.

Oak Conference To Convene

Regeneration, wildlife, land use, monitoring, and management will be among the topics discussed at the Oak Woodland and Hardwood Rangeland Management Symposium at UC Davis on October 31 through November 2, 1990.

Fifty presenters will deliver the results of their current, state-of-the-art research on oak and other hardwoods. The symposium will also offer a poster session, and the proceedings will be published.

The event, to be held in UCD's Freeborn Hall, is sponsored by the UC Integrated Hardwood Range Management Program and UC Extension, UC Cooperative Extension, the California Department of Forestry and Fire Protection, and the California Native Plant Society.

For more information, contact Rick Standiford, program coordinator, 163 Mulford Hall, University of California, Berkeley, CA 94720; (415) 642-2360.

New Views Shared on Ecological Planning

"Ecology and Planning: The New Perspectives" was the focus of a two-day conference held February 8-9 in Sacramento. The conference, offered through UC Davis Extension, was designed as an in-depth introduction to ecological aspects of environmental design and modern ecological practices now



Engelmann oak (*Quercus engelmannii*)

altering many of the perspectives that have influenced land use and resource management for nearly a century.

Anne Whiston Spirn, chair of the University of Pennsylvania's Department of Landscape Architecture and Regional Planning, was featured speaker on the concept of "deep structure" in the urban landscape. Six other presenters spoke on restoration ecology, landscape ecology, agroecology and sustainability, preservation of natural diversity, geographic information systems, and a systems view of the conference.

Larger-scale conferences on the topics discussed are being organized. The first of these will be "Ecology and Planning: The Landscape Dimension," a three-day event on landscape ecology to be held in Sacramento on October 3-5, 1990. For more information, contact Dana Abell, program coordinator, UCD Extension; (916) 757-8893.

Interagency Workshop Focuses on South Coast Issues

A South Coast Natural Areas Workshop, organized by the Interagency Natural Areas Coordinating Committee (INACC) (see *Transect* 7(2):3), was held February 28 at the Buena Vista Audubon Nature Center, Oceanside, CA.

The workshop was attended by 50 to 60 representatives from such agencies and organizations as the Bureau of Land Management, U.S. Forest Service, U.S. Fish and Wildlife Service, National Park Service, U.S. Navy, U.S. Marine Corps, California Department of Fish and Game, California Department of Parks and Recreation, State Lands

News and Notes *continued*

Commission, Coastal Conservancy, CALTRANS, Environmental Protection Agency, and The Nature Conservancy. Representing the NRS were members of the systemwide office and reserve managers from the Irvine, Riverside, and San Diego campuses.

Two purposes drove the event: (1) to enhance coordination of planning and management efforts for natural areas throughout Southern California's coastal flatlands from Los Angeles to San Diego (where many habitats are threatened), and (2) to give participants a broader perspective on interagency activities throughout the state.

This February workshop was the second INACC regional gathering. The first meeting was held last fall in Redding, and a third workshop took place in May in Sacramento.

Nature Lovers Labor at Reserves North and South

The sweat of your brow is a welcome contribution at both the Northern California Coast Range Preserve (NCCRP), in Mendocino County, and the Motte Rimrock Reserve, located 15 miles south of UC Riverside.

Painting, nailing, removing or erecting fences, planting trees, and clearing trails and fire lanes are among the maintenance tasks you can perform to support education and research at these NRS reserves — then, at NCCRP, spend the night near the largest virgin Douglas fir community left in the state or, at Motte, get a good look at some of Southern California's best-preserved Native American pictographs.

NCCRP Reserve Steward Peter ("Slave-driver") Steel and Motte Reserve Manager Barbara Carlson invite you to participate in the many labors that must be performed to keep these two reserves in good order. To arrange for a work weekend at NCCRP, contact Peter at NCCRP, 42101 Wilderness Road, Branscomb, CA 95417; (707) 984-6653. To volunteer at Motte, write or call Barbara at the Biology Department, 1208 Life Sciences Bldg., University of California, Riverside, CA 92521; (714) 657-3111.

Publications

Hastings Scholar Edits Book on Family Life of Birds

Cooperative Breeding in Birds; Long Term Studies of Ecology and Behaviour was published earlier this year by Cambridge University Press. Edited by P. B. Stacey, University of New Mexico, and W. D. Koenig, research

zoologist at the Hastings Natural History Reservation, this 615-page book was based in part on more than 16 years of work on acorn woodpeckers at the Hastings Reserve.

The monograph discusses cooperative breeding among birds, an unusual kind of social behavior common to only a few hundred species worldwide. Because certain individuals help to raise offspring not their own, cooperative breeding provides some of the clearest examples of altruism among animals. Such species also exhibit some of the most bizarre social behavior observed anywhere in the animal kingdom. The studies are all long term, and consequently the book summarizes some of the most extensive studies of the behavior of marked individuals ever undertaken.

Annual Report Off the Press

The first comprehensive NRS annual report is now available. Published this past winter, the document provides a statistical overview of reserve users, research, and teaching for the 1987-88 academic year. In addition, the report includes a map showing the location of all NRS sites, an updated list of reserve contact addresses, and a selected bibliography of the year's reserve-based work. Contact the systemwide NRS office for a free copy (see back page).

Prop 111 *continued from page 1*

Prop. 111 may cause: little or no enrollment growth, substantial student fee increases, tuition for California residents as well as further tuition increases for nonresidents, a significant reduction in academic and public service programs, a diminished research capacity, and a reduced capacity for administering the University.

"The Natural Reserve System is gearing up for a period of program development under the guidance of a Long-Range Planning Steering Committee," says NRS Director J. Roger Samuelsen. "Our ability to obtain increased funding to carry out these plans will inevitably be affected by the outcome of Prop. 111."

Concerned about UC's ability to continue its existing levels of service to California, UC's Regents took the unusual step of endorsing Prop. 111.

The only organized opposition identified at the time this newsletter went to press was from Citizens Against Unfair Taxation. This Orange County-based group says Prop. 111 will lead to an unwarranted increase in taxes and spending.

Santa Monica Mtns *continued from page 1*

The area's Mediterranean-type climate fosters dense stands of chaparral, and the Cold Creek sites contain excellent examples of four distinct phases. Six species of *Ceanothus* grow in close proximity here, as do both species of *Adenostoma*, chamise and red shank. The most recent fire, in 1970, burned portions of the chaparral on both properties.

Cold Creek and its tributaries provide splendid habitat for woodland and riparian vegetation, dominated here by California bay along the upper creek, with sycamore and coast live oak downstream. Also along the upper creek are thriving populations of big-leaf maple and the stream orchid *Epipactis gigantea*, which—like red shank—are uncommon in these mountains.

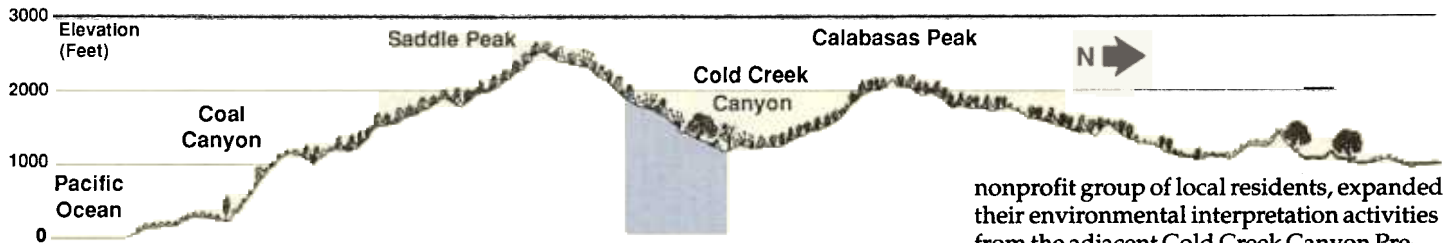
The reserve's chaparral-oak woodland mosaic is interrupted by pockets of native grassland, the largest of which covers about five acres. Several species of the native bunchgrass *Stipa* grow in these areas, as does the sunflower *Pentachaeta lyonii*, a state-listed endangered species.

More than 300 species of vascular plants grow in the Cold Creek watershed; this flora includes about 35 percent of the species native to the Santa Monica Mountains. The canyon's abundant fungi and bryophytes have also been inventoried.

The watershed also harbors a rich fauna, one very typical for the Santa Monica Mountains at large and—due to its permanent



Woodland vegetation along Cold Creek at the new Santa Monica Mountains Reserve.



This vegetation profile is based on a transect that passes through the middle of the Santa Monica Mountains Reserve. Published by William B. Critchfield in *Profiles of California Vegetation*, it is one of a series of profiles that reflects the strong influence of such ecological factors as elevation and aspect on the distribution of plant communities. The highlighted portion above shows chaparral and woodland vegetation mapped from the reserve property itself as part of the Vegetation Type Map (VTM) survey of California conducted by the U.S. Forest Service in the 1930s.

water supply—more diverse than most other areas in the range. Essentially all vertebrate species known to occur in chaparral, southern oak woodland, and riparian woodland habitats in the Santa Monica Mountains have been observed here, including the San Diego horned lizard (*Phrynosoma coronatum blainvilliei*) and San Diego Mountain kingsnake (*Lampropeltis zonata pulchra*), both species of special concern to the California Department of Fish and Game. Ornithologists praise the canyon's riparian woodland for its diversity of birds. And as the watershed is located along the Pacific Flyway, numerous migratory bird species visit seasonally.

Though the invertebrates have yet to be fully documented, entomologists have compiled a reserve insect inventory and collection, stored at the education center on site.

History and Public Access: Cold Creek Canyon's eastern ridge marked the interface between the Gabrielano—a Shoshone-

speaking people—and the Chumash, a Hokan group. Located near reserve headquarters is a rich deposit of prehistoric artifacts dating from 3,000 BC to 1,000 AD, remnants of seasonal and year-round encampments. In 1982-83, an archaeologist from CSU Northridge catalogued more than 3,000 artifacts from the near the education center.

This systematic dig also uncovered more than 1,000 historic materials dating from the early nineteenth century. In 1889, the Stunt family homesteaded the reserve land, retaining ownership of the ranch until 1970, when Ethel Stunt transferred it to Occidental College for use in field instruction.

In 1978, the State of California purchased Stunt Ranch with park bond funds, and the Santa Monica Mountains Conservancy assumed administrative responsibility for the site in collaboration with the state Department of Parks and Recreation. Trails on the property were opened for public hiking and equestrian use. The Cold Creek Docents, a

nonprofit group of local residents, expanded their environmental interpretation activities from the adjacent Cold Creek Canyon Preserve; in 1982, they converted an equipment shed at Stunt Ranch into the Kay Spensley Nature Education Center. About 4,500 local schoolchildren visit the center each year to learn about the area's natural features. These public access and education activities will continue—enhanced by new knowledge of local ecosystems—after Stunt Ranch joins the NRS.

The reserve is situated within the Santa Monica Mountains National Recreation Area, a unit of the National Park Service. Numerous private conservation groups and public agencies—all with resource values as their primary interest—are actively acquiring property in the area, so the amount of protected land available for educational uses will likely grow.

Facilities and Use: The Santa Monica Mountains Reserve is readily accessible by paved roads from UCLA, and samples of its undisturbed vegetation can be reached easily via Stunt Road and an on-site network of trails.

Currently, the education center and the reserve steward's residence are the only facilities on site. However, plans are underway to: (1) build a multipurpose lodge with semi-private sleeping quarters for 20 to 25 people, as well as bath, kitchen, dining, meeting room, and storeroom spaces, and a library/study/microcomputer room; (2) develop a student campground area adjacent to the lodge; (3) possibly convert an existing farm shed into a simple laboratory with sinks, counters, and space to house synoptic collections; and (4) establish a variety of environmental monitoring facilities, including at least one weather station, stream gauges, fixed plots, transects and photo points, and a grid system to locate research plots.

With these facilities in place, the Santa Monica Mountains Reserve will provide excellent opportunities to bring classes and conduct research on such topics as ecophysiology, fire ecology and prescribed burning, vegetation management and habitat restoration, endangered species protection and management, watershed management, water quality protection, and slope stability.

For more information on using this new reserve, contact Laurie Vitt, faculty manager, Department of Biology, 2203 Life Sciences Bldg, University of California, Los Angeles, CA 90024; (213) 825-1575.

Sarah Steinberg Gustafson, Senior Editor
Natural Reserve System

Santa Monica Mountains Reserve—Vital Statistics

Location:	Los Angeles County, CA, in the Cold Creek watershed of the Santa Monica Mountains. ~4.5 air miles NNE of Malibu, 4 air miles S of Calabasas; 26 driving miles from UCLA.
Latitude:	34° 6' N
Longitude:	118° 39' W
T, R, S:	T1S, R17W (SBB&M); portions of sec 10
USGS Map:	Malibu Beach 7.5'
Size:	310 acres University-owned land; additional 760-acre Cold Canyon Preserve available through the Mountains Restoration Trust.
Elevation Range:	800-1,600 feet; upper watershed all the way to 2,800-foot Saddle Peak in protected ownership.
Mean Precipitation:	24 inches/year, from 30-year records at Topanga Patrol Station
Topography:	Stream-cut canyon with steep and rugged eastern wall, gentler western slopes.
Habitats:	Chaparral (big pod ceanothus, scrub oak, red shank, chamise), coastal sage scrub, oak woodland, riparian woodland, grassland.
Species Diversity (watershed-wide):	fungi: 74+ bryophytes: 28+ vascular plants: 300+ (75% native) amphibians: 5 reptiles: 14 birds: 120+ mammals: 23
Facilities:	No overnight facilities at present; multipurpose lodge and basic laboratory planned. Trails provide access to examples of major habitats
Public Access:	Cold Creek Docents offer educational and interpretive programs on site and in surrounding area.
Personnel:	Reserve manager, on-site reserve steward to be hired.

Highlights *continued*

NRS Student Grants *continued from page 3*

Stephen R. Wing, Environmental Studies, UC Davis, received \$2,000 to study the effects of wave-modulated variance of light and flow regimes on the photosynthetic efficiency of a deep-dwelling macroalga at the Bodega Marine Reserve.

The 11 winning projects for 1989-90 represent six UC campuses and will be conducted at eight NRS sites. Three of this year's chosen projects are repeat winners: Gwendolyn Bachman (UCLA), Steven Morey (UCR), and Kim Krantz (UCSB).

The NRS Student Research Grants Program was started in 1988-89 with endowment income. Although only three grants were originally intended, the quality of proposals received was so high that NRS Director Roger Samuelsen expanded the program with funds from one-time sources. In the first year's competition, seven UC students received a total of \$5,500.

The deadline for 1990-91 grant applications will be announced later. Potential applicants, who must be UC students, should contact their campus NRS representatives for more information.

*Susan Gee Rumsey, Editor
Natural Reserve System*

Davis, Berkeley Offer Additional NRS Student Grants

Since 1985, the Natural Reserve Mini-grants Program at UC Davis has made \$5,200 available annually to support field work on UCD-administered NRS and campus reserves. The competition is open to both faculty and graduate students at the Davis campus. Applications are judged by a committee of UCD faculty reserve managers, and awards are announced in the summer. Most grants are for less than \$1,000, but larger amounts will be considered on the merits of individual proposals.

For more information about 1991 grants, contact Pat Hale, Institute of Ecology, 2126 Wickson Hall, University of California, Davis, CA 95616; (916) 752-6580.

Meanwhile, at UC Berkeley, the Jane McKenzie Student Research Grant Program is once again enlivening the field season at the 7,520-acre Northern California Coast Range Preserve (NCCRP) in Mendocino County. Modeled after the systemwide NRS Student Research Grants Program, this special competition for UCB student research at NCCRP is administered by the College of Natural Resources. Last year awards of \$500 each went to two graduate students. The program's benefactor, Jane McKenzie, was so pleased with its outcome that she gave an additional \$1,500 to fund three projects this summer. John Mendel, another NRS supporter, also recently gave \$1,000 for two more NCCRP student projects in 1990. Five winners have been chosen.

For more information about future student grant programs at UCB reserves, write or call the Dean's Office, College of Natural Resources, 101 Giannini Hall, University of California, Berkeley, CA 94720; (415) 642-7171.

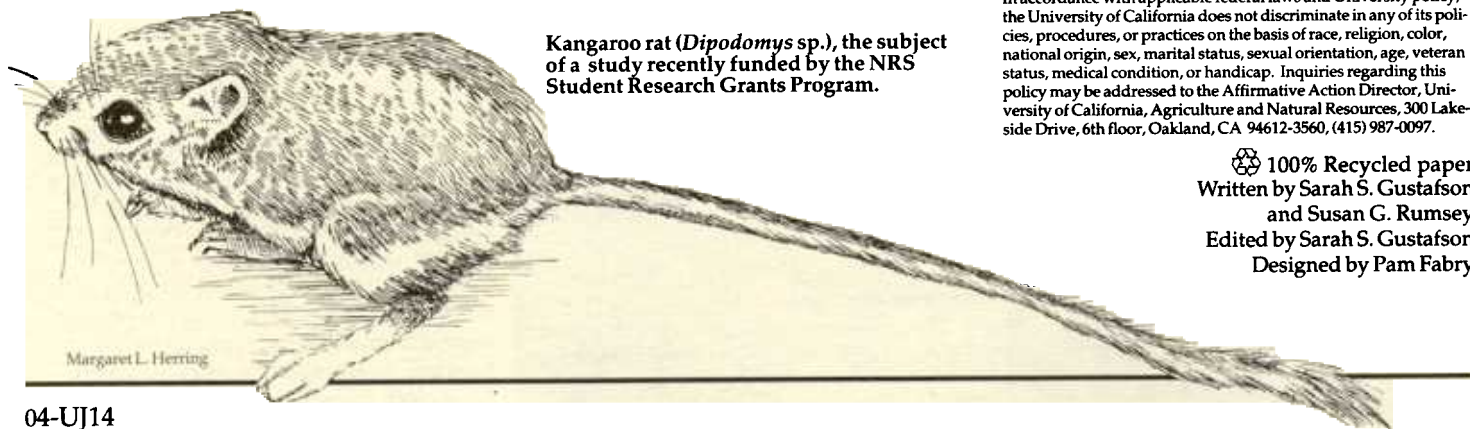
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tran • sect (tran'sekt), *n.* 1. *Field Science.* A line along which physical and biological data are collected. 2. *Tech. Slang.* A cross-sectional slice of the environment under study.

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 award-winning newsletter the *Transect*. For back issues or a free subscription—two issues per year—write or call the systemwide NRS office.

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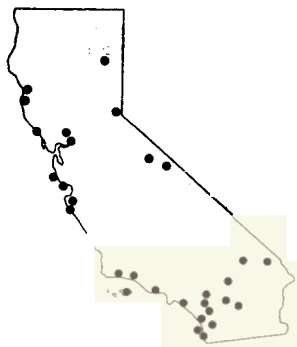
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and Susan G. Rumsey
Edited by Sarah S. Gustafson
Designed by Pam Fabry



Kangaroo rat (*Dipodomys* sp.), the subject of a study recently funded by the NRS Student Research Grants Program.

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