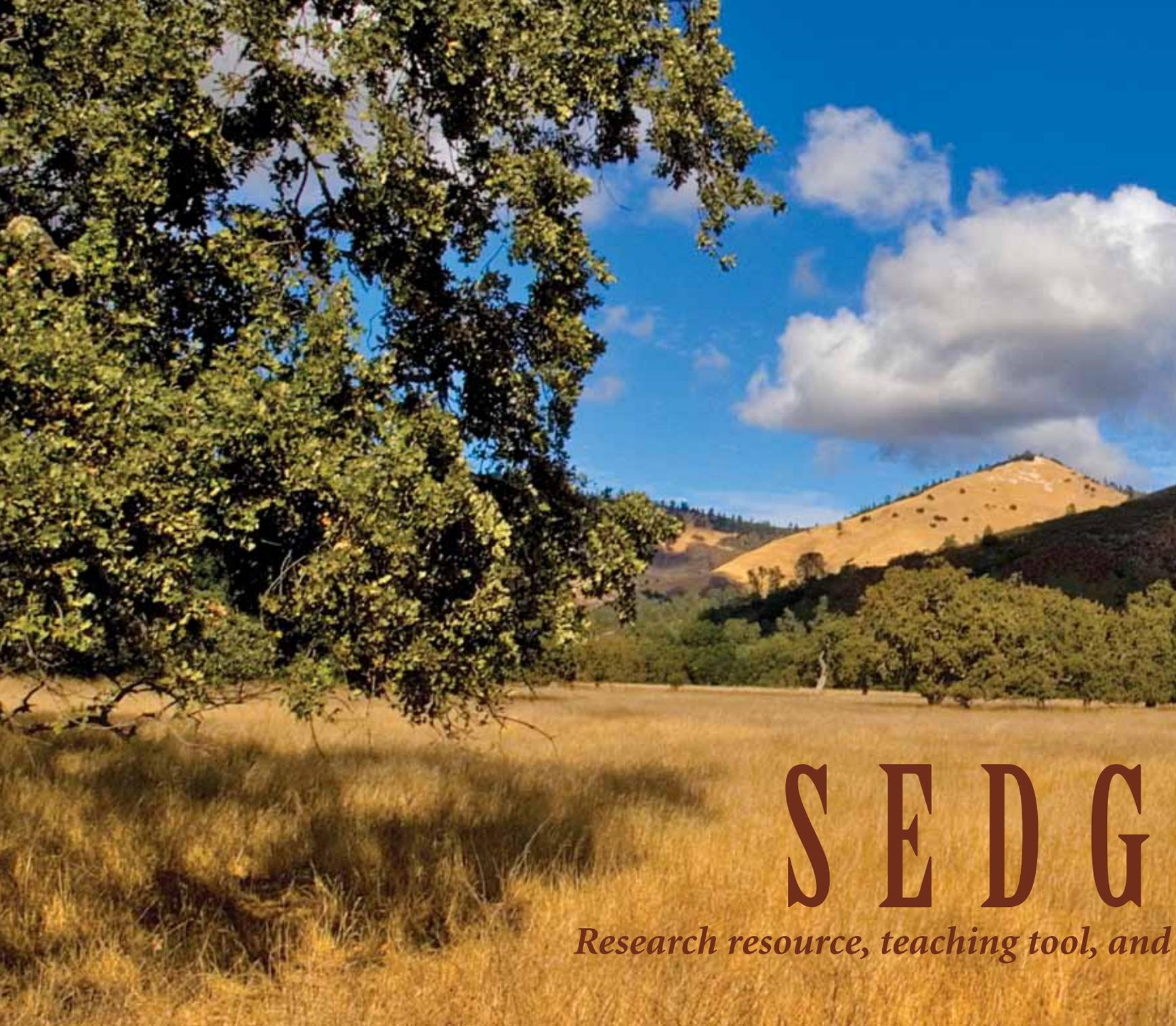


UC SANTA BARBARA
TODAY
SPRING 2010

Sedgwick

Jewel of the UC Natural Reserves

Translating Art
Treating Autism
Tracking Cybercrime



SE D G

Research resource, teaching tool, and

MARK OLIVER

BY EILEEN CONRAD



JONATHAN LEVINE

From his field research on seedlings (above), biologist Jonathan Levine has provided the first strong evidence that niche differences are critical to biodiversity.

Early morning at Sedgwick Reserve in the Santa Ynez Valley and, save for the drumming of a Red-breasted Sapsucker, it is as silent as a shining star. A passing storm has left a brilliant blue sky in its wake. As shadows retreat across this 5,900-acre expanse of fields, canyons, and woodlands, the southern slopes of the San Rafael Mountains glow in the soft, golden light of day.

Noted for both its dramatic size and environmental diversity, Sedgwick is one of 36 protected landscapes in the University of California Natural Reserve System, the largest network of university-managed wildland reserves in the world. Covering 135,000 acres from the eastern slope of the Sierra Nevada to submarine canyons off the Pacific coast, these magnificent examples of California’s terrestrial and aquatic ecosystems provide extraordinary opportunities for large-scale research, outdoor education, and public access. Including Sedgwick, UC Santa Barbara oversees seven of the sites (*see accompanying article*).

“UCSB is proud to take care of seven of the most spectacular reserves in the UC Natural Reserve System, each one of them an invaluable asset,” says Vice Chancellor Michael Witherell of the Office of Research, which administers all of the UCSB reserves. “The Sedgwick Reserve offers our researchers a remarkable opportunity for ecological and astronomical research



WICK

a prime example of nature's splendor

right in the Santa Ynez Valley. At the same time, it serves as a unique outdoor classroom for children from the neighboring communities.”

With a rich Native American history, Sedgwick lies between what were once the largest Chumash villages in the Santa Ynez Valley — Soxtokmu’ to the northwest and Kalawashaq’ to the south — with at least one Middle Chumash village (1,500 to 2,000 years old) within its boundaries. The reserve extends over nine square miles, reaching an elevation of 2,600 feet, with stunning panoramic views.

In 1845, the property was incorporated into the vast Mexican land grant, Rancho La Laguna, which extended along the Santa Ynez Valley east of present-day Los Alamos. Over the next 150 years, it was used for ranching, including cattle grazing.

“Sedgwick’s large size enables research of varying scales on native ecosystems and allows for a greater cross-section of interests by scientists,” explains Kate McCurdy, a conservation biologist and director of the reserve. “The botanical diversity is of huge interest to specialists.”

Vegetation types include coast live oak forest, blue oak woodland, valley oak savannah, buckbrush chaparral, coast sage scrub, grassland, willow riparian forest, serpentine outcroppings, and agricultural land. Figueroa Creek flows through the property, which is a refuge for wildlife, such as American black bear, coyote, mule deer, golden eagle, grey fox, and mountain



Examples of Sedgwick’s extensive native plant collection, such as coast Indian paintbrush (Castilleja affinis), above, will be housed at the Tipton Meeting House.

MARK OLIVER

lion — their presence captured by hidden cameras. A portion of Sedgwick is also in the condor-protected area of the Los Padres National Forest.

Like many of the UC reserves, Sedgwick would not exist were it not for a grand act of philanthropy. In 1995, rancher and sculptor Francis “Duke” Sedgwick and his wife, Alice, both now deceased, gave a large portion of the property to the university as part of their legacy. The remaining acreage was acquired through efforts of the Land Trust for Santa Barbara County and numerous other supporters who saw its value as a place to study the natural world.

Today, more than 128 scientists from UC and other universities in the

United States and abroad are engaged in 45 research projects at Sedgwick that are advancing our understanding of the natural systems at work in the environment, including 14 projects led by UCSB faculty members.

“The Sedgwick Reserve offers our researchers a remarkable opportunity.”

species and how annual endemic plants compete for resources. With funding from the National Science Foundation, soil scientists Joshua Schimel and Patricia Holden are examining the links between plant and soil processes, and how changes in the underground microbial community affect ecosystem dynamics in California annual grassland. Long-term botanical

For example, a pioneering study by UCSB biologist Jonathan Levine is yielding new information about invasive plant



Ecologist Carla D'Antonio weighs plants at Sedgwick with graduate students Nicole Molinari and Karen Stahlheber.

research by environmental scientists Carla D'Antonio and Claudia Tyler is focused on the restoration of native grasslands and the role of cattle grazing in influencing oak communities.

A major earthquake fault and two distinctive geological formations — the relatively young Paso Robles alluvium and the much older Franciscan metamorphosed seafloor — are of great interest to geologists who are mapping the tectonic history of the fault to better understand its role in the formation of the Santa Maria Basin. Recently, UCSB astrophysicists have begun to explore a new frontier at Sedgwick — the dark night sky. The Byrne Observatory at Sedgwick, the first at a UC reserve, is part of a planned global network of telescopes dedicated to scientific discovery and education (*see accompanying article*).

For more than 250 UCSB students, Sedgwick is the setting for fieldwork in botany, biology, creative studies, ecology, geology, and environmental studies. In a landscape painting class taught by paleobotanist Bruce Tiffney and artist Hank Pitcher, undergraduates learn to observe nature from different perspectives.

“The distinction is in how we record an observation,” explains Tiffney, who is dean of the College of Creative Studies (CCS). “In science, you try to squelch individuality and report on what you have observed in the most dispassionate way



Sedgwick's natural history, scenic vistas, and panoramic views are all subjects of specific hiking tours offered by the reserve.

LOOKING UP: FIRST OBSERVATORY AT A UC NATURAL RESERVE

The sign on the door of the new Laurie Nelle Byrne Observatory at the Sedgwick Reserve reads: "LCOGT.net *We Always Keep You in the Dark.*"

The Byrne Observatory, the first at a UC Natural Reserve, is part of the Las Cumbres Observatory Global Telescope Network (LCOGT). When complete, the network will link 44 telescopes around the world, creating an uninterrupted, 24-hour-a-day view of the night sky. Data gathered by the robotic, solar-powered telescopes are accessible via the Internet.

Wayne Rosing, chief engineer and founder of the LCOGT, says Sedgwick was chosen as the site for the 32-inch telescope because of its clear, dark sky. The observatory will create a "gateway to science" for K-12 classes and extraordinary research opportunities for University of California students and astrophysicists.

"We anticipate that the network will be used primarily by students, and once it is fully commissioned robotically, time will be available for scheduling by members of the UC system," notes Rosing, a pioneer in computer engineering and senior fellow in both astrophysics and engineering at UC Santa Barbara. He also is a senior fellow at UC Davis.

The LCOGT is particularly interested in astronomical events that appear suddenly and without warning, such as supernovae and gamma-ray bursts and objects that need to be observed for long periods of darkness, including planets outside of the solar system and binary star systems.

The Byrne Observatory is named in memory of Laurie Nelle Byrne, who served as a docent at the reserve, and in honor of the



MATTHEW C. MILLER

The Byrne Observatory, part of a planned global telescope network, will be accessible to UC students and researchers.

Byrne family. Over the years, gifts from the family's foundation have greatly enhanced the reserve, including support for the Tipton Meeting House, the future headquarters for Sedgwick and the site for remote telescope presentations.

"With a remote telescope operation you can follow a transient object that appears bright and then disappears," explains UCSB astrophysicist Lars Bildsten, a permanent member of the Kavli Institute for Theoretical Physics. "As this network is constructed, it will allow users around the world to capture these events." — *Eileen Conrad*



MARK OLIVER

Sedgwick's historic barn, built in 1907, is being restored for a planned ranching heritage museum with a gift from a UCSB alumna.

possible. Whereas in art, individual insights come into play and are then applied to the interpretation. It is all about seeing what is in front of you."

Tiffany helps students see how the three species of oak on the property differ, for example, and he talks about the

underlying geological forces that shaped the land.

"One of the things about geology and fieldwork in the natural sciences is that the scientists who keep the best notebooks and make the best drawings usually have the most profound insights," said Pitcher, a

CCS lecturer, in an interview with the UC Reserve newsletter. "Drawing is a way of learning how to see."

UC budget cuts are taking their toll on the number of classes at Sedgwick. "It is unfortunate, but all of the reserves are seeing fewer students," McCurdy notes. "The field studies portion of a college student's experience is being pared down, frequently because of the costs involved in getting here. It is a part of a larger concern that these are our future scientists, the future stewards of the land."

The outdoor classroom program brings more than 800 elementary school children to the reserve each year to experience nature, some for the first time, says outreach director Sue Eisaguirre. Students become part of a restoration experiment that they monitor over several years. Annually, more than 1,000 visitors enjoy public hikes and lectures or come to Sedgwick to paint or have a picnic on the ranch grounds.

About 70 volunteers serve as docents at the reserve, where they lead field trips

A CATALOG OF NATURE

While they clearly are places of great beauty and serenity, the University of California Natural Reserves also are living laboratories where more than 2,000 scientists from around the world are using new methods to gain insight into how the natural world functions and how localized events relate to global trends. UC Santa Barbara manages seven of these 36 protected areas, many of which offer public tours and educational access. These habitats host endangered species and native plants in unique landscapes.

"The UC Natural Reserve System comprises a wonderful collection of research and teaching sites," says UCSB ecologist William Murdoch, director of the campus's reserves. "UC Santa Barbara has more reserves than any other UC campus, and they represent an incomparable range of environments."



The Carpinteria Salt Marsh is an important regional nursery for marine and estuarine fish.

ANDREW BROOKS



The Western Snowy Plover, a threatened species, at Coal Oil Point.

CALLIE BROWDER

Following are brief descriptions of the reserves managed by UCSB. (Complete information on the entire UC reserve system is available at <http://nrs.ucop.edu>.)

Carpinteria Salt Marsh is one of the largest and most ecologically important coastal estuaries in Southern California. It includes extensive wetland, sub-tidal, channel, and emergent upland habitats. It offers pre-arranged tours for K-12 classes and other groups. Contact: (805) 893-7670.

Coal Oil Point, in Goleta, is one of the best examples of the coastal-strand environment in Southern California. It protects a wide variety of

coastal and estuarine habitats. It offers tours and volunteer opportunities. Contact: (805) 893-5092.

Kenneth S. Norris Rancho Marino Reserve, in Cambria, provides university researchers and classes with access to one of the most spectacular stretches of coastal habitats in central California. The privately owned reserve, named for a founder of the Natural Reserve System, is situated in the most significant bio-geographical transition area for both marine and terrestrial communities.

Santa Cruz Island Reserve, owned by the Nature Conservancy, is located on the largest of the Channel Islands located off the Southern California coast. It contains breeding grounds for harbor seals, seabird nesting colonies, many endemic plant and animal species, and well-preserved archaeological sites, which are accessible to university classes and researchers.

Sedgwick Reserve in the Santa Ynez Valley hosts large-scale field studies in varied native ecosystems and agroecosystems. It offers educational programs and volunteer opportunities. Open to the public on the second Saturday of each month for hikes and more. Contact: (805) 686-1941, ext. 4.

Valentine Eastern Sierra Reserve consists of two sites, Valentine Camp and the Sierra Nevada Aquatic Research Laboratory (SNARL), both located near Mammoth Lakes. Valentine Camp features a remarkable pristine sub-alpine habitat. SNARL serves as a major center for research for the eastern Sierra Nevada and Owens Valley. They offer educational programs and tours. Contact: (760) 935-4334.



The National Science Foundation and NASA fund studies of snowpack at the Valentine Reserve.

MARK CHAPPEL



Reserve docent Andy Lentz leads student visitors from Los Olivos Elementary School.

NICK DI CERCO

and hikes, collect seeds for the native species seed bank, maintain the restoration nursery, and discover new plant species to add to the reserve's botanical list. They also monitor the bird population, enthusiastically reporting on new arrivals and unusual sightings, among other things.

"It is surprising how many people come out here with very interesting backgrounds, and what they want to give to us," says McCurdy. "They elevate the reserve with their time, expertise, and support."

Many of the historic buildings on the property, including the original ranch house and bunkhouse where scientists and students stay, are in need of substantial repair and upgrading to support the world-class research under way. Without an endowment to fund its operation, Sedgwick depends on annual private contributions for both its outreach program and improvements. Plans for stepped-up fundraising activities are being developed.

One of the most significant enhancements to the reserve will be the completion of the Tipton Meeting House this fall, made possible by a bequest from a UCSB alumnus. The sustainably designed visitor and education center will have a lecture hall for workshops and remote telescope presentations, and office and archival space for the reserve. The century-old barn is being restored for a planned ranching heritage museum, and a residence for the director is under construction, also with gifts from alumni.

The aim of these efforts, says McCurdy, is to make Sedgwick an even more accommodating place for researchers and students and "bring this amazing reserve another step closer to realizing its great potential." ■