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WESTERN ANTELOPE VALLEY, GORMAN, AND TEJON RANCH:

IMPERILED FLORAL EXTRAVAGANZA?

SERPENTINOPHILES MEET IN MAINE

BOB SOOST (1921–2009)

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*Dedicated to the Preservation of
the California Native Flora*

The California Native Plant Society (CNPS) is a statewide nonprofit organization dedicated to increasing the understanding and appreciation of California's native plants, and to preserving them and their natural habitats for future generations.

CNPS carries out its mission through science, conservation advocacy, education, and horticulture at the local, state, and federal levels. It monitors rare and endangered plants and habitats; acts to save endangered areas through publicity, persuasion, and on occasion, legal action; provides expert testimony to government bodies; supports the establishment of native plant preserves; sponsors workdays to remove invasive plants; and offers a range of educational activities including speaker programs, field trips, native plant sales, horticultural workshops, and demonstration gardens.

Since its founding in 1965, the traditional strength of CNPS has been its dedicated volunteers. CNPS activities are organized at the local chapter level where members' varied interests influence what is done. Volunteers from the 33 CNPS chapters annually contribute in excess of 97,000 hours (equivalent to 46.5 full-time employees).

CNPS membership is open to all. Members receive the quarterly journal, *Fremontia*, the quarterly statewide *Bulletin*, and newsletters from their local CNPS chapter.

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The western end of the Antelope Valley and the Gorman Hills are world famous for their spectacular displays of spring wildflowers. These wildflower fields are composed of a truly unique blend of plants that are not found together—and in such astonishing quantity and quality—anywhere else. This visually and biologically compelling feature of California's biodiversity deserves the highest level of protection and management. Author and photographer Richard Dickey has been documenting these ephemeral displays for the past 23 years and shares some of his knowledge and extraordinary images of floral superabundance.



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Tejon Ranch is the largest contiguous private landholding in California. This unique property occupies the point of biologic convergence of Sierran, Mojavean, and Californian flora and fauna. This land also straddles the vague political dividing line between Northern and Southern California. The fate of Tejon Ranch is, and should be, of critical conservation concern to all Californians, but most especially to those of us who are enamored of the enthralling beauty of masses of wildflowers and wide-open spaces.

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California's serpentine outcrops have provided model settings for productive research in plant ecology and evolution for over a half-century. Serpentine outcrops are home to many of California's endemics and provide spectacular displays of native plants every spring. Californians share their love for serpentine with serpentine enthusiasts from around the world at the recently concluded Sixth International Conference on Serpentine Ecology held in Bar Harbor, Maine.



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Dr. Robert K. Soost was named a CNPS Fellow in 2005 in recognition of his many contributions to the conservation and preservation of California's plant life. He became active with the Marin Chapter in 1987, and was its president from 1995-2001. To read more about Bob and his activities with CNPS, please refer to Fremontia 33(4): 30-31. 2005.

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THE COVER: Gorman Hills, 2003. Bentham lupines (*Lupinus benthamii*), Adonis lupine (*Lupinus excubitus*), lacy phacelia (*Phacelia tanacetifolia*), globe gilia (*Gilia capitata*), thistle sage (*Salvia carduacea*), Bigelow coreopsis (*Coreopsis bigelovii*), white layia (*Layia glandulosa*), desert dandelion (*Malacothrix glabrata*), fiddleneck (*Amsinckia intermedia*), and California poppy (*Eschscholzia californica*). Photograph by Richard Dickey, copyright 2009.

EDITORIAL

ABUNDANCE

Abundance is the watchword of our lead article in this issue of *Fremontia*. Just how much is enough? And it begs a question—should we, as members of the California Native Plant Society, be as concerned about preserving one of the best known, long-term, viable, and vibrant displays of California's—and the nation's—wildflowers, as we are about ensuring the survival of the rarest elements of our native flora? I think that most of us would argue in favor of both, and that is the easiest answer. But, what if you had to choose? I would be extremely hard-pressed to give up the inspirational beauty and sheer exuberance of a good spring in the western Antelope Valley and Gorman Hills. The fact that these spring displays are unpredictable and extremely varied makes repeated visits over the years an imperative for many of us, as even a poor year yields many interesting finds. Thoreau's "faith in a seed" is demonstrably California's reality year after year in the western Antelope Valley and in the Gorman Hills. Nature's faith that billions of seeds containing the brilliance of innumerable springs to come will be permitted to stay in place to grow and regenerate themselves for the future's ever changing spring kaleidoscope of colors and patterns that we Californians have enjoyed in this particular area since the days of the Gold Rush. Such faith will be tested by politics and developers, but we must not fail in our efforts to conserve the best of California.

HELLO AND GOODBYE

I have very much enjoyed working with *Fremontia*. But, due to changing circumstances, I no longer have the amount of time that I feel is necessary to devote to the effective management of our journal. I have determined that it is best that I step down as *Fremontia* Editor at this time. Should the opportunity to edit and manage *Fremontia* arise again in the future, and if my time commitments should significantly change, I would certainly reconsider—especially if it meant working again with our journal's exceptional designer, Beth Hansen-Winter. It has been both an honor and a pleasure working with, and learning from, such a talented individual. And, for those of you who do not know Beth, she is quite a gardener as well, so we never have a shortage of things to talk about. My most sincere thanks go out to Beth, Kathryn Blassey (my sometimes editorial assistant), and Bob Hass (*Fremontia* copy editor, and imminently, *Fremontia* Editor) for your talents and assistance with making *Fremontia* the publication that it is today. Thank you to our proof-readers (Jake Sigg, Brad Jenkins, and Carol Witham), Linda Vorobik (my immediate predecessor), and to *Fremontia*'s editorial board. Finally, my thanks also go out to all of the authors and photographers who have contributed their time and expertise to our journal—*Fremontia* would not exist without you. Thank you, CNPS, for giving me this opportunity to share the wonder and beauty of our ever-present and ever-beautiful native flora.

This is my last issue as sole editor of *Fremontia*, our next issue (*Fremontia* 37.2) will be transitional, and subsequent to that, the capable Bob Hass will take up the reins as *Fremontia* Editor. A warm welcome and best wishes to Bob Hass for taking on this responsibility! And, to *Fremontia* and everyone in the California Native Plant Society, I wish you all many more years of increasing success.

Bart O'Brien, *Fremontia* Editor

USEFUL WEBSITES AND CONTACT INFORMATION

California Native Plant Society (CNPS):

www.cnps.org with links to
conservation issues, chapters,
publications, policies, etc.

For updates on conservation issues:

Audubon Society
www.audubon.org

Center for Biological Diversity
www.sw-center.org

Native Plant Conservation
Campaign www.plantsocieties.org

Natural Resources Defense
Council
www.nrdc.org

Sierra Club
www.sierraclub.org

Wilderness Society
www.wilderness.org

For voting information:

League of Women Voters
www.lwv.org, includes online
voter guide with state-specific
nonpartisan election and
candidate information.

US Senate
www.senate.gov

US House of Representatives
www.house.gov

California State Senate
www.sen.ca.gov

California State Assembly
www.assembly.ca.gov

To write letters:

President Barack Obama
The White House
1600 Pennsylvania Ave. NW
Washington, DC 20500

Senator Barbara Boxer
or Senator Dianne Feinstein
US Senate
Washington, DC 20510

Your CA Representative
US House of Representatives
Washington, DC 20515



Western Antelope Valley 2003 flowers, west view on to the Tejon Ranch near the California Aqueduct. The yellow color on the hillsides is from Bigelow coreopsis (*Coreopsis bigelovii*). All photographs by the author, copyright 2009.

THE LAST FLORAL BLOOMS: SOMETHING TO SEE, WHILE THEY ARE STILL THERE

by Richard Dickey

THE LEGACY

Centuries ago, explorers returned to Europe describing a brilliant orange fire along a mysterious shore called California. Telling stories of hills and valleys ablaze with the brilliant luminescence of gold and orange flowers, they referred to California as “la tierra del fuego”—the land of fire—for the vast spreads of iridescent poppies. Early Spanish

missionaries and European settlers documented springtime California blanketed with enormous pastures of wildflowers from San Francisco to San Diego. For generations poets, writers, and painters had romanticized California as “an Eden” for its landscape that boggled the imagination and stirred the heart. Late-nineteenth century Southern Californians honored their wildflower heritage, celebrating with weekend wildflower parties and

parades with flower-covered horses and buggies.¹

A SEA OF ORANGE

Visualize yourself standing amidst a sea of orange poppies, so vast they expand miles across a desert plain reaching into the far distant foothills. A soft wind stirs and slowly the air is filled with the sound of flowers moving in the breeze. The growing sound of a mil-



Tejon Ranch, December 2008. This view shows the back road to the ranch with Tehachapi Mountains in the distance. In a good year, the entire foreground and the foothills are covered with wildflowers.

lion satin petals surrounds and envelopes you. This very soft subtle sound grows to a loud ruffling and rustling, making the landscape seem to vibrate beneath your feet.

Visible ripples of wind move across the flowered plain like long sets of waves on an ocean. Scents of flowers invade your nose, smells like honeysuckle, grape, mint, lemon-licorice, and jasmine blend and morph into an incense of the desert in spring. One becomes aware of the palpable sense of “giddy” energy radiating from the land. Beyond rational explanation, a feeling of lightness and completeness flows from

the desert in full bloom as if Mother Earth herself were laughing with the flowers.

Only in California, a land steeped with myth and lore that has become an ethos to the world, is one still able to witness such wonders. Once home to the most prolific grass and wildflower prairies of the world, the Golden State is now experiencing a hyper transformation in landscape ecology that threatens its botanical legacy. Besieged by an exploding population, this land of the fantastic is quickly evaporating into history. California is slowly being “loved to death.” With only islands of native

habitat remaining, one such region remains unique and largely unspoiled at the western tip of the Antelope Valley, a place called Gorman and the adjacent Tejon Ranch.

CALIFORNIA'S FLORAL BLOOMS

With its distinct mediterranean climate and varied landscape, California's native flora has evolved a unique concentration of endemic plants at such a global scale that it is scientifically recognized and known as the “California Floristic Province”

OPPOSITE PAGE, TOP TO BOTTOM: Western Antelope Valley looking north into the Tehachapi foothills and Tejon Ranch in 2006. Goldfields (*Lasthenia californica*) are predominant but are starting to dry, while California poppies (*Eschscholzia californica*) are in full bloom. • The westernmost edge of the floor of Antelope Valley in March 2005. This view is looking west on to the Tejon Ranch near the hills north of Quail Lake, and is the center of the proposed Centennial City. The colorful flowers include California poppies (*Eschscholzia californica*), Davy gilia (*Gilia latiflora* ssp. *davyi*), desert dandelion (*Malacothrix glabrata*), owl's clover (*Castilleja exserta*), and goldfields (*Lasthenia californica*) on distant hills. • This is the proposed site of Centennial City, on Tejon Ranch property near Quail Lake in 2005. Gorman and most of the Tejon Ranch did not produce colorful displays during spring of 2005. Most of the record precipitation stopped in mid-to late-February. Lower desert and coastal blooms were prolific, but higher elevations dried out before their flowers bloomed. • Tejon Ranch, 2001. Looking west across “very windswept hills” the flowers appear smaller in height possibly due to the winds. Flowers include: Bigelow coreopsis (*Coreopsis bigelovii*) and phacelia (*Phacelia* sp.). The clouds over the mountains are the result of orographic lift of the air mass from the San Joaquin Valley.



CLOCKWISE FROM RIGHT: A lone California poppy (*Eschscholzia californica*) grows with Parry gilia (*Gilia parryi*) in northwestern Antelope Valley, 1991. • Two yellow California poppies (*Eschscholzia californica*) on the Tejon Ranch, 1992. Color variants of California poppies and other annuals are occasionally seen in this area. • Gorman, 2003. A dreamscape of flowers: Adonis lupines (*Lupinus excubitus*), Bentham lupines (*Lupinus benthamii*), California poppies (*Eschscholzia californica*), Bigelow coreopsis (*Coreopsis bigelovii*), phacelia (*Phacelia* sp.), globe gilia (*Gilia capitata*), Fremont pincushions (*Chaenactis fremontii*), desert dandelions (*Malacothrix glabra*), and more.



flower displays. Evolved in response to an unforgiving environment with inconstant seasons, these dense floral blooms are similar to blooms of ocean plankton, deploying a strategy of sheer numbers to ensure survival of the few. Additionally, adaptable seeds able to survive boom or bust seasons with extended droughts have further refined this genetic pool. After eons of distillations and localized adaptations, California is blessed with hills, valleys, and canyons of wonder; with a brief flash of life so intense that it defies imagination.

Centuries of exploitation and shortsighted land-use planning have left California a completely changed state. The Great Central Valley of yesteryear is gone, transformed into a conveyor belt of produce for the USA. Agriculture, ranching, housing, road building, and dams—along with the introduction of nonnative plants—have drastically altered 75% of California's ecology. Introduced Old World weeds from similar climates have invaded and flourished, aggressively taking over native habi-

(CFP). The CFP has been designated as one of Earth's biological hotspots due to its diversity and endangered

status. Of all these plant treasures, none is more mercurial and fleeting than California's springtime wild-



TOP TO BOTTOM: Gorman roadside, 2003. Thick growth of Bentham lupines (*Lupinus benthamii*), a few globe gilies (*Gilia capitata*), scattered California poppies (*Eschscholzia californica*), with a few fiddlenecks (*Amsinckia* sp.) and Bigelow coreopsis (*Coreopsis bigelovii*) adorn a steep south facing hillside. • Orange California poppies (*Eschscholzia californica*), on the Tejon Ranch, 1992. • A dark spot of color on the upper petal an Adonis lupine flower indicates that the flower has been pollinated. The younger, not yet pollinated flowers have a pale yellow spot on their upper petals. Tehachapi foothills just outside Tejon Ranch, 1998.

tats, first in coastal areas and then spreading into interior regions of California. Among the most damaging of these invaders is a myriad of fast-growing brome grasses. This unprecedented invasion of nonna-

tive plants—combined with an absence of herbivores that could control their spread, and exacerbated by widespread fire suppression practices—are irrevocably transforming California's natural areas. As a re-



"In the Spring, the San Joaquin Valley had a matchless sky overhead and an expanse of wildflowers that spread over the great valley like a purple carpet, so vast that a day's ride on horseback would take one only to the middle of it."

—Arnold Rojas, 1899–1988⁵



sult, California's widespread, dense floral blooms of the past are becoming fewer, smaller, and more isolated. Now, they can only be seen as patches here and there.²

Although most of California's great floral valleys are now gone³, several pockets of relatively undisturbed habitat remain, and contain significant and viable seed reservoirs. These "islands" of native California ecology have survived encroachment primarily due to isolation, ruggedness, climate, and elevation. Possibly the most extraordinary one is an area of Southern California along the western rim of the Antelope Valley. Only 60 miles north of Los Angeles lies a vast remnant of wilderness that has remained virtually unspoiled since time immemorial.

THE WESTERN ANTELOPE VALLEY INTERSECTION

When viewing Southern California from space imagery or looking at relief maps, there are five distinct geomorphic features that stand out. Foremost is the diagonal coastline with its enormous potential reservoir of Pacific moisture. Running parallel to shore and further inland

are the Coast and Transverse Mountain Ranges. Directly north of these two features is the Great Central Valley, flanked along its eastern edge with a skyscraping wall of mountains known as the Sierra Nevada; the Sierra and the Tehachapi Mountains stand like a dam preventing the higher Mojave Desert from spilling into the Central Valley.

However, the most intriguing of all the land features is the large V-shaped projection of the Mojave Desert jutting toward the Pacific Ocean. Here, a massive arrow of the Mojave Desert points westward, forming an exquisitely fine point all within 40 miles of the Pacific Ocean and framing the western tip of the Antelope Valley. At this geomorphic junction of four bioregions—where high desert meets sea, and valleys intersect mountains—nature's forces have been coalescing for eons, creating unique and diverse plant communities.

With an exceptional number of species even relative to the area, Gorman and Tejon are ground zero to overlapping ecoregions (Mojave Desert, Central Valley, Sierra Nevada, and Southern California) and plant communities too numerous to list. When spring conditions are just

right, this morphing of plant communities is vividly displayed on the hills above Gorman. From here and stretching 30 miles northeast across the windswept Tehachapi Mountains of the Tejon Ranch, then spilling onto the northwestern Antelope Valley floor, is a rare unspoiled area of exceptional and tempermental springtime beauty.

On top of the mountain in Gorman, spread across 2,800 acres of south facing hillsides along Interstate 5, lies what many consider the crown jewel of California's wildflower locations. Born from a chasm called the San Andreas, this land is oddly yet aptly named Peace Valley. Since the 1800s, the renowned hills of Gorman have been attracting local and international travelers for their spectacular spring wildflower displays, which some have compared to Yosemite for their amazing natural beauty. The neighboring and larger Tejon Ranch property is home to remaining stands of California's native bunch grasses, wildflower prairies, and some of the oldest and largest oak trees in California. Pronghorn antelopes and the critically endangered California condors roam free in this vast remnant of wildness that has virtually been eliminated in



"One shining morning a landscape was revealed that after all my wanderings still appears the most beautiful I have ever beheld. At my feet lay the Great Valley of California, level and flowery, like a lake of pure sunshine forty or fifty miles wide, five hundred miles long, one rich furred garden of yellow compositae. And from the eastern boundary of this vast golden flowerbed rose the mighty Sierra, miles in height, and so gloriously colored and so radiant it seemed not clothed in light, but wholly composed of it, like the wall of some celestial city."

—John Muir, 1838–1914⁶

California and the West. Amazingly all of this is within an hour's drive from Los Angeles.

MICROCLIMATES AND OROGRAPHIC LIFT

In this area of Gorman and Tejon, the complex intersection of five geological features and four ecoregional climates has created nanoclimates within microclimates. Here one can witness the progression in plant growth from one canyon to the next, from one ridgeline to another, and across one alluvial plain, depending on elevations and climate zones. The spring flower displays are particularly variable here due to the overlapping of two domi-

nant climates—the continental climate of the Mojave Desert and the mediterranean climate of California. Where this high desert reaches close to the Pacific the wildflowers are exposed to bitter winter cold, high winds, droughts, drenching rains, heavy snows, and early spring heat.

At times in winter, frigid polar air moves unimpeded across the North American continent and washes over the Mojave Desert. These cold dry air masses expose this region to drying arctic blasts. Conversely, some of the warmer Pacific winter storms are laden with subtropical moisture. As these storms sweep in from the ocean and slam into this mountainous landscape they may release copious amounts of rain and snow. This land

also lies balanced in between three enormous oceans of air from the Mojave, the South Coast, and the Central Valley. With surrounding mountain passes acting as funnels, this lofty balcony is influenced by the slightest of atmospheric changes between these enormous air masses, making this one of the windiest regions in the state, and an ideal habitat for the California condor. The combination of elevation, climate, and the prevailing jet stream wind patterns of a season have a significant impact on this region's habitat and its reservoir of diverse seeds.

With an elevation range of 3,400 to 4,800 feet, a cooler, windier, or predominantly cloudy winter usually produces smaller displays of flowers on the steep hills and rolling

Gorman, 2003. A magnificent view of the variety and density of flowers on the steep hills: Bentham lupine (*Lupinus benthamii*), Bigelow coreopsis (*Coreopsis bigelovii*), fiddleneck (*Amsinckia* sp.), globe gilia (*Gilia capitata*), and California poppy (*Eschscholzia californica*).



plains. For reference, winters of average precipitation, moderate temperatures, and fast moving weather systems with quickly returning spring sun, appear to produce the most notable spring wildflower displays on these highlands. Oftentimes, seasons of above-average rains accompanied by more cloudy days with cooler temperatures appear to inhibit early growth of native plants while encouraging nonnatives. Due to this region's elevation, abundant late season rains in combination with

the increasing warmth from the spring sun, encourages the best displays here.

Gorman and Tejon are also home to the natural phenomenon called "orographic lift." This effect occurs whenever an air mass is forced or pushed over rising terrain. As the air mass gains altitude it expands and cools, forming clouds that may hover for days or weeks over the land. With its elevated location at the geographic convergence, a season with persistent orographic lifting may inhibit

wildflower growth along the hilltops. Yet only a few miles away on the flats of the Antelope Valley, there may be an abundance of flowers due to more sunshine and warmth. Some seasons, lush wildflower displays flourish on the elevated hills of Gorman and the Tejon Ranch, while the adjacent valley plain lies dull and brown due to spotty late rains or early intense heat. An important note: a winter of early heavy rains followed by a pattern of cold, cloudy days and drying winds seems to pro-

TOP: Gorman Hills panorama, 2008. • BOTTOM: Gorman Hills panorama, 2003.



duce scattered or desiccated flowers. Although the season of 2004-2005 was the second wettest in Southern California's history, the rains fell from October through early February and benefited low desert and coastal blooms. By April of that season, the higher, cooler, and cloudy Gorman-Tejon region had prematurely dried out from winds, and the floral displays were minimal.

WAXING AND WANING OF THE BLOOMS

With favorable moisture, temperature, and wind, the floral bloom may last for several weeks, or it may be shortened dramatically by a sudden early heat wave. This region's flowers are particularly vulnerable to wind damage; most visitors observe it is helpful to arrive earlier than later in the bloom, before winds can play havoc with the flowers' fragile petals.

Even after many years of photographing wildflowers, I have still not come up with a way to predict what



TOP TO BOTTOM: Gorman Canyon, 2003. At dusk, the white flowers of evening snow (*Linanthus dichotomus*) begin to open. • Gorman Canyon, 2001. The exact same view, two years earlier. • Gorman Hills, 2003. The line of trees and shrubs marks a water seep or slow spring (one of around 64 such water features) on the Gorman Hills. • Gorman Hills, 2003. The top of the hills are covered with spectacular displays of wildflowers.



TOP: Gorman, 2008. The same view as below, but in early winter, vividly makes the point that preserving displays of California's native annual wildflowers requires astute land management and faith that the seed bank residing in the soil will survive to bloom again when conditions are right. • BOTTOM: Gorman, 2003. This view shows Gorman Post Road and the Golden State Freeway (Interstate 5), with motorists exiting from their cars for a closer look at the flowers. The darkest blue is primarily Bentham lupine (*Lupinus benthamii*) with a few royal desert lupines (*Lupinus odoratus*) mixed in. The lighter blue-lavender is primarily lacy phacelia (*Phacelia tanacetifolia*) along with a few globe gilia (*Gilia capitata*), other flowers are yellow Bigelow coreopsis (*Coreopsis bigelovii*) and orange California poppies (*Eschscholzia californica*). During 2003, the blooms peaked in mid-April and lasted for two weeks. That year, the Bigelow coreopsis dried out first.

will be blooming in any particular spot. And, I have never observed a location bloom with exactly the same wildflowers, colors, combinations, or densities from year-to-year. In fact, there are actually specific locations I have recorded that have flowered only once in my 23 years of documenting and photographing these fleeting floral landscapes.

A typical bloom pattern may start out with coreopsis (*Coreopsis bigelovii*) or goldfields (*Lasthenia californica*) being the first to show colors, perhaps followed a few weeks later by owl's clover (*Castilleja exserta*), gilia (*Gilia* spp.), phacelia (*Phacelia* spp.), and lupines (*Lupinus* spp.), while California poppies (*Eschscholzia californica*) may reach their peak later when the earlier colors are starting to fade. There is always a unique waxing and waning of the blooms, which varies tremendously from one season to the next. During the same season, this blooming cycle may also vary between adjacent locations within the western Antelope Valley.

Occasionally though, there are rare seasons when all the colors of the flowers crescendo together, producing the most amazing symphony of music for the eyes. Some of the most notable recent years in the Tejon Ranch area were the spring blooms of 1988, 1991, 1992, 1998, 2001, and 2003, along with localized areas of the Ranch in 2005.

In the Gorman Hills, the blooms of 1981, 1985, 1988, 1992, and 2001 produced some of the best displays. Observers have described the season of 2003 as one of the most memorable in their lifetimes. With relatively average but later season rainfall, the 2003 bloom produced an intensely dense and varied display with all the hues of the palette peaking in unison. Most amazing were vast smears of deep blue across the slopes from enormous stands of 30-inch tall Bentham lupines (*Lupinus benthamii*). Some locals commented, "In all my lifetime, I have

never seen the hills with so much blue.” It has since become known as the year of the “Big Blue.”

Blended into the display were the varied colors of royal desert lupines (*Lupinus odoratus*), pygmy lupines (*Lupinus bicolor*), Adonis lupines (*Lupinus excubitus*), globe gillias (*Gilia capitata*), lacy phacelias (*Phacelia tanacetifolia*), coreopsis, goldfields, popcorn flowers (*Cryptantha* spp.), desert chicory (*Rafinesquia neomexicana*), white layia (*Layia glandulosa*), evening snow (*Linanthus dichotomus*), and California poppies. The hills of Gorman were so mesmerizing and stunning that hundreds of motorists speeding by on the nearby Interstate 5 slowed to gawk, while semitrailer drivers exuberantly sounded their air horns with what can only be described as “happy toots.” Many motorists even chose to exit the freeway for a closer view.

THE SECRET GARDEN

The wildflowers of Gorman and Tejon are undeniably a remarkable and mysterious natural phenomenon. After eons of isolation, adaptation, and specialization, these delicate little flowers live in the world-class CFP that has evolved on a time frame beyond human comprehension. Here is a land where extremes of geological features and unique microclimates have created the world’s heaviest, tallest, and oldest living plants. These wildflowers, little DNA ingredients of life, have discovered the secrets to surviving for years and decades with little or no water. They are clever survivors that appear as fleeting visions, at best for a few weeks but sometimes only for a few days. Once thought by many to be a regular seasonal event, these wildflower blooms are now acknowledged to be rare, precious, and uncertain things.

For years on end, the highlands of Gorman and Tejon may look unassuming and covered in their warm

sandy browns, occasionally teasing us when seasons are marginal. But this is a patient land, waiting as a wise Methuselah for just the right conditions, as if the moon, planets, and stars need to be in alignment in order for the magic to happen. When the cycles of rain, sunshine, and temperature are perfect, this landscape transforms itself into a vision of Eden. It is a moment in time, when millions of flowers in the wilderness become the landscape, when the aggregate of tiny, delicate details overwhelms and becomes the bigger picture. This land represents the epitome of the “Secret Garden” that writers have romanticized and written about for centuries, as one could live a lifetime on this land and never see the same scene ever again.

GORMAN AND TEJON PAST

For hundreds of years Gorman and Tejon have remained remote and on the sidelines, fortuitously escaping Southern California’s explosive growth. The private property owners of the past had, for the most part, been commendable stewards of the land. Their self-sustaining operations impacted the environment relatively little. For example, the Ralphs family (of Ralphs Grocery Company) originally owned and leased the largest holding of Gorman’s 2,800 acres since the early 1900s. They grazed small numbers of cattle and moved them regularly to prevent overgrazing. Using a ratio of one cow per acre, they tailored this operation to climate and soil conditions. During seasons of drought the hills were not grazed, allowing the land to recuperate. Most importantly, the Ralphs family disallowed any grazing during the wet season, from mid-November to late-April, which permitted the native flora to regenerate. Their dedication and sensitivity to the land gave generations of Californians the oppor-



Geomorphic features of Southern California graphically demonstrate the unique position of the Gorman-Antelope Valley area. Image courtesy of the Space Shuttle Endeavour—Mission SRTM (Shuttle Radar Topography Mission) C-Band, Interferometric Radar, STS 99—February 2000.

tunity to experience one of the natural wonders of California, and of the world—spectacular wildflower blooms.

Similarly, the owners of Tejon Ranch have, for the most part, also been careful not to overgraze their land and are mindful about allowing the land to recover. Tejon Ranch has also protected sensitive areas by sectioning them off from grazing.

Although there are varying opinions regarding the impact of grazing on the environment, there is a growing amount of evidence that shows that when grazing is conducted responsibly, it may function as a biological control to clear lands of aggressive weeds, and is therefore beneficial. While Gorman and Tejon have survived relatively intact due to decades of good stewardship, both now stand at a crossroads.

VOICES FOR CONSERVATION

GORMAN

In the mid-1990s, the status of Gorman shifted dramatically when



Gorman, 1992. This incredible hillside full of wildflowers gives one the feeling of being in a Monet painting.

new owners took over the property. Soon after 2000, plans were proposed for a water extraction plant requiring extensive grading into the hills and storage tanks for producing bottled water. Other developers have expressed interest in building homes on the hills. In the fall of 2005, students of UCLA's Extension Landscape Architecture Program, under the guidance of their instruc-

tor Michael O'Brien, conducted an intensive ten-week-long environmental survey. In it they documented the need for, and feasibility of, preserving 2,800 acres as a protected wildflower park and habitat sanctuary.

"For generations, this spring display has drawn lovers of wildflowers, particularly devotees of the state flower—the California poppy," the

students' report states. "Conventional wisdom holds that man's hand has weighed so heavily on the land that little remains of California's original state. Yet . . . Gorman Post Road is considered one of the best wildflower sites in Southern California." The Gorman water extraction facility was eventually denied due to a CEQA lawsuit filed by the Sierra Club's Condor Group Chap-



ter, and prevailed primarily because studies showing impacts to the local water supplies were inadequate.

In August 2006, a suspicious fire with five ignition points burned 4,864 acres of Gorman and parts of adjacent Tejon Ranch.⁴ Many canyons of the Gorman Hills, as well as areas with converging hills, experienced high burn temperatures and were left severely charred. To add

insult to injury, the current owners have permitted (some local residents suggest they have encouraged) extensive overgrazing with 1,000 sheep, followed by 300 cattle, from November 2006 to at least the publication date of this article (July 2009). This is the first time in recent memory that grazing has been allowed on Gorman during three consecutive wet seasons. As a result of this poor stewardship, the hills are in a very distressed state; many of the burned spots, along with continuous winter grazing, are resulting in large areas of barren, loose soil. The Gorman Hills were designated a Sensitive Ecological Area by the Los Angeles County Department of Regional Planning (in 1976), but local residents express frustration with the County's inability to protect the land. (As of the writing of this article, cattle are still on the hills.)

TEJON RANCH

Adjacent to Gorman is the 270,000-acre Tejon Ranch, which is

the largest contiguous, private landholding in California. Situated 35 miles south of Bakersfield, 67 miles north of Los Angeles, and straddling the Tehachapi Mountains, this enormous ranch of wild canyons, mountains, and alluvial plains is now threatened with ambitious development under the new management. In 2000, landholder Tejon Ranch Company (TRC) announced plans for three unprecedented proposals: a luxury resort community called Tejon Mountain Village, expansion of Tejon's Industrial Complex, and building a new city (to be named Centennial City) on the desert with over 70,000 residents.

The Center for Biological Diversity, Sierra Club, Natural Resources Defense Council, Audubon California, Environment Now, Endangered Habitat League, and Planning and Conservation League originally voiced concerns and entered into talks with TRC with the expressed goal of preserving this rare remnant of pristine land.

The TRC, with a well-funded

Gorman, 1992. Highway weary travelers, getting out of their cars on Gorman Post Road, seem to lighten up and smile, recognizing they were witness to something very special and rare in nature, a remnant of the great floral blooms of California's past.



TEJON RANCH—A CONSERVATION PRIORITY

Tejon Ranch is a hotspot for biological diversity and is a haven for rare and endemic species, ancient oak trees, condors, rare native plant communities, intact watersheds and streams, wildflower fields, and the largest extent of native grasslands left in California. The ranch is surrounded by protected public and private lands and is a vital linkage corridor connecting the southern Sierra Nevada to the Transverse Ranges of the coastal mountains. The federally listed endangered Bakersfield cactus (*Opuntia basilaris* var. *treleasei*)

grows on Tejon along with numerous other CNPS IB plants, including striped adobe lily (*Fritillaria striata*), Tejon poppy (*Eschscholzia lemmonii* ssp. *kernensis*), delicate blue-cup (*Githopsis tenella*), Comanche Point layia

(*Layia leucopappa*), calico monkeyflower (*Mimulus pictus*), and the Piute Mountains navarretia (*Navarretia setiloba*).

Tejon is perhaps best known for its beloved wildflower fields, which make up in unparalleled intensity and scale what they might lack in listed species. The overwhelming seasonal floral show, painting the vast landscape of hills and gullies with ephemeral color, is world-renowned and is an irreplaceable piece of our California natural heritage. All of these natural treasures are threatened with destruction from private land development.

The Tejon Ranch Company has recently proposed a series of urban sprawl developments that jeopardize the integrity of the wildflower fields of Tejon Ranch. Tejon Mountain Village is a massive development proposed for the western side of Tejon Ranch near Lebec. This development would compromise 28,500 acres of oak-studded mesas and canyons that are vividly striped with coreopsis and poppies in years of well-timed rains.



ABOVE: This unusual color form of California poppy (*Eschscholzia californica*) was observed in the western Antelope Valley in 2009.

• OPPOSITE TOP: Tejon Ranch, 1992. This view is a perfect example of the extreme richness of western Antelope Valley's wildflowers. Bigelow coreopsis (*Coreopsis bigelovii*), Adonis lupines (*Lupinus excubitus*), and California poppies (*Eschscholzia californica*) dominate the view. The photographer estimates that there are 700,000 to 1,000,000 individual flowers in this image. This area only bloomed for two consecutive years with Bigelow coreopsis and California poppies, but the Adonis lupines have bloomed every year with varied vigor and height. • BELOW: Antelope Valley, 1991. This view is looking northward to the Tejon Ranch and the Tehachapi Mountains. This specific location has grown in with perennials and subshrubs since this photograph was taken, and has never bloomed like this again. California poppies (*Eschscholzia californica*), Davy gilia (*Gilia latiflora* ssp. *davyi*).



These wildlands are essential to the survival and recovery of the endangered California condor, too, but are proposed as a sprawling upscale resort of vacation homes, hotels, golf courses and commercial space around a small lake.

As if this wasn't enough, the Tejon Ranch Company also wants to build a new city on the best wildflower fields and native grasslands left in California. The Centennial Development is proposed to cover 11,600 acres with 23,000 homes, one of the largest single development projects ever considered in California.

Additionally, the 1,100 acre Tejon Industrial Complex East will cut off a linkage corridor for the state and federally protected San Joaquin kit fox around the south end of the San Joaquin Valley, so that diesel trucks can bring overseas cargo to warehouses to be built on productive valley farmland and adjacent wildflower fields.

While several large conservation organizations have agreed to the destruction of over 41,000 acres in hopes that the remaining 235,000 acres will be conserved at some point in the future, other organizations, including the Center for Biological Diversity, remain opposed to the location of the developments because of the unique plant communities and habitats that they will impact—areas like the outstanding wildflower fields and the largest native grasslands left in the state. Condor critical habitat needs to be fully protected if these magnificent birds are to rebound from near extinction. To learn more about what you can do to protect Tejon Ranch and



its botanical bounty from destruction by poor planning, please go to www.savetejonranch.org.

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To view the map of the proposed plan for Centennial City, look to these two websites: <http://www.flickr.com/photos/exuberance/3570250661/> (note that you can toggle between the aerial photo of the site and the developer's plan on this website) and also at <http://www.tejonranch.com/centennial/index.asp#> (from there, click on "Site Plan").



public relations campaign, skillfully maneuvered through two years of protracted negotiations. The outcome was a conservation agreement with little or no public input. This pact, finalized in May 2008, was announced with a high-profile media conference showcasing Governor Arnold Schwarzenegger shaking hands with senior representatives from the Tejon Ranch and all national environmental groups that had been involved in the negotiations, except the Center for Biological Diversity. Presidents, CEOs, lawyers, directors, real estate agents, consultants, and representatives exchanged self-congratulations and cigars for their accomplishment, hailing it as “good for California and good for Tejon’s shareholders.”

The much-touted settlement calls for creating a conservancy of 178,000 acres, to be owned and managed by TRC and funded by the future sale of houses. Approximately 140,000 acres of this conservation easement covers property that is too deep, steep, and rugged for commercial use, and which therefore would never have been developed anyway. The pact also prohibits conservation groups who are partners to the agreement from raising future

opposition to Tejon’s projects, regardless of their environmental impact. If real estate sales fall short and the conservancy becomes defunct, thousands of acres of irreplaceable habitat will have been bulldozed and graded with no guarantees of preservation.

In 2007, the Center for Biological Diversity withdrew from these negotiations based on concerns about the impacts that uncontested development might have on this sensitive landscape. “Tejon Ranch is a true gem of California and can never be replaced,” said Ileene Anderson, staff biologist at the Center. “Once these sprawl cities are built, they will further fragment Southern California from the rest of the state. Coupled with the hit that the California condor will take, this agreement deals away one of the greatest environmental opportunities that California has ever seen. And it will be lost forever.”

THE LAST OF AN AMAZING LEGACY

I encourage anyone who has not had the opportunity to take a drive any time of the year along Gorman

Post Road onto Highway 138. Continue east past Quail Lake and watch the massive Mojave “V” suddenly open before you. You will see two diverging mountain ranges, one to the northeast and one to the southeast spreading out across the horizon and disappearing beyond the Earth’s curve. Pull over, park your car and step out, take in the view, and make a mental note. You are standing at the very finite point of an extremely large and unique landscape that is captivating no matter the season; this is a vast, wild, open space, an American savannah filled with grasslands, wildflowers, antelopes, condors, desert, and surrounded by mountains with an infinite horizon to the east.

Then take a look to the north, just over the hills near Quail Lake and visualize a city of 70,000 residents sprawling 3.5 miles across the desert, replacing the sea of orange poppies. Envision roads and utilities expanding outward from this center. Could such a development really be “light on the land” and sustainable, as the developers claim? The enormous disruption of soil and the steady vehicle traffic would certainly hasten the invasion of exotics

View from the top of Gorman Hills, 2001. Peace Valley and the San Andreas Fault are below at the bottom of the hill. Bigelow coreopsis (*Coreopsis bigelovii*) and California poppies (*Eschscholzia californica*) dominate the view.





Tejon Ranch, 1988. California poppies (*Eschscholzia californica*) curiously flower in large depressions. This phenomena may be due to protection from the wind, increased warmth, and/or possible access to more moisture. Or possibly, the winds blew the seeds across the landscape and they collected in these depressions.

into an otherwise pristine and preserved wilderness. The energy, transportation, and water needs of this new city would likely take far more resources than the tax base will support. Gorman and Tejon are intertwined. If Tejon's proposed projects are built, the roads and utilities would then be in place and available for use by Gorman's housing developers, who have admitted their projects are not feasible unless the infrastructure is already built. If these projects proceed, how will we explain to future generations why we allowed the bulldozing of such an irreplaceable natural resource?

I have traveled thousands of miles across our state, over decades of time, and have witnessed the most amazing floral blooms; but no place in California can compare to the stunning wildflower displays that occur at the western Antelope Valley junction, when for its brief moment in time, it transforms itself into the most beautiful place on Earth. It is truly the secret garden, incomparable to any other, and deserves protection.

Here in the hills of Gorman and the Tejon Ranch is the symbolic and physical intersection of our past and future environmental directions.

Here, we have the opportunity to preserve a place that is truly rare and unique, not only to California but to the world. As concerned citizens, we need to be proactive and make our voices heard. We need to influence our policymakers to do the right thing and conserve these two sensitive areas so that they will still be around for future generations to enjoy.

FOOTNOTES

- ¹ Hedrickson J. 1989. *Tournament of Roses; The First 100 Years*. Knapp Press, Los Angeles, CA.



² Minnich, Richard A. 2008. *California's Fading Wildflowers: Lost Legacy and Biological Invasion*. University of California Press. Inference, synopsis and proposed ideas from book.

³ Wood, John Windell. 1917. Pasadena, California, Historical and Personal.

ABOVE: Western Antelope Valley, 1988. Joshua trees (*Yucca brevifolia*) are near their westernmost occurrence, and goldfields (*Lasthenia californica*) bloom in early spring. The view in the distance is looking north-northeast on to the Tejon Ranch and the Tehachapi Mountains. • LEFT: Photographer Richard Dickey on the hills of Gorman in April 2009. Photograph by Rose Bryan.

Self-published, Pasadena, CA. Digitalized in July 2008: http://books.google.com/books?id=YxQpAAAAYAAJ&printsec=to_c&source=gbs_v2_summary_r&cad=0. Pages 139–140 describe wildflower areas that no longer exist.

⁴ Quail Fire, Los Angeles County, 2006. http://dpw.lacounty.gov/wrd/Fire/file/2006_fire/Quail.pdf

⁵ Rojas, Arnold R. 1964. *The Vaquero*. McNally and Loftin, Santa Barbara, CA. (Quote is from page 58.) Digitalized May 2008: http://books.google.com/books?id=5d1kAAAAAMAAJ&dq=the+vaquero&q=purple+carpet&pgis=1#search_anchor. Rojas wrote a collection of stories documenting, recounting, and romanticizing the California vaquero. Several books were later pieced together from his collected stories: *These Were the Vaque-*

ros, Vaqueros and Buckeroos, and *Lore of the California Vaquero* are among a few of his stories that provide invaluable information from when “California was still young,” as he liked to say.

⁶ Muir, John. 1992. *John Muir: The Eight Wilderness Discovery Books*. Mountaineers Books, Seattle WA. (Quote is from page 613.) <http://books.google.com/books?id=9QjeR4qHG10C&pg=PA613&dq=john+muir+golden+flowerbed#PPA614,M1>.

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SERPENTINOPHILES FROM CALIFORNIA AND ACROSS THE WORLD GATHER IN MAINE TO HIGHLIGHT RECENT RESEARCH ON SOIL-BIOTA RELATIONS OF SERPENTINE OUTCROPS

by Nishanta Rajakaruna

Serpentine loosely refers to a broad group of minerals associated with the weathering of ultramafic (high iron and magnesium-containing) rocks. Soils associated with such rocks often differ from more widespread soils, being less fertile and having high concentrations of heavy metals. The extreme chemical and physical nature of such serpentine soils generates habitats that are biologically unique.

SERPENTINE ECOLOGY IN CALIFORNIA

Serpentine ecology is not a foreign concept to California's botanists. After all, serpentine is the state rock and serpentine outcrops within the Californian Floristic Province harbor 12.5% of California's endemic plants (Safford et al., 2005). The 176 species endemic to Californian serpentines is a remarkably high number given that only 670 taxa are associated with serpentine soils in California, a substrate covering less than 1.5% of the state. California has been blessed with many botanists who have had life-long love affairs with the state's serpentine outcrops, in particular the half century-long professional commitment by California native and pioneer of serpentine research Arthur Kruckeberg.

Serpentine outcrops throughout California provide settings for spectacular displays of our native plants. The fascinating stories associated with soil-biota relations of California's serpentine have been well documented (e.g., Kruckeberg, 2002; Alexander et al., 2007). Efforts to conserve two such unique habitats

here in California, Coyote Ridge (Santa Clara County) and Edgewood Park (San Mateo County), were recently highlighted in the Winter 2008 issue of *Fremontia*, the journal of the California Native Plant Society.

SIXTH INTERNATIONAL CONFERENCE ON SERPENTINE ECOLOGY (JUNE 16-23, 2008)

Thus, it was no surprise that 17 of the total 51 oral presentations at the recently concluded Sixth International Conference on Serpentine Ecology (www.coa.edu/serpentine) in Bar Harbor, Maine, were based on studies from California's serpentine outcrops. Twelve of the 93 delegates attending the conference were from California or were presenting on California's serpentine soil-biota relations. Other regions represented at

the conference included Albania, Australia, Bulgaria, Canada, Czech Republic, Cuba, France, India, Iran, Italy, Japan, Morocco, New Caledonia, New Zealand, Portugal, Russia, South Africa, Spain, Sri Lanka, United Kingdom, and eastern USA, making it one of the most truly international of the 6 Serpentine Ecology conferences held to date. The conference was a testimony that serpentine outcrops are fast-attracting a wide range of researchers from across the world as model habitats for ecological studies.

Serpentine ecology conferences have their origins in California. The first conference was held in 1991 at the University of California, Davis. Subsequently, conferences have been held in New Caledonia (1995), South Africa (1999), Cuba (2003), and Italy (2006), always highlighting a region with intriguing serpen-

Participants of the Sixth International Conference on Serpentine Ecology. The 93 serpentinophiles represented 21 countries. Photograph courtesy of the College of the Atlantic.





TOP: A serpentine endemic of the New Idria area, San Benito monardella (*Monardella antonina* ssp. *benitensis*), with a tarantula hawk wasp (*Pepsis formosa*). Photograph by Ryan O'Dell. • BOTTOM: Recently-discovered Green Mountain maidenhair fern (*Adiantum viridimontanum*) from Deer Isle, Maine. This fern was previously recorded from only Vermont and Québec. Photograph by the author.

tine soil-biota relations. The conferences provide an opportunity for the gathering of serpentinophiles from around the world, every two to four years, to share and discuss their findings related to the broad and interdisciplinary field of serpentine ecology. The meetings provide a setting for serpentinophiles across many disciplines and many regions to establish profitable collaborations; the conference in Maine was no different from its predecessors. The conferences always feature a mid- and post-conference tour to regional outcrops. This year's participants visited Deer Isle, Maine, a

well-botanized serpentine body in coastal Maine (Rajakaruna et al., 2009) for the mid-conference tour, and the magnificent Mount Albert, Gaspésie Provincial Park, Québec, for the post-conference tour. The highlight of the mid-conference tour was the confirmation that a fern discovered in 2004 by the author was Green Mountain maidenhair fern (*Adiantum viridimontanum*; Pteridaceae), an allotetraploid derivative of Aleutian maidenhair fern (*Adiantum aleuticum*) and the common maidenhair fern (*Adiantum pedatum*). Green Mountain maidenhair fern was previously only recorded from a few sites in Québec and Vermont and is globally rated as vulnerable (G3; www.natureserve.org).

Topics discussed at the Sixth International Conference on Serpentine Ecology were grouped under the themes of geology/soils, biota, ecology/evolution,

physiology/genetics, and applied ecology, illustrating the multifaceted effects of unusual geologies in generating and maintaining biodiversity. Participants included botanists, zoologists, ecologists, pedologists, geologists, microbiologists, evolutionary geneticists, and conservation biologists. Attendees of the conferences are a unique group of researchers that work across disciplines in effective collaborations to explore the fascinating relationships that exist between extreme geologies and life, from cells and whole-organisms to communities and ecosystems.

PRESENTATION HIGHLIGHTS FROM CALIFORNIAN SERPENTINE ENTHUSIASTS

Several presentations from California's serpentine enthusiasts highlighted the need to address pressing issues in biodiversity and conservation with respect to serpentine biota. Susan Harrison (University of California, Davis) and Ellen Damschen

Serpentine endemics of the New Idria area, California (FROM TOP TO BOTTOM): Rayless layia (*Layia discoidea*); Talus fritillaria (*Fritillaria falcata*); San Benito evening primrose (*Camissonia benitensis*). Photographs by Ryan O'Dell.





Serpentine barrens of the New Idria area of San Benito County. Photograph by the author.

(Washington University, St. Louis) presented their ongoing research on the effects of climate change on California's serpentine plants, stressing that plants associated with serpentine may be more likely to go extinct under predicted climate change scenarios than their non-serpentine counterparts. Their conceptual framework for assessing the impacts of climate change on serpentine endemics parallels the recent models highlighted by David Ackerly (University of California, Berkeley) and colleagues (Loarie et al., 2008) on the effects of climate change on California's endemic plants. Ryan O'Dell (Bureau of Land Man-

agement, Hollister Field Office) highlighted his research on the flora of the New Idria serpentine mass in San Benito County and the challenges and triumphs associated with re-vegetating serpentine barrens of the region. New Idria is home for

many rare Californian endemics, including *Camissonia benitensis* (Onagraceae), *Fritillaria falcata* (Liliaceae), *Layia discoidea* (Asteraceae), and *Monardella antonina* ssp. *benitensis* (Lamiaceae). The conference

also highlighted another area of growing interest, the study of plant-fungal relations in serpentine soil. Shannon Schechter (University of California, Berkeley) presented her dissertation research on the relationships between plant ecotypes of *Collinsia sparsiflora* (Scrophulariaceae) and distinct arbuscular mycorrhizal fungi (AMF) assemblages, showing that serpentine and non-serpentine ecotypes of *C. sparsiflora* have distinct AMF associations. Her work

Californian native and pioneer of serpentine ecology research, Dr. Art Kruckeberg (right), with fellow serpentine researchers Dr. Dick Walker (left) and Dr. Rosalina Berazain-Iturralde (center), following a field trip to a serpentine outcrop in Cuba. Photograph by the author.



was recently published in the journal *Molecular Ecology* (Schechter and Bruns, 2008). A noteworthy addition to the serpentine conference was the participation of Dawn Cardace, a researcher from the NASA Ames Research Center, Moffett Field, California. She highlighted her work on how serpentinization processes can create microbial habitats in the cool, dark subsurface on Earth and possibly other planetary bodies. A central goal of her work is to link mineralogy and habitability to remotely target extraterrestrial microbial habitats in the ongoing search for life beyond Earth's boundaries. Little

did serpentinophiles realize how their model habitat for ecological studies could be linked to extraterrestrial research!

UPCOMING PROCEEDINGS AND CONFERENCE

Overall, the conference was an immense success, providing an effective stage for serpentine enthusiasts to gather and share their work on rocks, soils, plants, insects, other biota, and even extraterrestrial research associated with this unique habitat. The proceedings of the conference will soon be published by

the Humboldt Field Research Institute, Steuben, Maine as part of a special issue of their journal, *North-eastern Naturalist*. The publication has been made possible from generous support from California Native Plant Society, USDA Forest Service (Pacific Southwest Region), Missouri Botanical Garden, Maryland Native Plant Society, Maine Space Grant Consortium, Barrick Gold of North America, College of the Atlantic (Bar Harbor, Maine), and several private donors. The next conference is scheduled for 2011 in Portugal with a post-conference tour to explore serpentes of Spain. We look forward to an even stronger California presence at the next conference.

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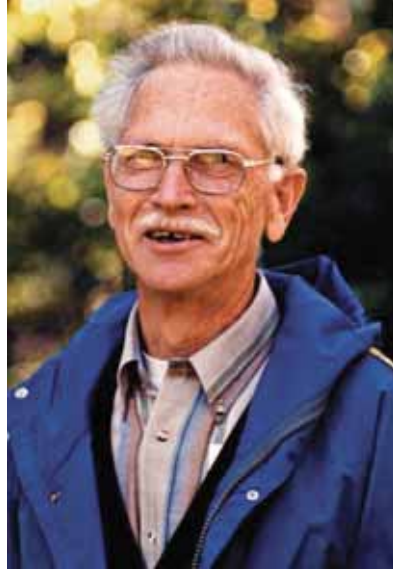
1921–2009

by Phyllis M. Faber

The Marin Chapter of CNPS has lost a treasured friend, Bob Soost, who died on March 6, 2009 at his home in Inverness. Bob was the Marin chapter president from 1995-2001 and continued as the Marin representative at state board meetings until 2006. He was a grand source of knowledge for so many on numerous topics. Bob also volunteered for the Point Reyes National Seashore rare plant monitoring project for many years and was a great source of information for the park. His loss will be felt for a very long time.

Bob was a research plant geneticist with the Citrus Experiment Station, which later became part of the University of California, Riverside. He became a full professor and chairman of the horticulture department. He helped develop important (patented) varieties of citrus, including Oroblanco grapefruit and Gold Nugget mandarin.

After retiring and moving to



Bob Soost. Photograph by Stacy J. Clinton.

Inverness, Bob joined CNPS and also became actively involved with the group monitoring rare plants at the Point Reyes National Seashore. They have added two new native genera to the known Marin flora, *Tofieldia* (*Triantha*) *occidentalis* and *Men-*

yanthes trifoliata (a new family, Menyanthaceae, for Marin County).

Beginning in 1999, Bob actively represented the Marin Chapter on numerous committees and advisory groups such as the Marin-Sonoma Cooperative Weed Management Area, the Fire Management Program for Point Reyes, the Bayfront Corridor Open Space Plan, and the Marin County Coastal Plan. Bob was always an enemy of invasive species, whether they were French or Scotch broom or wild turkeys; and was an eternal and active supporter of preserving California's native flora. A Bob Soost does not come along often and he is hugely appreciated and sorely missed.

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BOOK REVIEWS

Cacti, Agaves, and Yuccas of California and Nevada. Stephen Ingram. Cachuma Press, 2008. 244 pages. \$35.95 hard cover, \$25.95 soft cover.

In a rather crowded field, this book is a welcome addition to the succulent plant literature. Books on cacti and/or other succulents abound, and those treating native plants and especially desert flora are increasingly frequent. This volume stands out on a number of fronts. First is its unorthodox geographical realm combining California and Nevada. Second, two groups (Cactaceae and Agavaceae) that are botanically far flung yet commonly regarded as “cactus” by the layman are treated together. Finally, we must consider the hallmarks of any good modern book – captivating illustrations and substantive text.

At the beginning of the book the author presents nearly 30 pages of explanatory and introductory informa-

tion. These include classification, ecology, the story of the yucca and the yucca moth and an explication of using packrat middens to assess changes in vegetation. As is the case throughout the book, Mr. Ingram’s writing style is friendly and lucid, an essential practice in such a densely fact filled volume.

In the species profile section, which comprises the bulk of the book, the plants are arranged alphabetically within the two families (Cactaceae and Agavaceae). (Ocotillo and *Nolina* are treated briefly at the end of this section.) Each entry is restricted to two facing pages, with more pages given to treat multiple infraspecific taxa. Each species is represented by several photographs as well as a distribution map that is expertly drafted and highly useful. Text for individual entries is engaging and original, and will provide a wealth of cogent information for even the most experienced naturalists.

Throughout this book the photography is consistently striking. One wishes that many of these portraits, of both plants and landscapes, were folio or even poster size. Original paintings by two different artists appear at the beginning of each genus entry but the compelling photographic work outflanks these.

Following the species entries, chapter four covers conservation and cultivation and provides a concise overview of these somewhat interrelated topics. In discussing soil mixes no mention is made of using sand, one of the best and least expensive components for growing cacti and other desert plants. In terms of where these plants will fare best, either in a desert environment or in cismontane California, the author provides some helpful indications but it will be for the grower to discover which species thrive in a given location or only tolerate a foreign cli-



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mate. Many low or high desert plants will *survive* in proximity to the coast (creosote, saguaro, Joshua tree, etc.) but will always lack the vitality they exhibit *in situ*.

Natural areas that are ideal for visiting to observe a great diversity of cacti, agaves, and yuccas in the two states are discussed in chapter five. At the back of the book are eight appen-

dices, as well as a key to the genera treated, a glossary, comprehensive bibliography and index. These generous references include resources for horticulture (nurseries), education, and



California Department of Fish and Game Rare Plant Conservation

California hosts more than 7,000 species of plants. Many are rare, having a very limited distribution, and many are threatened or endangered. The Department coordinates conservation activities for the State's listed plants. Conservation activities have many facets. What we do:



Scientific Research

Conducts scientific research to increase our knowledge of listed plants and aid in their conservation.



California Natural Diversity Database (CNDDDB)

Collects and analyzes location and status information on all 2200 of California's rare plants. Products include RareFind 3, BIOS and the new, soon-to-be-released "iRareFind," an internet-based application with connectivity to BIOS.



Vegetation Classification and Mapping Program

Sets the standards for mapping and classifying vegetation in California based on the National Vegetation Classification System. The program is completing a state-wide vegetation map and classification.



Rare Plant Program

Issues permits for scientific research on listed plant species and for collection of seed or voucher specimens. Oversees grants provided by the USFWS for research on special status plants (Section 6 grants).



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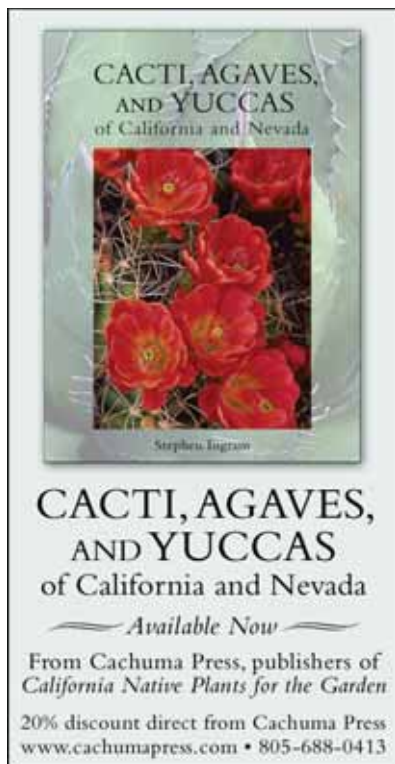


Project Review and Mitigation

Provides technical review of proposed projects and assists in development of mitigation to offset impacts on rare plants and natural communities.

conservation, a comparative table of characters for cholla species, habitat summaries, and species checklists.

Mr. Ingram's contribution is a welcome addition to the modern botanical literature regarding xerophytes of the Southwest. Physically the book handles well and is a fine production on high quality paper. In terms of cost, the prices given here represent an excellent value. This volume has



much to recommend, and much to comprehend.

Dylan P. Hannon, Monrovia, CA

Ecology: A Pocket Guide (revised and expanded), Ernest Callenbach. University of California Press, 2008. 192 Pages, 6 line illustrations, 2 maps. \$13.95 soft cover.

What a different world this might be if its leaders and decision makers were to universally know and understand the ecological insights and principles so eloquently presented in this book. An excellent example is the California Native Plant Society, which excels in blending knowledge of natural history with administrative decision-makers it interacts with. Its Rare Plant program is just one of many examples. So is the Conservation Conference it organized in January 2009.

The title implies a "pocket textbook" but I think of it in a different context. While it deals with information, it seems more involved with "language." It deals with terms usable in a nonacademic atmosphere, such as legislatures and boards of directors.

It discusses these ecological concepts in alphabetical order starting with *Air* and ending with *Zoos*. These short, concise entries are mini-essays interweaving the natural world and its interactions with the human world, in a manner understandable to those decision makers involved with the vocabulary of "product" and "profit."

We learn, for example, the role of *algae* in Nature's world as well as in the world of the human for treating liquid waste, production of biodiesel and hydrogen as well as to stiffen puddings and other liquid foods.

We also learn that *growth* is a function of plants, animals, and humans, as well as countries, and companies too. Organisms grow to maturity enabling them to occupy their *niches*. Can we analyze human societies in much the same way as ecosystems when it comes to the flow of *energy* and the physical circulation of matter? Are there not parallels in the throughput of *energy* in nature as well as for steel, concrete, paper, plastics, and other materials? Is not *sustainability* as important to a natural ecosystem as it is to economic survival? Are there not lessons to be drawn from overgrazed pastures? Does not human *habitat* include *water*, sunlight, necessary temperature range, hiding and nesting places, *food chains* and the like?

The book talks about ecological principles, but includes the context of human interactions with these principles. Although these parallels are made, this is not a book of finger-wagging lectures. It is a book of thoughtful commentary that may be useful to decision makers of all sorts. Maybe copies of this book should be presented by CNPS chapters to local planning board members as well as to Sacramento-based administrators.

In the author's own words, here is an example of how even a busy administrator can appreciate the easy-to-understand nature of this book. "This book is designed so you can dip into it, lay it down or put in a pocket, and come back to it later." It is, "A compact introduction to fundamental concepts of ecology . . ."

Listed, but not discussed, are four "Laws" of Ecology.

- *All things are interconnected.*
 - *Everything goes someplace.*
 - *There is no such thing as a free lunch.*
- And best of all,
- *"Nature bats last,"* although I prefer the way I first heard it, *"Don't mess with Mother Nature. She always gets the last laugh."*

Norden H. (Dan) Cheatham,
East Bay Chapter

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(CONTRIBUTORS: continued from back cover)

Nishanta "Nishi" Rajakaruna is an Assistant Professor in Plant Biology at San José State University, and has conducted research on the ecology and evolution of serpentine plants since 1996. He has botanized on serpentine outcrops in California and Maine, British Columbia and Québec (Canada), Cuba, Italy, South Africa, and Sri Lanka.

“ I want to support education, research of California flora, and science based on habitat preservation.

With a donation for student scholarships to the 2009 Conservation Conference, CNPS provided all of that in one easy package. ”

*Brad Jenkins
Member since 1997*

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MATERIALS FOR PUBLICATION

Members and others are invited to submit material for publication in *Fremontia*. Instructions for contributors can be found on the CNPS website, www.cnps.org, or can be requested from *Fremontia* Editor, Bart O'Brien at bart.obrien@cgu.edu or c/o Rancho Santa Ana Botanic Garden, 1500 N. College Ave., Claremont, CA 91711.

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Rose Bryan, a long time resident of the Gorman Hills, has continually been a staunch advocate and leader for the protection and conservation of this designated Sensitive Environmental Area.

Norden H. (Dan) Cheatham is a frequent book reviewer for *Fremontia*. He is well known for the Cheatham & Haller vegetation classification system from the 1970s that was originally developed for the UC Natural Reserves System.

Stacy J. Clinton is Dr. Robert K. Soost's granddaughter.

Richard Dickey is a noted photographer of California's floral abundance, architecture, and fashion. For the past 23 years, he has been photographing western Antelope Valley and the Gorman Hills. To purchase or view his fine art native plant photography, visit his website at www.feralflowers.com.

Phyllis M. Faber is a former long-time editor of *Fremontia* and is currently Editor for the California Natural History series of the University of California Press. She is a CNPS Fellow and is a noted conservationist, wetland biologist, and author.

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FROM THE EDITOR

I first saw Richard Dickey's photographs of the western Antelope Valley and Gorman Hills at an exhibit at the Theodore Payne Foundation a number of years ago, and knew that his is a talent that is both rare and special. It is indeed a pleasure to bring this small sample of his impressive oeuvre to the pages of *Fremontia*. These photographs, taken at the peak of spring beauty and during the depths of early winter dormancy drive home the temporal aspect of our flora that few people realize and appreciate. California has much more impressive seasons than oblivious outsiders can imagine, as Rick's images so amply portray. If you have the opportunity to attend any future exhibit of Rick's photographs you simply must do so as many of these original images are up to six feet or more across and the colors and forms are incredibly expressive.

Unfortunately, some of the exceptionally beautiful areas depicted in Rick's images are, quite shockingly, threatened with development by the Tejon Ranch Corporation (and others). Ileene Anderson deftly outlines reasons that resonate as a call to action for the conservation and preservation of the highly valued ecosystems of Tejon Ranch.

Serpentine areas of California are magnets for botanists. It is no wonder that there are now ongoing international conferences focusing on these beautiful and intriguing habitats. Nishanta Rajakaruna shares his experiences attending the most recent such conference in Bar Harbor, Maine.

We sadly acknowledge the passing of Dr. Robert Soost, one of our CNPS Fellows from the Marin Chapter. Phyllis Faber provides an overview of some of Bob's many accomplishments.

Rounding out this issue are reviews of two highly recommended books: *Cacti, Agaves, and Yuccas of California and Nevada* by Stephen Ingram, and *Ecology: A Pocket Guide* by Ernest Callenbach.

—Bart O'Brien

(continued on inside back cover)