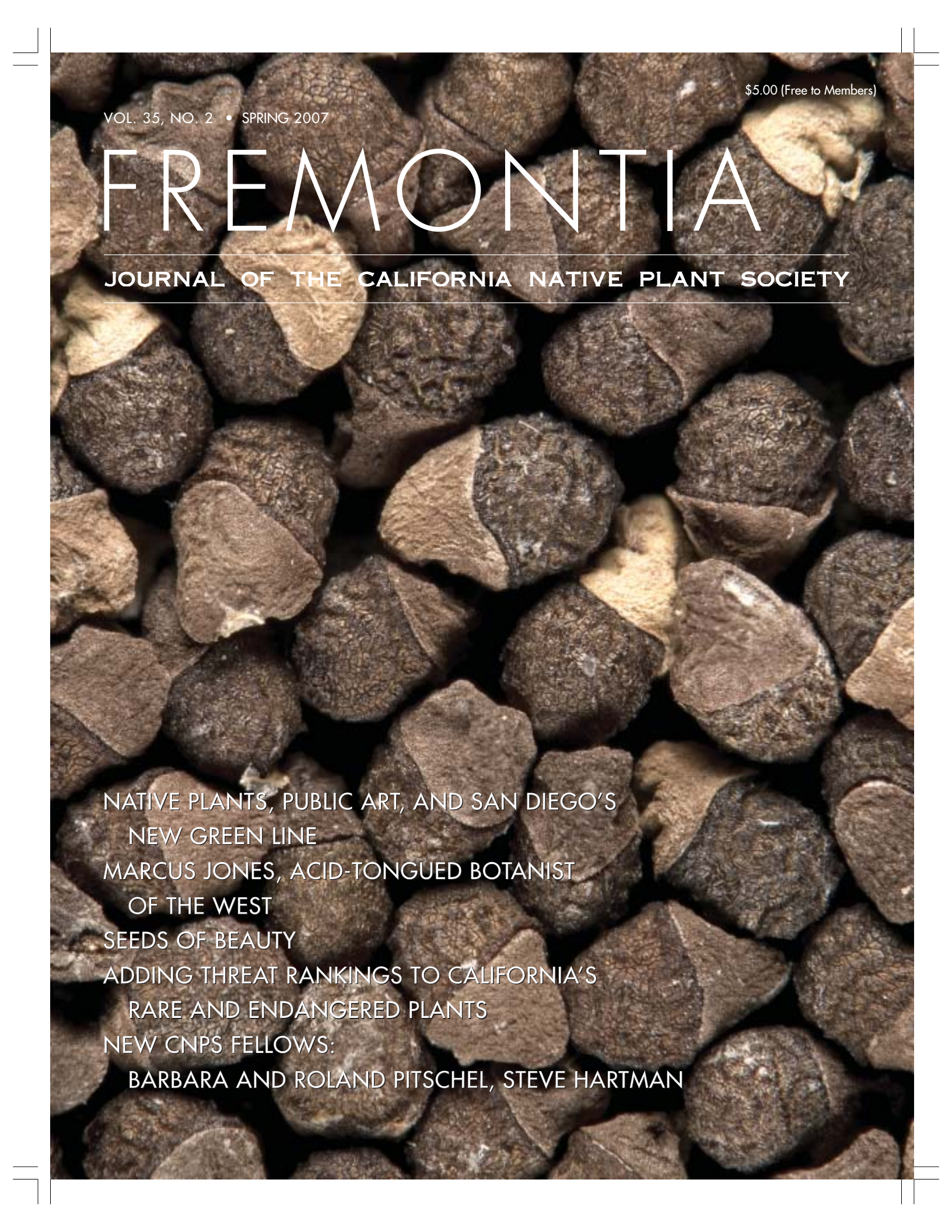




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FREMONTIA

JOURNAL OF THE CALIFORNIA NATIVE PLANT SOCIETY

NATIVE PLANTS, PUBLIC ART, AND SAN DIEGO'S
NEW GREEN LINE

MARCUS JONES, ACID-TONGUED BOTANIST
OF THE WEST

SEEDS OF BEAUTY

ADDING THREAT RANKINGS TO CALIFORNIA'S
RARE AND ENDANGERED PLANTS

NEW CNPS FELLOWS:

BARBARA AND ROLAND PITSCHER, STEVE HARTMAN

FREMONTIA

VOL. 35, NO. 2, SPRING 2007

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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.

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MARCUS JONES: AN OUTSPOKEN MAVERICK: 1852–1934 *by Elizabeth Rush* 9

Marcus Jones (1852–1934) was a botanist with “attitude,” but in addition to stirring up trouble, he made significant contributions to his field. He established a large herbarium and described hundreds of new species. By publishing new species on his own, he gave impetus to the independence of the Western botanical establishment from the Eastern hierarchy. He also contributed a rich supply of stories to the botanical lore.

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The beauty and diversity of Californian seeds are the subjects of this expanded photo essay. Seeds are the promise of life on one hand, and signal the end of life for annuals, biennials, and other plants that are termed monocarpic (a plant that produces seeds once in a lifetime). All seeds serve the same basic functions, yet these marvels of evolution display an astonishing array of forms, colors, and textures to fulfill such deceptively simple goals.



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The author presents the recent implementation of a new Threat Rank designation for plants listed in the Society's indispensable Inventory of the Rare and Endangered Plants of California. This new system supersedes the Society's previous Rarity, Endangerment, and Distribution (RED), and Rarity, Endangerment, Vigor, and Distribution (REVD) codes. Problems inherent in the previous systems and how the new system addresses these concerns and brings a new level of clarity to the Inventory are explained.

NEW CNPS FELLOWS:

ROLAND AND BARBARA PITSCHEL *by Jake Sigg* 22

Barbara and Roland Pitschel were instrumental in the founding of the Yerba Buena Chapter of CNPS in 1986. With their ongoing efforts (since 1972) on behalf of the award winning restoration of Bernal Heights Park, they are true pioneers in the field of ecological restoration.



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Steve Hartman has served the Los Angeles/Santa Monica Mountains Chapter for over 30 years, and the state board of CNPS for over 25 years. His long standing concern for California's plant communities was one of the keys to the establishment of CNPS's Plant Communities Program. He served on the California Desert District Advisory Council and created the Vertical Vegetation Program at Joshua Tree National Park.

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THE COVER: The rough-textured seeds of the corkseed fish-hook cactus (*Mammillaria tetrancistra*). Photograph by John Macdonald.

EDITORIAL: WALNUTS

Occasionally, my mind wanders from reveries of native plants to the concrete reality imposed by money—and I must think of walnuts. Do you like walnuts? We should all be listening to what walnuts have to tell us, as it is such a compelling tale of conservation imperatives and economic reality.

There are both native and exotic species of walnuts present in California. The exotic species, the so-called English walnut (*Juglans regia*) though it is not native there) is the oldest documented “tree food” collected and eaten by humans back to at least 7000 B.C. Not surprisingly, this exotic walnut was an early immigrant to California, though the first commercial orchard was not planted until 1867 in Goleta. From this time through the first half of the twentieth century, walnut orchards were predominantly planted in the southern part of California. However, today most commercial production of walnuts is focused in California’s Central Valley and in adjacent coastal valleys. Exotic walnuts are also grown in home gardens and landscapes throughout much of California.

Surprisingly, 99% of the U.S. production of walnuts is grown in California—and this amount represents 2/3 of the world’s production. In 2005, these exotic walnut trees occupied 215,000 acres of land in California (an area larger than the city of San Diego), and produced an astounding 355,000 tons of walnuts—an average of 1,575 nuts per tree. The value of this crop was \$539,600,000.

In California, we have two native walnut taxa: *Juglans californica* var. *californica* and *Juglans californica* var. *hindsii*. The former entity is predominantly found in Southern California, while the latter is very rare and is found in a few widely scattered locations east of the San Francisco Bay Area. Though our native walnuts are conspicuous elements of our flora, they were not recognized botanically until relatively recently. *Juglans californica* var. *californica* was described in 1875 by Sereno Watson of Harvard University. *Juglans californica* var. *hindsii* was described by Willis Jepson of UC Berkeley in 1909.

California Indians highly prized our native walnuts as a food source, for dyeing basketry materials, and other purposes. In central California, it has been difficult to determine which populations of the rare tree *Juglans californica* var. *hindsii* are actually native occurrences and which ones were planted by California Indians before European contact.

In Southern California, our native walnuts flower in March and April, when the two to four inch yellow-green male catkins cascade from buds on old wood, while tiny clusters of two to five female flowers appear on new shoots. Walnuts are wind pollinated—and therein lies the problem. Our native walnuts are interfertile with the exotic walnuts. Indeed, virtually all commercial walnuts in California are grafted onto a rootstock that is grown from seed of *Juglans* ‘Paradox’ (the 1878 Luther Burbank hybrid between the exotic *J. regia* and the native *J. californica* var. *hindsii*). The exotic walnuts are grafted onto this hybrid rootstock, as they would otherwise not thrive in California’s soil conditions.

Some expert geneticists have theorized that our native walnuts will cease to exist as separate biological entities after one or two more walnut generations due to hybridization with exotic walnuts. So here we have a most provocative situation: our native species are being used to grow an exotic species that is itself leading to the extinction of our native species.

How much are our two California native walnuts worth? Do you like walnuts?

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 George W. Bush
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



The Green Line, 70th Street trolley station, La Mesa, CA. All photographs by the author unless otherwise specified.

THE GREEN LINE

by Nina Karavasiles

I'm a trained sculptor and, for the past 25 years, I've made my living by making art. Somewhere along the line my interest in making things grew into a love for saving things, reusing things, restoring things, and reviving things. So when I won a competition and became a member of a design team that was to create a new trolley station, I was eager to apply my "green" aesthetic.

Planned, designed, and constructed by the Metropolitan Transit Development Board (MTDB), and San Diego Association of Governments (SANDAG), San Diego's Metropolitan Transit System includes a light rail trolley network that traverses 54 miles of the busiest transportation corridor in San Diego

County. However, as more people moved into San Diego's east county, congestion on the freeways dramatically increased, inspiring MTDB to add a trolley line extension in 2005. The Green Line, as this extension is called, includes four new stations and filled a 5.9 mile gap in the trolley network. MTDB projects that the Green Line will generate 11,000 new trolley trips a day and attract 2.5 million new trolley riders per year as a result of the increased capacity and connectivity.

When MTDB initiated the development of the Green Line, they hired four separate teams of design experts to create four unique trolley stations. For the 70th Street station in La Mesa, Parsons Brinckerhoff

and KTU+A Landscape Architecture and Planning were chosen to provide architecture, engineering, and landscape architecture services. As part of this team, I was selected to create an original public artwork that transcended the typical add-on of a statue or fountain, something that would actually become integrated into the site.

The site for the 70th Street trolley station is surrounded by parking lots, trailer parks, billboards, restaurants, condominiums, car dealerships, gas stations, and other tell-tale evidence of suburban sprawl. It began as an asphalt lot in a former riverbed, bordered on one side by a water-carved cliff and on the other by Interstate-8. Construction of I-8



Aerial view of the 70th Street trolley station during construction.

had dwarfed the site and made it into an inconspicuous haven for homeless encampments, and the once glorious waterway had been reduced to the debris-choked Alvarado Creek.

The deterioration of this site's landscape due to development of the surrounding cityscape compelled me to want to restore at least a portion of it to its original, natural beauty. I

wanted to reclaim this land for itself, as well as for the San Diego commuters who would soon be using the trolley. I also wanted somehow to integrate into the project a way of providing habitat for animals, insects, and birds. The project quickly inspired and challenged my skills as an artist, and drew on my knowledge and appreciation of natural systems. Creating a natural oasis

amid the crisscrossing chaos of urban life became my goal, environmental stewardship became my message, and native plants became my primary medium.

To begin conceiving a "green" work of art, I assigned some parameters to my creative process. First, I wanted each of my choices to be based on sound environmental practices. Second, I wanted the artwork elements to be beautiful, as well as inspiring enough to compel future designers to follow a "green" philosophy. Third, I wanted to create a self-sustaining ecosystem where all the natural elements at the station could exist and thrive harmoniously.

As my brainstorming continued, new goals emerged. I thought about promoting public transportation as a choice, not just a necessity, and as a means for minimizing environmental impact. What could attract more riders? What would be interesting to people who wait at this same station day after day? What could they do in the 15 minutes between each

Overview of the 70th Street trolley station.

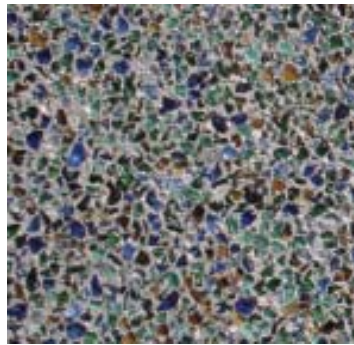


trolley arrival? I thought about educating these riders—possibly 2.5 million in one year—about environmental stewardship. I asked, “What would I do if I were waiting?” I concluded that I would investigate my surroundings. These musings were the basis for the artwork elements that I finally installed at the trolley station.

I began my work at the core of the station: the platforms. The platforms were installed in a pattern that roughly mimics the actual path of Alvarado Creek, which now runs underground in this area. Along the platforms we placed tall lamp posts to illuminate the station at night, each with a concrete base that I sand-blasted with a quote. There were 36 quotes in all. Some were philosophical (“We cannot solve the problems that we have created with the same thinking that created them.” Albert Einstein), some factual (“The average annual rainfall in La Mesa is 13.75 inches [2004]. The average American uses 150 gallons of water a day.”), and still others posed a question (“What could we do with recycled glass?”), but all were intended to spark conversation and introspection.

In my design, I specified that certain areas on the concrete surface of the station platforms be embedded with thousands of tiny recycled glass chips. Besides adding an attractive sparkle, their use demonstrates how recycled materials can be used creatively, and I hope this will inspire people to recycle their glass containers.

Another art element incorporated into the station design references the history of the river. It is a handmade historic map case that shows the locations of Native American villages along the river banks. In addition to teaching about the historic uses of the river, the presence of the map case conceptually links the old waterways with the current transportation methods and corridors. High-efficiency LED



Recycled glass is used as a decorative pavement.

lights, which cast a blue hue, were strategically placed to mark the location of the underground creek.

For the comfort of trolley customers, I designed benches. The base of each bench is composed of river-worn cobblestones that I rescued from the site during the early

A hand-painted map shows Native American villages and transportation patterns through the valley.



phases of site preparation and construction. The use of the cobblestones demonstrates the environmental benefits of reusing a naturally occurring material, and acts as a symbolic link to the origin of the site as a river bed. The seat of each bench is made of a high quality recycled plastic “lumber.”

To reward any commuter’s investigation of the station with a discovery, I placed a sculpture titled “Train-like Apparatus” in a largely hidden location among the foliage. The sculpture is made with parts from old train track-switching equipment that, when moved, rotate a wheel upon a Native American acorn grinding stone, or metate, which was found on the project site. Painted on the switcher is an interpretive image of what Alvarado Creek looked like 100 years ago.

The highlight among the 40 original art elements located at the 70th Street trolley station is the presence of native plantings and handmade metal name plaques that I made to identify certain species. We placed native plants at the station with the intention of educating the public about the beauty of natives and the history of their use by Native Americans and other local inhabitants. I also wanted to restore the land at least partially to its former environment, and not just landscape it. My goal was to create a peaceful, green oasis for both humans and animals within this harsh urban setting.

Southern California, the San Diego area in particular, is home to an amazingly diverse native flora. I selected native species based on several criteria: local nativity, plant community, availability, and ethnobotanical uses. I specified plants that were appropriate for the trolley station customers and operators. The plants had to contain few, if any, thorns; have no branches that would grow to a height that could conceal spaces; grow reasonably well at our location; be able to withstand abuse from pedestrian traffic; and not con-



Clockwise from top left: Light pole base, "It is not safe to drink water directly from streams anymore." • The "Train-like Apparatus" sculpture by Nina Karavasiles. • Aluminum cast plaque for coastal sagebrush (*Artemisia californica*). Photograph by M. Lara. • Native plants and construction materials at the 70th Street trolley station.



tain colored berries that would stain the hardscape (see Table 1 for a partial listing of the native plants for this project).

We purchased the plants from Tree of Life Nursery in San Juan Capistrano and Las Pilitas Nursery in Escondido. Some soil amendments were added. However, fertilizer was not added, in order to promote a natural mycorrhizal soil environment.

After planting, a black weed barrier fabric was installed. Cobblestones were then placed on top of this material, and a top dressing of local, stabilized, decomposed granite was used to hold them in place. These materials were used as a mulch to conserve water and to reduce weed growth.

To emphasize the educational aspect of planting natives, I created bronze, brass, and aluminum markers, or plaques, which I securely anchored into the soil next to specific plants. Unlike traditional plant markers, they provided information about the ethnobotanic uses for each plant, in addition to the species name. My hope was that the handmade quality of these plaques would convey the spoken word as something passed down over time, like a family history, rather than excerpted from a botanical text.

The native plantings have already inspired new stories. During a re-

cent inspection of the site, I was surprised and delighted when a commuter approached me excitedly with an acorn from one of the newly planted coast live oaks (*Quercus agrifolia*). She told me that she had never seen a real acorn; she had only heard about them on TV in association with squirrels. She was so thrilled with her discovery that she took the acorn home to display on her coffee table.

Proper maintenance of the plants is essential to ensure that they remain the main source of interest, education, and peaceful respite at the 70th Street trolley station. I discovered that many seasoned landscapers and landscape maintenance personnel are unfamiliar with the appropriate methods for caring for natives. So I collaborated with the staff at Las Pilitas Nursery to write a native plant maintenance manual for the station operators to use as a guide. The manual emphasizes the fact that native plants, unlike ornamentals and exotics, usually do not

require additional fertilizer after planting. The manual also includes tips about the proper frequency and amount of irrigation required, both during the establishment and post-establishment phases.

Even with the availability of my plant maintenance manual, the frequency and scope of maintenance efforts may be limited by the same budget constraints that face many government agencies today. To counter these possible shortfalls and to further community engagement with the site, I am currently working to organize local residents to participate in the upkeep of the plants at the station.

For instance, I have recently spoken with a group of local Native American basket weavers to encourage them to perform some of the pruning that needs to be done, especially of the deer grass (*Muhlenbergia rigens*), which is commonly used in basket weaving. Lorene Sisquoc, my primary contact, has indicated that many of her fellow weavers have

TABLE 1: PARTIAL PLANT LIST FOR THE 70TH STREET TROLLEY STATION

Common name	Scientific name
bearberry or kinnikinnick	<i>Arctostaphylos uva-ursi</i> 'Point Reyes'
coastal sagebrush	<i>Artemisia californica</i>
San Diego sedge	<i>Carex spissa</i>
western redbud	<i>Cercis occidentalis</i>
strawberry	<i>Fragaria chiloensis</i>
deer grass	<i>Muhlenbergia rigens</i>
western sycamore	<i>Platanus racemosa</i>
hollyleaf cherry	<i>Prunus ilicifolia</i>
coast live oak	<i>Quercus agrifolia</i>
coffeeberry	<i>Rhamnus californica</i>
lemonade berry	<i>Rhus integrifolia</i>
Matilija poppy	<i>Romneya coulteri</i>
California rose	<i>Rosa californica</i>
blackberry	<i>Rubus ursinus</i>
arroyo willow	<i>Salix lasiolepis</i>
white sage	<i>Salvia apiana</i>
elderberry	<i>Sambucus mexicana</i>



Top to bottom: Deer grass (*Muhlenbergia rigens*) flows naturally onto the recycled glass paving. • This light pole base focuses attention on the lush groundcover of wild strawberries (*Fragaria chiloensis*), "If you can find it before another creature, this tiny berry is sweet and delicious." • San Diego sedge (*Carex spissa*) is featured in the riparian area.



Nearby the trolley platform, a small group of people enjoys the shade from a grove of young western sycamore trees (*Platanus racemosa*). Photograph by M. Lara.

had difficulty finding deer grass untreated by pesticides. My hope is that the station will become known among locals as a place to safely harvest this grass, as well as other plant materials.

In the spring, the station will yield a crop of organic strawberries (*Fragaria chiloensis*). Blackberries (*Rubus ursinus*) will follow in the summer. Hobbyists might enjoy collecting the elderberry (*Sambucus mexicana*) to make yellow dye, and even gourmets might like the rose hips (*Rosa californica*), lemonade berry (*Rhus integrifolia*), and white sage (*Salvia apiana*).

I have now been involved with this project for almost seven years, two of which were dedicated to the construction alone. In this time, I have reflected on some of the success and failures I experienced. If I were to be involved in a future project to design and develop another na-

tive plant habitat, I would continue to emphasize the importance of creating an ecology rather than simply gardening or landscaping.

While many capital projects initiated by government agencies have a requirement to award jobs to the lowest bidders, I would lobby for hiring a landscaping crew based on their knowledge of native plants, and not on the lowest bid, since the success of a native plant habitat depends on knowing how to care for each species.

Next time I would conduct considerably more hands-on research before developing a design. In this case, I could have learned that standing water was present in some places, if I had performed my own digging on the site. I would also learn more about how the landscape will be maintained before developing a design. If the operating agency cannot provide adequate maintenance for

certain species, the design should be adapted before planting begins. In addition, I would continue to collaborate with professionals in other disciplines such as geologists, ornithologists, photographers, engineers, musicians, and basket weavers. Lastly, I would be sure to tell many people about my commitment to using native plants for my projects. I discovered that this word-of-mouth sharing was very effective in generating support for the project, as well as in influencing others to consider using native plants for their projects.

In just a few months since it opened, a wide variety of commuters using the 70th Street trolley station have already responded positively to the native plantings and other art elements. I frequently visit the station to observe peoples' interactions, and often engage them in conversations. Bus drivers on break eat their lunches surrounded by the western sycamores (*Platanus racemosa*) and strawberries (*Fragaria chiloensis*). High school students stop me to talk about how much they like the art and how much they wish all the trolley stops had public art. A politician informed me that she had taken a class on native plantings and she was delighted to see some examples at the station. A local dance troupe performed at the site.

To see so many different people enjoying my work at the trolley station has been very rewarding. I see them as part of the ecology I created, partners in a harmonious relationship with native plants and public art. I hope that my contribution to the design of this trolley station supports the idea communicated by Baba Dioum in one of the sandblasted quotes on the site: "In the end we will conserve only what we love. We love only what we understand. We will understand only what we are taught."

Nina Karavasiles, 28802 Chihuahua Valley Road, Warner Springs, CA 92086. nina@ninak.info; www.ninak.info

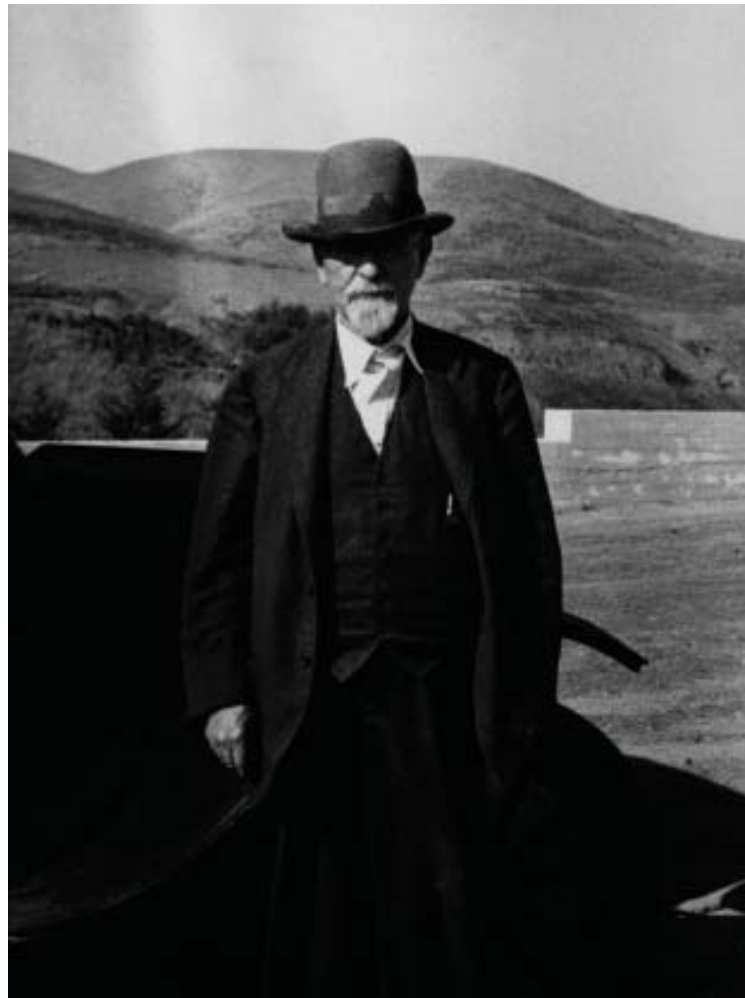
MARCUS JONES: AN OUTSPOKEN MAVERICK 1852–1934

by Elizabeth Rush

Among the colorful Western botanists at the turn of the 19th century, Marcus E. Jones stood out for two reasons: his dramatic eccentricity, and his scope and energy as a plant collector and scientist. His biographer, Dr. Lee W. Lenz of the Rancho Santa Ana Botanic Garden in Claremont, California, writes that “he studied more Western plants in their native habitats than any botanist of his time.”

Marcus Jones earned his stripes for eccentricity early in his career during a trip to Baja California in 1881. He traveled with two older, established botanists, Charles Parry and Cyrus Pringle, and with 18-year-old Charles Orcutt and Orcutt’s brother. While exploring the hills east of Ensenada, the men came upon an undescribed rose. Pringle had left the group earlier in the day, but the others apparently saw it simultaneously. Several days later Parry and the Orcutts left for San Diego without Jones, who refused to travel on Sunday. Parry then sent the Orcutts back for Jones, but when they returned, Jones drew a pistol, and according to one account, ordered the young men out of the wagon and drove off without them.

The San Diego newspaper reported the incident, but Jones’s motivation for his action remained a mystery. Possibly it involved the dispute over who saw the rose first, since Jones later accused Parry of “stealing” his rose and receiving credit for discovering it. Parry was understandably outraged by Jones’s accusation and by his request to George Engelmann to delay publication of the name for the new rose until the controversy could be sorted out. Engelmann punted. He wrote



Marcus E. Jones at Rancho Santa Ana Botanic Garden, July 1932. Photographer unknown. All photographs appear courtesy of Rancho Santa Ana Botanic Garden’s Archive Collection.

that the rose was described from specimens sent by C.C. Parry and M.E. Jones.

The episode haunted Jones’s career. Parry would not let it go. He complained to the most prominent eastern botanists of the time Asa Gray, George Engelmann, and John Coulter about Jones’s behavior, and the resulting loss of credibility

blocked Jones’s opportunity to publish new species in the journals they controlled.

Coulter, who edited the *Botanical Gazette*, had previously experienced Jones’s polemical tendencies when he “warned him off his ground,” the Rocky Mountain area. Coulter had been working on a flora of the region and Jones had similar



Mojave River south of Hesperia, California, May 1926. Photograph by M.E. Jones.

plans. Coulter ignored the warning and published his work three years later. Although Jones worked on his flora (expanded to include the entire region west of the Rocky Mountains) for the rest of his long life, his two volume manuscript lay unfinished on his desk when he died. Had his flora been published in a timely manner, Lenz believes it

would have been a major contribution to Western botany.

In spite of Jones's failure to complete his flora and his tendency to offend nearly everyone he came in contact with, he still made several important botanical contributions to our present-day knowledge of California native plants. His herbarium, which he later sold to Pomona Col-

lege in 1923, contained 500,000 specimens (100,000 sheets), 10,000 of which were mounted. He described hundreds of new species, and he collected in places where few people before or since have ventured. Duplicates of his specimens are contained in herbaria around the world. Jones was an ecological botanist, dabbled with experimental taxonomy, and supported Darwinian principles. By publishing new species on his own, as had Katharine Brandegee and Edward Lee Greene, he gave impetus to the independence of the Western botanical establishment from the Eastern hierarchy. And throughout his life he also contributed a rich supply of stories to the botanical lore.

HIS EARLY YEARS

Marcus Jones's own story began in 1852 in Jefferson, Ohio where his father owned a sawmill. When he was 14 years old the family moved to Grinnell, Iowa, home of Iowa College, a Congregational school that later became Grinnell College. Of his early interests he wrote in a family history, "I never thought it any work to study plants; it was just a part of my life." Like his future bete noire, botanist Edward Lee Greene, Jones's mother owned a copy of Mrs. Almira Lincoln's *Familiar Lectures on Botany, Practical, Elementary and Physiological* and encouraged him to use it. Jones's copy of this book is now in the library at Rancho Santa Ana Botanic Garden.

Jones's mother also supported his other intellectual pursuits, and the move to Grinnell provided him access to both a quality high school and college education, which would have been unavailable in Jefferson. Jones planned to teach Latin at Iowa College when he graduated, but found the indoor life deleterious to his health. In order to support himself in the outdoors he traveled to Colorado, where he began to collect plant specimens, bulbs, and seeds to



Carpet of redwood sorrel (*Oxalis oregana*) among coast redwoods (*Sequoia sempervirens*) near Scotia, California, April 1924. Photograph by M.E. Jones.

sell to botanists here and in Europe. In addition, he packaged some pressed plants as souvenirs from the Rocky Mountain area and sold them to curio shops. He also began corresponding with Charles Parry, Asa Gray, and George Engelmann, who helped him to identify his specimens. He was well on his way to a career in botany.

During the winter he returned to Grinnell to work on his collections and the following spring he collected in Utah. Again he went back to Grinnell to process his specimens. While there he engaged a young woman, Anna Richardson, to help with the labeling. The relationship flourished and in February of 1880 they were married. The couple set up housekeeping in Salt Lake

City, Utah, where Jones planned to support himself by teaching and collecting. Since Jones was vehemently anti-Mormon, his choice of Salt Lake City as a base provides some insight into his life-long delight in conflict.

He had not been in Salt Lake City long before he was visited by two eminent botanists, Charles Parry and George Engelmann. The two looked over Jones's collections and all three went botanizing together in the canyons surrounding the city. The visit went well (except for Engelmann's near drowning while bathing in the Great Salt Lake). A year later Jones was in Baja California with Parry—the trip which ended with Jones's bizarre conduct. Roger Williams writes in his book on the botanical exploration of the Rocky Mountains that this marked the beginning of the unstable behavior that dogged Jones's career.

Before leaving on his disastrous trip to Baja California, Jones lost his teaching job at the Salt Lake Academy, a non-Mormon school where he taught botany, chemistry, and geology. Fortunately, his wife Anna had opened a kindergarten the previous year to help support the family. Because of the school's popularity, additional grades were added, and Jones began to teach in the

higher grades. However, he continued to collect extensively, to publish articles on a variety of topics including religion, and to preach at various local churches as a lay minister. In addition, he self-published a 32-page booklet titled *Ferns of the West* in 1882.

The Jones School closed in 1888 in spite of its apparent success, and once again Jones struggled with the need to earn a living outside of his botanical interests, which he continued to do throughout the rest of his life. He secured a position as librarian and curator of the museum at the University of Deseret (later the University of Utah), which provided some income. His resource-

Mud volcanos, Salton Sink, California, March 1924. Photographs by M.E. Jones.





Thousand Palms oasis near Edom, California, April 25, 1925. Photograph by M.E. Jones.

fulness landed him a number of other jobs as well. He prepared a report on the hydrology of the Utah Territory and conducted a study of the water levels in the Great Salt Lake. He also revived an earlier interest in geology and began serving as a consultant on mining matters, and as an expert witness in many mining disputes. He was among the first to

study the toxic effects of pollution from the mines on plants and animals. Accounts of his testimony as an expert witness reveal an abundance of flippant comments, clearly those of a man with "attitude."

Jones also worked on several railroad surveys, and continued collecting plants as he traveled. A stint collecting plants for the National

Herbarium (Smithsonian Institute) from 1894 to 1895 ended in bitterness and conflict. The difficulty arose over Jones's insistence on collecting duplicate specimens for himself. These projects kept him away from home for long periods of time, but they also allowed him to be out in the field over large areas of the West.

Anna Jones, concerned over her husband's lack of progress on the flora and over the family finances, in 1890 leased a three-story home in Salt Lake City to run as a boarding house. An enormous attic occupied the third floor, a space reserved for Jones's herbarium and library. Anna's intention was to free her husband from financial worries so that he could complete his work on his increasingly ambitious flora.

At about this same time Townsend and Katharine Brandegee launched their journal, *Zoe*, and invited Jones to contribute. Three of Jones's articles appeared in *Zoe* under the rubric "Contributions to Western Botany," and then Jones began to self-publish a journal which he also titled *Contributions to West-*

Jones' camp, showing his much favored auto, in the coast redwoods (*Sequoia sempervirens*) near Scotia, California, April 1924. Photograph by M.E. Jones.



ern Botany. Over a decade later when the Brandegees discontinued *Zoe*, they suggested that Jones take over the publication. He declined their offer, but continued to publish his own journal episodically.

Jones admired Katharine Brandegee both as a person and as a taxonomist. He also admired and liked Alice Eastwood. In an article in *Contributions to Western Botany* he wrote, "No one is more kindly to women than I so long as they keep their places." Since neither Brandegee or Eastwood were known for keeping their places, they must have used great tact in dealing with Jones.

Over the next several years Jones's marriage became increasingly troubled. Anna struggled to support the family to free Marcus to work on his botany, but he made little progress on the flora. He did write a treatise titled *The Willow Family of the Great Plateau* in 1908, and a 288-page monograph titled *Revision of the North-American Species of Astragalus* in 1923, both of which he self-published.

As always he continued to collect. His early trips were made by horse and wagon, but around the turn of the century he obtained a bicycle and, after that, a motorcycle. His affair with the motorcycle was short-lived due to an accident, but he replaced it with a Model T Ford which remained his mode of transportation for the next 20 years. It was his great love.

By 1923 Jones's life had spiraled downward. He and Anna separated in 1910, work on the flora stalled, he was depressed, and he was having difficulty supporting himself. He saw the sale of his herbarium as the only solution to his problems. He consulted with Alice Eastwood about the sale (she was interested), as well as with the Gray Herbarium at Harvard, the University of Utah, Stanford University, and Pomona College.

Professor Philip Munz of Pomona managed to find the money to

buy the collection and to arrange for Jones to come with it. The price finally agreed upon was \$25,000, to be paid in installments. Willis Jepson (no fan of Jones) wrote to congratulate Munz: "This your most recent accession, makes the herbarium of Pomona College lead nearly all others in the New World in numbers of specimens, I suspect, save only the New York Botanical Garden and the National Herbarium." The Pomona College herbarium was moved in 1951 to the Rancho Santa Ana Botanic Garden and in the 1960s was integrated into that collection.

The years at Pomona were apparently happy ones for Jones, and devoid of his customary vitriolic confrontations. Jones and Munz planned a flora of Baja California, and Jones (although now in his seventies) made numerous adventurous collecting trips to that area. From his base in a small house in Claremont that accommodated his printing press, his photography equipment, and his work tables, he also traveled extensively around the Southwest, to Northern California, and for research at the herbarium at the University of California in Berkeley.

With his printing press close-at-hand, he began publishing a series of profiles in *Contributions to Western Botany* titled, "Botanists I Have Known." Among those he praised were Katharine Brandegee, Alice Eastwood, George Engelmann, Samuel Parish, Asa Gray, and Sereno Watson. Among those whom he cut to ribbons were Edward Lee Greene and Charles C. Parry. Perhaps, given his amiable relationships at Pomona, he needed to vent in some other way. His vitriol was not limited to the profiles. In a review of Stanford University's LeRoy Abrams's *Flora of Los Angeles and Vicinity* he wrote, "Abrams is not in any proper sense a botanist . . . The poorest attempt at a text book on the plants of any region that I have ever seen."

His feelings about Edward Lee Greene ran deeper than disagree-

ments over taxonomy. Some years after Greene's death, Jones wrote in his *Contributions to Western Botany* that, "Greene, the pest of systematic botany, is gone, and [has] relieved us from his botanical drivel. They say that the good men do live after them, but the evil is interred with their bones. I suspect that his grave must have been a big one to hold it all." Jones summed up his assessment of Greene by writing, "Greene was first, last, and all the time a botanical crook, and an unmitigated liar . . . The most charitable thing we could say of him was that he was insane."

In spite of Jones's widespread acrimony, his own death engendered more forgiveness than he allowed Greene. C.A. Weatherby of the Gray Herbarium wrote to Philip Munz, "I was genuinely sorry to hear of Jones's death; in spite of his diatribes against most of us, he was the sort of straightforward and apparently big-hearted old pirate at whom one could take no real offense and for whom, I imagine, one could have a genuine affection."

The author wishes to thank Dr. Lee W. Lenz for permission to use data derived from Lenz's biography of Marcus Jones.

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A HARVEST OF SEEDS

by Michael Wall and John Macdonald

The wonder and diversity of our native flowers are no less diminished and no less inspiring after their petals fall. As the exuberance of spring fades, and summer days grow shorter, seed production begins in earnest. This photo essay illustrates the fascinating variety of our native seeds, those tiny, gift-wrapped packages of life, and exemplars of beauty and function.

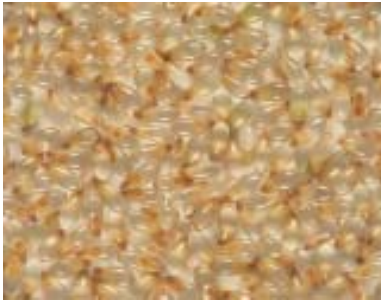
Since the early 1980s the seed collection at Rancho Santa Ana Botanic Garden (RSABG) has grown to its current holdings of over 3,400 accessions representing over 1,600 taxa from 115 plant families. The number of conservation collections of rare, threatened, or endangered native plants have increased dramatically over the years. Today, close to one-third (995) of the accessions in the collection are listed in the CNPS *Inventory of Rare and Endangered Plants in California*, and about 14% (468) are state or federally listed rare, threatened, or endangered taxa. Many of these rare plant collections represent populations that no longer exist, or may be genetically richer than the remnant and declining populations from which they were originally sampled. These genetically representative population samples are especially valuable as they can serve to regenerate plants for future reintroduction and recovery projects, and are themselves a hedge against extinction. In addition, these seed collections are used to research seed germination protocols while the resulting plants are often incorporated into the Garden's displays. Seed samples from the collection are distributed to researchers and other botanical institutions around the world. Seed collections stored under controlled conditions over long time periods serve to provide us with a better understanding of both the advantages and limitations of seed storage as both a conservation and horticultural tool.

ABOUT THE PHOTOGRAPHY

RSABG Volunteer John Macdonald has been photographing seed collections at RSABG for the past six years. The catalog of seed images at the Garden has now grown to well over 1,000 and represents close to 900 native and 120 non-native species. To capture these images, Macdonald uses either a Minolta Maxxum 7D 6MP or a Sony Alpha 100 10mp digital camera using a Sigma 100mm Macro and on occasion (for very close work) a reversed 55mm Minolta lens mounted on the front of the 100mm Macro. The camera is mounted on a Kaiser copy stand using a Minolta twin flash 2400 for lighting. He subsequently optimizes and combines the images in Photoshop CS2 on a Mac G4 using HeliconFocus 3.5 software to combine multiple images to improve depth of field.

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Opposite page, counter clockwise from upper left: Rough menodora (*Menodora scabra*) • Chaparral whitethorn (*Ceanothus leucodermis*) • Long-spined spineflower (*Chorizanthe polygonoides* var. *longispina*) • Coast woolly-heads (*Nemacaulis denudata* var. *denudata*) • California fan palm (*Washingtonia filifera*) seeds • Frying pans (*Eschscholzia lobbii*) • California fan palm (*Washingtonia filifera*) fruits • Bigberry manzanita (*Arctostaphylos glauca*).

This page, top row from left to right: Spiny red-berry (*Rhamnus crocea*) • Poison oak (*Toxicodendron diversilobum*) • Notch-leaved phacelia (*Phacelia crenulata* var. *ambigua*). Second row from left to right: Fluff grass (*Erioneuron pulchellum*) • California juniper (*Juniperus californica*) • California vervain (*Verbena californica*). Left: Sonoma sunshine (*Blennosperma bakeri*). Below: Coffee weed (*Sesbania exaltata*).







Opposite page, clockwise from top: Close up of poison oak (*Toxicodendron diversilobum*) • Purple owl's clover (*Castilleja exserta*) • Woolly plantain (*Plantago ovata*).
 Above, clockwise from upper left: Prickly poppy (*Argemone munita*) • California barrel cactus (*Ferocactus cylindraceus*) • Desert windflower (*Anemone tuberosa*) •
 Guadalupe Island lupine (*Lupinus guadalupensis*) • Douglas's sandwort (*Minuartia douglasii*) • Forked fiddleneck (*Amsinckia vernicosa* var. *furcata*) • Catalina crossosoma (*Crossosoma californicum*).
 Left and below, left to right: Catalina mariposa lily (*Calochortus catalinae*) • Fringed amaranth (*Amaranthus fimbriatus*) • Chia (*Salvia columbariae*) • California croton (*Croton californicus*).

WHERE DID THE CNPS RED CODE GO?

by Kristi Lazar

The California Native Plant Society's *Inventory of Rare and Endangered Plants of California* (CNPS *Inventory*) was originally published in 1974 and was the first effort of its kind to track the status of native and rare California plant taxa. The CNPS *Inventory* has been used for more than 30 years by government agencies, consultants, students, and others to help in their rare plant oriented conservation, research, and educational activities. The CNPS *Inventory* currently contains information on more than 2,000 rare California plant taxa and places each rare species into one of five CNPS lists (see Box 1). These lists are used to categorize the rarity of a plant based on number and status of occurrences. The



Lathyrus japonicus (sand pea) is known from nine occurrences in the coastal dune ecosystems of Del Norte and Humboldt Counties in California, as well as in Oregon and Washington. *L. japonicus* is threatened by both invasion of nonnative plants and off-road vehicles. This plant is on CNPS List 2 and once had a RED Code of 3-3-1, indicating that it is rare and threatened in California but more common outside of California. Now, *L. japonicus* is on List 2 with a Threat Rank of 0.1. This 2.1 more clearly indicates that this species is rare and very threatened in California despite it being more common elsewhere. Photograph by A. Pickart, 2006.



CNPS REVD Code (Rarity, Endangerment, Vigor, and Distribution Code), which was later modified to the RED Code, was an additional component of the CNPS *Inventory* that was created to help further categorize species rarity.

CREATION OF THE REVD AND RED CODES

A species that is rare generally has a narrow distribution and/or few occurrences. However, a rare species may have different degrees of

endangerment depending on other factors. A species such as *Astragalus deanei* is known from 16 occurrences restricted to San Diego County and is seriously threatened due to encroaching development. *A. deanei* is an example of a plant that is rare and endangered. However, a species such as *Penstemon calcareus* is known from 21 occurrences in remote areas of Inyo and San Bernardino Counties with currently no known threats to the species. *P. calcareus* is an example of a plant that is rare but not endangered. As



Top: *Delphinium stachydeum* (spiked larkspur) is known from 22 occurrences in Lassen and Modoc Counties on federally owned lands with minimal threats to the species. *D. stachydeum* also occurs in multiple other states. This species is on List 2 and once had a RED Code of 2-1-1. Now, *D. stachydeum* is on List 2 with a Threat Rank of 0.3. This 2.3 more clearly indicates that this species is rare but not very threatened in California and is more common outside of California. Photograph by T. Engstrom, 2006. • Bottom: *Arctostaphylos myrtifolia* is a California endemic that is known from 14 occurrences in Amador and Calaveras Counties. Main threats to this species include disease, development, and mining. This species is on List 1B and once had a RED Code of 2-2-3. Now, *A. myrtifolia* is on List 1B with a Threat Rank of 0.2. This 1B.2 more clearly indicates that this species is rare in California and is moderately threatened. Photograph by S. Matson, 2006.

BOX 1: CNPS LISTS OVER THE YEARS

1974 (1st edition)

- 1. Very Rare & Rare and Endangered
- Appendix I – Rare and Not Endangered
- Appendix II – Mostly of Limited Distribution
- Includes the REVD Code*

1980 (2nd edition)

- 1. Presumed Extinct in California
- 2. Rare and Endangered
- 3. Rare, But Not Endangered
- 4. Rare in California, But Not Elsewhere
- Includes the REVD Code*

1984 (3rd edition) to 2004 (online version)

- 1A. Presumed Extinct in California
- 1B. Rare or Endangered in California and Elsewhere
- 2. Rare or Endangered in California, More Common Elsewhere
- 3. Need More Information
- 4. Plants of Limited Distribution
- Includes the RED Code*

2005 (online version) to present

- 1A. Presumed Extinct in California (no threat ranks)
- 1B. Rare or Endangered in California and Elsewhere
 - 1B.1 – Seriously Threatened in California
 - 1B.2 – Fairly Threatened in California
 - 1B.3 – Not Very Threatened in California
- 2. Rare or Endangered in California, More Common Elsewhere
 - 2.1 – Seriously Threatened in California
 - 2.2 – Fairly Threatened in California
 - 2.3 – Not Very Threatened in California
- 3. Need More Information (threat ranks not always present)
 - 3.1 – Seriously Threatened in California
 - 3.2 – Fairly Threatened in California
 - 3.3 – Not Very Threatened in California
- 4. Plants of Limited Distribution (threat ranks not always present)
 - 4.2 – Moderate Degree of Threats
 - 4.3 – Low Degree of Threats or Unknown Threats

these examples show, a simple designation of a plant's status as rare, threatened, or endangered was unsatisfactory.

The REVD Code was created as a numerical way to present four important factors that determine how rare a species is (see Box 2). These factors are: Rarity, Endangerment, Vigor, and Distribution. Each of these components had a 1, 2, or 3 ranking, with the higher number indicating the greater cause for concern. In addition, each component

of the REVD Code was given a 1-3 ranking independently of any of the other components. While this system of ranking was useful to assess the factors which influence a species' rarity, the REVD Code was found by many users to be confusing. In the first attempt to simplify the REVD Code, the Vigor component was removed in the 3rd edition of the CNPS *Inventory* published in 1984. The REVD Code was thereafter known as the RED Code. Despite this effort at improvement,

problems with the usability and redundancy of the RED Code continued to be a concern.

WHAT HAPPENED TO THE RED CODE?

In 2003, a committee, called the CNPS Ranking System Working Group, was organized to address problems with the RED Code. The committee recommended that the RED Code be discontinued and that its information be conveyed in a clearer manner through the creation of a Threat Rank in the CNPS *Inventory* (see Box 2). The recommendations of the Ranking System Working Group were approved by the CNPS Board of Directors in August of 2005 and the changes were subsequently implemented. So, while the RED Code has been removed from the CNPS *Inventory*, RED Code information is still present, just in a different format.

RARITY

The rarity component (R value) of the RED Code is incorporated in the current CNPS lists: A plant that is considered rare (rarity value of 1 or 2) is likely to be on List 1B or List 2 (plants rare, threatened, or endangered in California) and a plant that is not as rare (rarity value of 3) would likely be on List 4 (plants of limited distribution). This shows that the rarity part of the RED Code is a redundant feature of the CNPS ranking system. More detailed information on rarity can be found in the ranking system of the California Natural Diversity Database (CNDDB), which uses a nationally recognized ranking method designed by The Nature Conservancy. In this system, Global and State Ranks (G and S ranks respectively) are assigned based upon number of occurrences, number of good occurrences, and distribution and range information, along with several other factors. Since the CNDDB tracks



Top: *Penstemon calcareus* (limestone beard-tongue) is known from 21 occurrences in Inyo and San Bernardino Counties. *P. calcareus* also has a few occurrences in adjacent Nevada. This species is on List 1B and once had a RED Code of 2-1-1. Now, *P. calcareus* is on List 1B with a Threat Rank of 0.3. This 1B.3 more clearly indicates that this species is rare but not very threatened in California due to its remote localities. Photograph by J. Andre, 2006. • Bottom: *Dudleya greenei* (Greene's dudleya) is a California endemic that occurs on several of the California Channel Islands and is threatened by feral herbivores and trampling. This species is on List 4 and once had a RED Code of 1-2-3. Now, *D. greenei* is on List 4 with a Threat Rank of 0.2. This 4.2 more clearly indicates that this species is of limited distribution in California and is moderately threatened. Photograph by S. Matson, 2006.

individual occurrences, it can assign more precise ranks for a species than can CNPS, which tracks rare plants only to the quad level. The CNDDB G and S ranks are now in-

cluded in the CNPS Online *Inventory* as additional information.

DISTRIBUTION

The distribution component (D value) of the RED Code was once used to indicate whether a plant was endemic to California or whether it was widespread outside California. This information is already included in the distribution portion of the CNPS *Inventory* record, which indicates the counties in California where the plant is known to occur, and other states, if any, where the plant occurs. In addition, a note on whether the species is a California endemic has been added to the CNPS Online *Inventory* to further elucidate the distribution of the species.

ENDANGERMENT

The endangerment component (E value) is probably the most important part of the RED Code and is the most useful for conservation purposes. However, this endangerment component seemed to lose some of its value and accessibility when it was part of the RED code. For this reason, CNPS implemented a separate but appended Threat Rank to replace the endangerment component of the RED Code.

THREAT RANK

The Threat Rank is an extension of the CNPS List and designates the level of endangerment with a 1 to 3 ranking, with 1 being the most en-

BOX 2: THE MEANING BEHIND REVD AND RED CODES (1974–2005) AND THREAT RANK (2005–TO DATE)

R – Rarity

- 1 – Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction is low at this time.
- 2 – Distributed in a limited number of occurrences, or more occurrences if each site has few plants.
- 3 – Distributed in one to several highly restricted occurrences, or present in such small numbers that it is seldom reported.

E – Endangerment

- 1 – Seriously Endangered in California
- 2 – Fairly Endangered in California
- 3 – Not Very Endangered in California

V – Vigor (from REVD Code, pre-1988)

- 1 – Increasing or Stable in Number
- 2 – Declining in Number
- 3 – Approaching Extinction or Extirpation

D – Distribution

- 1 – More or Less Widespread Outside California
- 2 – Rare Outside California
- 3 – Endemic to California

Threat Ranks (2005 onward)

- 0.1 – Seriously Threatened in California (high degree/immediacy of threat)
- 0.2 – Fairly Threatened in California (moderate degree/immediacy of threat)
- 0.3 – Not Very Threatened in California (low degree/immediacy of threats or no current threats known)

BOX 3: CNDDDB ELEMENT RANKING

- S1 – Less than 6 element occurrences OR less than 1000 individuals OR less than 2000 acres
S1.1 = Very Threatened
S1.2 = Threatened
S1.3 = No Current Threats Known
S2 – 6-20 element occurrences OR 1,000-3,000 individuals OR 2,000-10,000 acres
S2.1 = Very Threatened
S2.2 = Threatened
S2.3 = No Current Threats Known
S3 – 21-80 element occurrences OR 3,000-10,000 individuals OR 10,000-50,000 acres
S3.1 = Very Threatened
S3.2 = Threatened
S3.3 = No Current Threats Known
S4 – Apparently secure within California; this rank is clearly lower than S3 but factors exist to cause some concern; there is some threat or somewhat narrow habitat. No Threat Rank.
S5 – Demonstrably secure to ineradicable in California. No Threat Rank.

dangered and 3 being the least endangered. Note that this is the opposite of the “old” RED Code ranking in which 3 was the most endan-



Astragalus deanei (Dean's milk-vetch) is a California endemic known from less than 20 occurrences in San Diego County and is seriously threatened by development. This species is on List 1B and once had a RED Code of 3-3-3. It is now on List 1B with a Threat Rank of 0.1. This List 1B.1 more clearly indicates this species rarity and threat status. Photograph by V. Scheidt, 2006.

gered and 1 the least endangered. A Threat Rank is present for all plants on List 1B and List 2, and the majority of plants on List 3 and List 4. List 4 plants may have a Threat Rank of 0.2 or 0.3. An instance of a List 4 plant with a Threat Rank of 0.1 has not yet been encountered, as List 4 plants generally have large enough populations to ensure their continued existence in California. Other factors of concern place these plants on the CNPS List. In addition, no plants on List 1A (presumed extinct in California), and only some plants on List 3 (need more information) and List 4 (limited distribution) have a Threat Rank extension.

CONCLUSION

Throughout the past 38 years of the Rare Plant Program, improvements have continuously been made to streamline the rare plant review process, as well as the CNPS *Inventory*, and make them as user-friendly as possible. The usefulness of the Threat Rank also extends outside of CNPS. The CNDDDB uses a system



Top: *Calochortus tiburonensis* (Tiburon mariposa lily) is a California endemic known from a single occurrence on serpentine grassland in Marin County. Threats to this species include recreational activities and non-native plants. This species is on List 1B and once had a RED Code of 3-3-3.



Now *C. tiburonensis* is on List 1B with a Threat Rank of 0.1. This 1B.1 more clearly indicates that this species is rare and very threatened in California. Photograph by M. Below, 2006. • Bottom: *Swertia albomarginatus* (desert green-gentian) occurs in remote localities in Inyo and San Bernardino Counties, as well as in Arizona, New Mexico, Nevada, and Utah. This species is on List 4 and once had a RED Code of 1-1-1. Now, *S. albomarginatus* is on List 4 with a Threat Rank of 0.3. This 4.3 more clearly indicates that this species is of limited distribution in California but is not very threatened. Photograph by J. Andre, 2005.

similar to the new Threat Rank extension (see Box 3). Adding this Threat Rank extension and aligning it with the CNDDDB's system further helps users by providing rankings which are accepted nationwide. In addition, this Threat Rank helps make the CNPS List a more effective prioritization tool for conservation planning as it is now easier to identify those plants which are the rarest and the most endangered.

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NEW CNPS FELLOWS

ROLAND AND BARBARA PITSCHER

The contributions of Yerba Buena Chapter founding members Roland and Barbara Pitschel have been so numerous, of such magnitude, so vital to the chapter and to the Society, and are of such high quality, that the chapter board was impelled to single them out as Fellows of the California Native Plant Society (CNPS). Barbara and Roland are perfectionists in everything they do, and never settle for anything less than the best. Their official titles on the chapter's board of directors do not tell the story, as a large portion of what they do does not fit under those titles.

Both Roland and Barbara are self-effacing people. Most members are aware of Barbara because she is the

visible tip of the iceberg. However, those who know how the chapter works are aware that it could not function as it does without Roland's continual behind-the-scenes efforts. Switching metaphors, if Barbara is the tree, Roland is the root system that anchors, supports, and nourishes it. Roland uses his talents and fine craftsmanship unobtrusively to keep chapter activities running smoothly. Roland, chapter vice president since 1992, lends consistency, stability, and continuity to the chapter. In that same year he became publications chair, and assumed responsibility for production of chapter publications. He continues to fulfill the duties of both posts today.

The Pitschels' most visible contribution to our chapter is the newsletter, the *Yerba Buena News*, which they have produced since 1995. Bar-

bara is the editor and orchestrates the production process, taking infinite pains to have each newsletter attractive, error-free, timely, of excellent quality, varied and balanced in content, interesting to readers, and educational. Her care in layout, design, and illustrations enhance the attractiveness and readability of each issue. Roland's contribution is seamlessly woven into this process, as he interacts with the volunteer desktop publisher, does layout and paste-up, and finds and works with a printer who will provide the necessary high quality at an affordable price. Barbara recruits mailing volunteers and Roland sets up the mailing process. He then delivers the newsletters to the Postal Service so they reach most members the next day, always in plenty of time for scheduled events.

In 1993, Barbara became chair of the Program Committee, which arranges monthly members' meetings. Since 2002, she has continued as co-chair of this committee with Jake Sigg. Roland provides crucial technical and logistical support for each meeting. As a result of their combined efforts, the chapter has fascinating, well-attended programs appealing to a broad range of diverse interests. These popular meetings often attract attendees from beyond CNPS membership. We enjoy programs that are balanced and varied, with topics such as gardening, planting for wildlife, wildflowers, human uses of native plants, and scientific, historic, biographic, and geographic issues of interest. Our guest speakers' travel, equipment, and logistic needs are anticipated and aptly handled so that attendees enjoy a pleasant evening free of distractions. Speakers are treated to dinner, and everyone is encouraged to attend.

Barbara became hospitality chair

Roland and Barbara Pitschel at Bernal Heights Park, San Francisco. Photograph by M. Bors.



in 1992, and the Pitschels generously provided food and refreshment at members meetings—at their own expense—until the recent advent of a new chapter hospitality chair in 2005. They provide the same to attendees at our monthly board meetings, which they host.

Barbara's and Roland's long history in the field of ecological restoration in San Francisco began in 1972 when they became involved in Bernal Heights Park, which is now recognized as one of the city's significant natural areas. They helped in the successful effort to transfer this property from the Department of Public Works, where it was a candidate for development, to the Recreation and Park Department (RPD), where it will be preserved in perpetuity in a natural state.

After moving to Bernal Heights in 1966, they quickly realized that, despite years of disturbances and weed invasion, here was a remnant of the original landscape, complete with many of the native plants that had been present since the time of European settlement. The transfer agreement stipulated that any maintenance work undertaken at this park would be only to restore it to a "pre-1825" condition. In 1973, Barbara and Roland inaugurated monthly hilltop trash removal work parties. This effort gradually evolved into the monthly restoration work parties that still exist today. Following each work party, attendees are rewarded with a sumptuous repast at the Pitschels' nearby home.

In 1980, aided by the expertise of David Amme and Dennis (Rogers) Martinez, founders of DAWN (Design Associates Working With Nature), the Pitschels were instrumental in gaining permission from RPD authorizing their volunteer stewardship efforts on Bernal Heights Park. Early efforts concentrated primarily on eradication of invasive exotic weeds. In 1986, with the help of Bernal Heights resident and plant ecologist Rick Clinebell, efforts were

formalized into the Bernal Hilltop Native Grassland Restoration Project, which added propagation and planting of locally indigenous stock on the site and observation of results. The Bernal Hilltop Project was the first ecological restoration project attempted in San Francisco and one of the earliest such efforts in California.

Shortly thereafter, Barbara and Roland both became active in DAWN. Roland served on the DAWN board from approximately 1983 to 1987. Charli Danielsen was plant propagator and president of the DAWN board during that period until she retired to assume the CNPS presidency. Barbara continued to manage DAWN's membership records until 1991.

The Bernal Hilltop Project was named Best-of-the-Bay in 1998 by the *San Francisco Bay Guardian*, was honored in 1999 with the \$1,000 Lackmann-Soulages Award from the Trust for Public Land, and received a \$300 "giving back to the community award" from Bernal Realty in 2001. All awarded funds were contributed to the restoration effort.

Barbara is a charter member of Society for Ecological Restoration (formerly SERM). In 1983, she presented a paper on grassland restoration at the American Association of Botanical Gardens and Arboreta conference in San Diego. There, she met *Restoration & Management Notes* editor Bill Jordan, for whom she volunteered for several years as West Coast contributing editor of notes to the journal.

Barbara, as Head Librarian of San Francisco Botanical Garden's Helen Crocker Russell Library of Horticulture (HCRL), in addition to promoting CNPS, disseminates information about native plants and gardening to an avid and knowledgeable public.

Her efforts include high quality art exhibits by chapter members and others. A popular recent exhibit was the collected art works of Wayne Roderick, which he had willed to

the HCRL. After this three-month exhibit, all of the items were sold or auctioned, and the proceeds were used to benefit the library's collection.

In all that they do, Roland and Barbara Pitschel have brought recognition, professionalism, and a positive image to the California Native Plant Society. The Yerba Buena Chapter Board of Directors considers the actions of the Pitschels to exemplify the best traits and ideals of our Society, and finds the Pitschels to be highly deserving of this too-long-delayed honor.

Jake Sigg

STEVE HARTMAN

Steve Hartman, a champion of California native plants, has been an advocate for the preservation, conservation, and use of our state's flora. Over the last thirty years, he has built an incredible network of conservation organizations and agencies to further these goals.

Hartman became a member of the Los Angeles/Santa Monica Mountains Chapter of the California Native Plant Society (CNPS) as a student at University of California Berkeley in 1974. But his interest in nature goes back to earlier days. As he explains, "I could pretty much identify the birds, reptiles, amphibians, insects (to order) and mammals, but plants had so many more species! Joining CNPS was a logical choice because when on field trips, there would always be someone who could identify the plants. (As a side note, my brother and a friend created the 'California Newt Patrol' [CNP] when I was in high school. We built a pond area at my friend's home and learned how hard it is to construct a wetland.)"

Hartman credits Jeffery Clark, his high school AP (Advanced Placement) biology teacher, and his leading field trips in the local mountains for stimulating his interest in native



Steve Hartman at Algodones Dunes in Imperial County. Photograph by C. Goodpasture.

plants. On one occasion, Clark and Hartman worked on a transect of the San Gabriel Mountains, identifying plants and plant communities as they hiked up and down the mountain, an experience that left an indelible impression on Hartman.

While at UC Berkeley, Hartman published *Simplified Key to 24 Common Plant Families* in 1974. A revised second edition was published in the mid-80s. He still gets requests for the identification guide, but admits that he has not had time to update it lately.

When he returned to Los Angeles after college, Hartman's first project with the chapter was to convert the typewriter-written Avery labels to computer-generated labels from the membership database. What a gift he was offering to the chapter! This act was also setting his life-path of becoming a main player in CNPS. Since then, Hartman has worked on everything from noxious weeds to gardens and from wild lands to motorways. He has helped the chapter with everything from

accounting to plant sales and from programs to presidencies.

While serving as chapter president from 1987-1988, Hartman's persistent advocacy for a new state committee for plant communities earned him the "Goad Award" presented by then-president Suzanne Schettler. The Plant Communities Program was realized in 1991.

Starting in 1999, Hartman created a line of natural history computer programs. The first product was "California Plant Communities Information System," an authorized release of Holland's seminal 1976 "gray literature." Another program was "Preliminary Descriptions of the Terrestrial Natural Communities of California" that was updated to conform to the 1993 Jepson taxonomy. With the advent of Windows(TM) that could incorporate images, he produced a line of Wildflower CDs starting in the mid-1990s (Anza-Borrego Wildflowers, Death Valley NP Wildflowers, Joshua Tree NP Wildflowers, 500 Sierra Wildflowers, 500 California Wildflowers, and

an updated California Plant Communities CD with images.) Because of his vision and work, the mission was attained.

Another facet of Hartman is his business knowledge. His background as a business major at UC Berkeley and his work in the family retail business gave him the skills and experience to become chapter treasurer and then CNPS state treasurer, an office he has held since 1996.

As an editor, Hartman has an impressive resume: He edits *Toyon*, the chapter newsletter, and helps in the publication of the semi-annual CNPS catalog. He has also served as editor of two popular native plant publications: the second edition of *Flowering Plants of the Santa Monica Mountains* by Nancy Dale and *The Best Spring Ever: Why El Niño Makes the Desert Bloom* by photographer Carll Goodpasture.

Hartman shows his abiding love of the desert through his work on several fronts. Hartman became involved with Bureau of Land Management (BLM) studies, commenting on environmental impact reports (EIR). He was the first to request that BLM consider plant communities rather than just Unique Plant Assemblages, Forage, and Rare and Endangered Species when drawing up EIRs.

In 1992, Hartman began a six-year term serving on the California Desert District Advisory Council (CDDAC), which oversees 12 million acres of public land. He realized that fragile desert washes, rich in biodiversity, had no protection and that driving in them was not restricted. His focus on protecting these washes led to the publication of *Desert Washes: Managing a Fragile Resource on Our Public Lands*, Educational Bulletin #98-3 of the Desert Protective Council, Inc. Hartman comments, "I believe that my efforts during my term on the Council (followed up ably by Ileene Anderson) led to increased aware-

ness of the variety of plant communities in the desert and especially the importance of protecting desert washes, and has indirectly led to certain environmental groups taking a very hard stand on the issue of designating [driving] routes which has subsequently led to lawsuits that are still pending." During his tenure on the CDDAC Hartman was also instrumental in taking a survey of vegetation for the Northern and Eastern Colorado Ecosystem Management Plan (NECO) and in the resulting draft report.

Hartman's desert field trips are highlights of the year for many desert enthusiasts. He leads three- to five-day trips for CNPS members, staff,

and botanists in spring and sometimes in fall, exploring Imperial County, southern and eastern Riverside County, and eastern San Bernardino County. As Hartman describes these trips, "The Indian Wash vicinity of eastern Imperial County, the Algodones Dunes, and the Bradshaw Trail are fantastic for the glorious vast openness, the uncommon shrubs and breathtaking but rare annual displays. It is also hard not to be fascinated by the remnants of the Native American tribes, be it rock alignments, trails, sleeping circles, quartz scatters, or petroglyphs . . . or the 60-year-old tank tracks that are still obvious today." In times of drought, Hartman might

lead the group in search of populations of rare plants, challenge participants to identify perennial vegetation in its deciduous state, or hunt for plant galls, always observing and appreciating the beauty and resiliency of the desert.

In Joshua Tree National Park Hartman envisioned and implemented an important project—the Vertical Vegetation Program (VV), which established baseline vegetation data in 1999. The VV was a cooperative temporary arrangement between rock climbers, the Park, and CNPS. Once the project concluded with the report, the Park incorporated the findings into their ongoing management activities.

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Another of Hartman's interests is the establishment and protection of Sepulveda Wildlife Lake and Sanctuary. From 1986 to the present, he has worked tirelessly, not only weeding and planting, but advising, advocating, and lobbying for this sanctuary on the Los Angeles River. Complicating matters is the array of agencies with a stake in the area. The Army Corps of Engineers "owns" the Sepulveda Flood Control Basin and Dam while the City of Los Angeles Department of Recreation and Parks, County Mosquito Abatement,

Bureau of Sanitation, L.A. Department of Street Maintenance and CalTrans all have their particular interest in the area.

When the plans for a mass transit bus line across the San Fernando Valley on an abandoned railroad line were adopted, Hartman served on the advisory board and promoted the use of a half million California native plants along the 13.4-mile route.

The San Fernando Valley Audubon Society honored Hartman in 1993 with their Conservation Award

for his definitive role in the preservation of the Sepulveda Basin and the Los Angeles River and for his support of Audubon's environmental education programs for Los Angeles school children.

Steve Hartman's work has enlightened the public, encouraged enthusiasm for protection of threatened environments, elicited cooperation among agencies, both public and private, all to benefit California flora. His positive impact on California's native flora will endure.

Jo Kitiz

BOOK REVIEWS

Introduction to California Soils and Plants: Serpentine, Vernal Pools, and Other Geobotanical Wonders, Arthur R. Kruckeberg. University of California Press, 2006. 281 pages. \$45.00 hardcover, \$18.95 paperback.

The University of California Press divides its popular California Natural History Guide Series into two categories: "introductions for beginners," and "field guides for more experienced naturalists" (from a back page blurb). This book, number 86 in the Natural History Guide series, might be deemed an introduction, but it holds something of interest for all plant enthusiasts. Where field guides answer the question, "What is that?" this book answers the questions "Why are these plants growing where they grow?" and "Why are there so many plant species in California?" Anyone who finds these questions intriguing, from budding California naturalists to experienced observers will find this book well worth buying. Professor Kruckeberg, a well-known and respected botanist, is in his seventh decade of studying the relationship between serpentine soils and their unique floras. He terms it a "kooky soil story." Dr. Kruckeberg is one of the pioneers in the field of *geobotany*, and this interaction between plants and geology is the heart of the book. But this book goes far beyond rocks and soils.

Introduction to California Soils and Plants provides an accessible presen-

tation of how geology influences plants in two different and profound ways: landforms and the chemical composition of rocks and the soils into which they evolve. California is blessed both with a diversity of landforms, ranging from mountains to the Central Valley to islands, and with an immense diversity of rocks and soils, ranging from ancient Precambrian rocks to recent volcanics. These two sources of diversity influence plant evolution and distribution, leading in large part to the 6,000-plus native plant species found in California today, more than in any other state.

A comprehensive exploration of California's full geobotanical richness requires a tome, rather than a guide. Kruckeberg follows a simpler strategy, using specific examples to illustrate the effects that geology has on plants. In the chapter on landforms, he uses both large features (the Channel Islands and the Central Valley) and small ones (vernal pools and other wetlands) to illustrate how different landforms foster specially adapted floras. After providing overviews of plant evolution, soil chemistry, and soil formation, he naturally devotes a chapter to the serpentine story. The link between the unusual chemistry of serpentine rocks and soils and the plants adapted to survive in them provides one of the best case studies of the profound interaction between rocks, soils, and plants, and Dr. Kruckeberg

is one of the great experts on the subject.

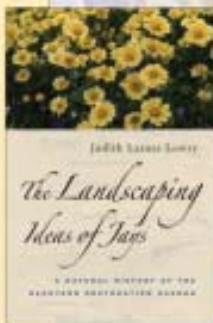
Following the serpentine story, a somewhat shorter chapter describes other plant-soil relationships, with examples from limestone, sterile soils (lone and Pine Hill), salty soils, normal soils, wetlands, and guano beds on the Farallon Islands. Briefer chapters on plant geography and human influences describe both the distribution of native plants in California and the threats to them. The book ends with 30 pages of useful information—a glossary of terms, references, and best of all, lists of unusual California landforms and soils, most of which are in parks or reserves, and all of which are worth seeing. Overall, the book is highly readable and informative. While UC Press may market it as a beginner's introduction, almost everyone will learn something new from it.

Frank Landis
Los Angeles

Native Treasures: Gardening with the Plants of California, M. Nevin Smith. University of California Press, 2006. 288 pages, 125 color illustrations. \$60.00 hardcover, \$24.95 paperback.

Many readers of *Fremontia* are familiar with the native plant gardening columns written by M. Nevin Smith, Director of Horticulture at Suncrest Nurseries, Inc., Watsonville, California. This new volume, *Native Treas-*

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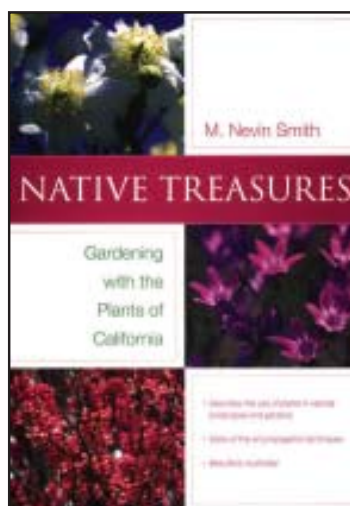


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ures: *Gardening with the Plants of California*, is itself a native treasure. It is at once a usable guide to growing California native plants and a love letter to the flora of California.

For many years, Marjorie Schmidt's book, *Growing California Native Plants* (UC Press, 1980) has been the only in-depth source for expanding one's knowledge and use of California's native flora in the garden. Now we have two sources published within a year: this volume and *California Native Plants for the Garden* (see book review, *Fremontia* 34(1):31-32, 2006). While the latter book discusses the cultivation of a wide variety of native plants once they are in the garden, Smith's book offers an in-depth look at a selection of native plants both in the garden and in the natural habitat.

The genesis of Smith's book began



years ago when Marjorie Schmidt asked Nevin Smith to take over her column in *Fremontia*. Schmidt had dealt with one species at a time, covering its cul-

ture in some depth. Smith chose to write more in essay style, including much practical cultural information, but also including background discussion of a genus or group of plants. He has continued and expanded this essay style in *Native Treasures*. This book does not try to cover every California native in cultivation; Smith makes his choices with care and treats each of his choices in depth. He wants the reader to understand the "why," not just the "how," of native plant gardening.

The section devoted to California oaks, "Ode to an Oak" is a case in point. The first two lines set the tone: "Oaks are not mere elements of a wild California landscape, even major elements. They *create* a landscape and give it character." Clearly this is not the start of a "how-to" chapter. Discussion of "Use and Culture" does not even begin until the fifth of sixteen pages in this chapter.

A major feature in each of these essays is the description of studying the plants in their natural surroundings, or as Lester Rowntree wrote "meeting them in their days and seasons." This approach stresses the most valuable way to learn what each plant needs if we are to bring it into the garden successfully.

Large sections of the book are devoted to what Smith calls "nuts and bolts," such as habitat, soil, microclimate, fire, installation and maintenance. There is also an excellent chapter on propagation, with more information on the propagation of California natives than is available in any other source other than a propagation textbook. The propagation process is clearly explained with an easy-to-follow guide for gardeners who want to try their hands at expanding their collections.

Native Treasures provides a great read as well as an excellent guide to the use of natives in the garden. It is an essential companion book to *California Native Plants for the Garden*. These two books provide an exponential increase in the amount of information available to the California native plant gardener. *Native Treasures* is also an excellent stimulus to go out into the field to study and enjoy California's vast floral richness.

Rosemary Foster
Monterey Bay Chapter

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Margo Bors is an artist working mainly in watercolor and printmaking. Recently she has been working with digital photography, especially insect-plant images. View her work on the web at www.margobors.com.

Tom Engstrom is the wildlife and botany program manager at Sierra Pacific Industries in Anderson, California. He was also a contributor to the *Illustrated Field Guide to Rare Plants of Northern California*, published by UC Extension.

Carll Goodpasture studied photography and cinematography before obtaining his doctorate in entomology from the University of California, Davis. His work may be viewed at www.goodpasture.ritardando.net.

Marcus E. Jones is the subject of a feature article in this issue of *Fremontia*. His extensive archives and herbarium collections are at Rancho Santa Ana Botanic Garden.

Mario Lara is an artist whose most recent public art project is located at a trolley station in downtown San Diego. See his work at www.mariolara.us.

Steve Matson is vice-president of the CNPS Tahoe Chapter, botanist, photographer, and building contractor. View his images at <http://calphotos.berkeley.edu/>.

Andrea Pickart is the ecologist for Humboldt Bay National Wildlife Refuge in Arcata, CA. Her background is in plant ecology with an emphasis on dune and wetlands.

Vince Scheidt is a consulting environmental biologist based in San Diego, California who specializes in botany and herpetology.

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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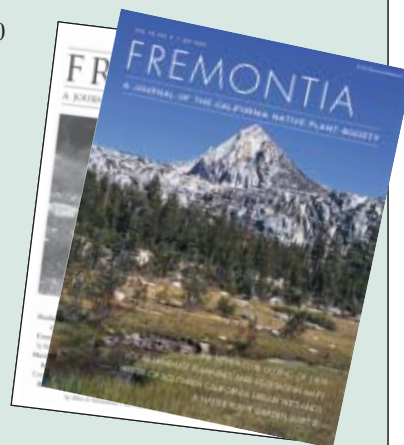
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Jo Kitiz is a long-time member of the Los Angeles/Santa Monica Mountains Chapter of CNPS. She is also Program Director of the Mountains Restoration Trust, a public benefit nonprofit organization working to preserve, protect, and enhance the natural resources of the Santa Monica Mountains.

Frank Landis is a botanist currently working at Sapphos Environmental. His background is in plant community ecology and the interactions between plants, mycorrhizae, and soils.

Kristi Lazar is the CNPS Rare Plant Botanist, and is a member of the Sacramento Valley Chapter. She spends the majority of her work time tracking the status of rare plants throughout California and enjoys visiting them in her free time.

John Macdonald retired in 1997 and since then has developed a talent for digital photography. Since 2001, he has been a volunteer for Rancho Santa Ana Botanic Garden's Seed Program where he has produced an extensive digital library of native seed and plant images.

Elizabeth Rush is a writer who lives in Los Altos Hills, CA. She has written for *California Wild*, *Bay Nature*, *Outdoor California*, *Pacific Horticulture*, *Fremontia*, and other publications.

Jake Sigg is a founder of the Yerba Buena Chapter of CNPS. He has devoted much time and expertise to the management and control of invasive plants, and is a founding member of the California Invasive Pest Council, a nonprofit dedicated to the protection of California wildlands from invasive plants through restoration, research, and education.

Michael Wall is a fourth-generation Californian with a lifelong interest in California native plants and natural history. He came to Rancho Santa Ana Botanic Garden's Horticulture Department in 1990, and since 1996 has served as Curator and Manager of the Seed Program.



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