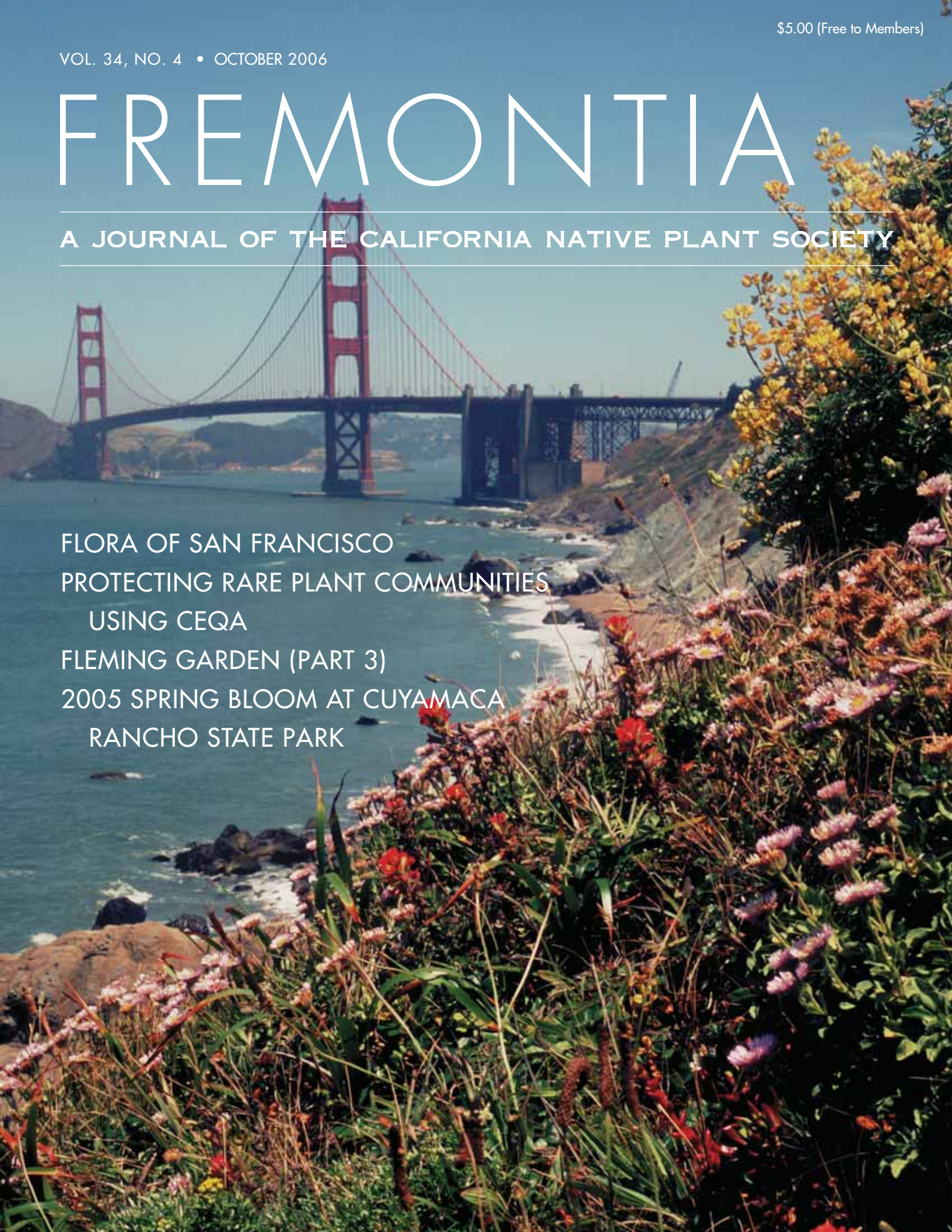


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FREMONTIA

A JOURNAL OF THE CALIFORNIA NATIVE PLANT SOCIETY

FLORA OF SAN FRANCISCO
PROTECTING RARE PLANT COMMUNITIES
USING CEQA
FLEMING GARDEN (PART 3)
2005 SPRING BLOOM AT CUYAMACA
RANCHO STATE PARK



FREMONTIA

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California Native Plant Society

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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 87,000 hours (equivalent to 42 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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In enacting the California Environmental Quality Act (CEQA), the Legislature declared the policy of the state "to preserve for future generations representations of all plant and animal communities." CEQA requires that public agencies at all levels of state government must publicly examine, and mitigate or avoid to the extent it is feasible, the adverse environmental consequences of any discretionary project that such agencies propose to carry out, fund or otherwise permit or approve. This article reviews and discusses provisions of CEQA and the CEQA Guidelines that can be used by the public, including CNPS and its members, to help protect rare plant communities.



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In the aftermath of the devastating San Diego fires of 2003, Phillip Roullard finds great beauty and diversity in the wildflowers of Cuyamaca Rancho State Park. San Diego County, while far from the largest county in the state, has the most diverse county flora in California. Fire-following wildflowers are a small but compelling component of the flora and are the magnificent focus for this photo essay.



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This short piece explains what is behind the shorthand citations for referencing herbarium specimens in botanical papers and articles.

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THE COVER: This iconic San Francisco view of the Golden Gate Bridge features such classic coastal bluff species as yellow bush lupine (*Lupinus arboreus*), pink seaside daisy (*Erigeron glaucus*), and red Indian paintbrush (*Castilleja wightii*). The unique flora of the City and County of San Francisco is discussed in this issue by authors Thomas Daniel and Marie Fontaine. Photograph by T.F. Daniel.

GUEST EDITORIAL: WHERE THERE IS A WILL, THERE IS A WAY

In this editorial, we will be covering one of the simplest and most utilized planned giving techniques: a charitable bequest made through a will or living trust.

The importance of having a written estate plan cannot be overemphasized. State law stipulates how your estate will be disbursed if you fail to establish your own will or living trust. Since the state knows nothing about your individual priorities or commitments, it is greatly to your advantage to make this clear by developing a personalized will or living trust. Not only does it provide you with peace of mind—it prescribes who you want to handle your affairs and who will benefit from your estate.

To those of you who have already established your estate plans, congratulations on a job well done! And to those of you who have taken the extra step of including CNPS as a beneficiary of your will or living trust, we thank you! It is indeed gratifying when we hear that friends and supporters have included CNPS in their estate plans. By investing a portion of their estate in the future of this organization they confirm their belief in CNPS's mission and the importance of our work.

If you would like more information about planned giving, CNPS programs and services, or our fundraising efforts, please let us know. We would be delighted to speak with you about them.

TYPES OF BEQUESTS

Bequests are an important part of CNPS fundraising efforts. Generous donors from all regions of the state and from all walks of life have helped CNPS achieve many of its goals or have helped make possible a number of CNPS programs.

Bequests to family, friends, and charitable organizations can take a variety of forms, depending upon what the donors are trying to accomplish in their estate plans:

- **Specific Sum**—This type of bequest leaves a particular dollar amount of money to a named beneficiary.
- **Percentage of Value**—By leaving a percentage of your estate to each beneficiary, you ensure that all share in the increases or decreases in the value of the estate.
- **Contingent Bequest**—This ensures that your estate goes to another beneficiary you care about in the event that your primary beneficiary dies before you do.
- **Residuary Benefit**—This leaves the remainder of your estate to a named beneficiary after all other bequests are satisfied.

In addition to naming CNPS in your will or living trust, you can also name CNPS as a beneficiary of a life insurance policy or retirement plan. There are also planned gift options that can pay you an income during your life while benefiting CNPS later on. To find out more, just contact our office.

Have you already included the California Native Plant Society in your estate plans? If you have but haven't let us know about it yet, please do. We want to be able to thank you for your support. Also, if you prefer that your donation be kept anonymous, we will honor that request.

Do you need more information?

Are you interested in seeing an example of a personalized planned gift? Just call and we will send you our *Gift Illustration Request Form*. Simply fill it out and return it to our office. All information will be held in the strictest confidence. This service is free and there is no obligation. We are also available for personal consultations. To arrange one, please contact Cari Porter, development director, at 916-447-2677.

Before implementing any plans, be sure to seek the advice of your professional tax and legal advisors.

Amanda Jorgenson, Executive Director, CNPS
Cari Porter, Development Director, CNPS

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

REDISCOVERING SAN FRANCISCO'S NATIVE FLORA

by Thomas F. Daniel and Marie Fontaine

A renewed interest in the floras of urban regions has been evident for the past decade or so (e.g., Clemants and Moore 2003). Indeed, the inaugural issue of a new online journal in urban biology (*Urban Habitats*, published by the Center for Urban Restoration Ecology at Rutgers University and the Brooklyn Botanic Garden, <http://www.urbanhabitats.org/>) that appeared in 2003 was devoted to the subject of urban floras. Clemants (2003) has provided a bibliography of published floristic accounts for 23 of the world's most populous cities. In addition, an editorial in the journal *Science* (Crane and Kinzig 2005) recently highlighted some implications of biodiversity conservation, restoration, and management in urban regions, noting that more people are now living in cities than outside them.

Most highly modified landscapes with dense human populations have undergone a major floristic change from natural habitats with native plants to altered landscapes dominated by non-native species. As a result, urban regions are often at the forefront of efforts to prevent the establishment and spread of invasive species and to preserve rare native species. In their parklands and open-space preserves, urban areas often harbor rare, threatened, or endangered plant species. Thus, there is a need for comprehensive floristic inventories of urban areas over time to document and monitor both the status of native taxa, as well as the introduction and spread of non-native plants into the flora.

San Francisco comprises only about 47 square miles of land area and is the smallest and most densely populated county in California (the city and county are coterminous).

Despite its small size and extensive urbanization, the county has a rich floristic diversity that includes at least 21 rare, threatened, or endangered vascular plant species (California Native Plant Society 2005; see Table 1). Although San Francisco has a long history of studies on its

plant life, recent floristic surveys have resulted in the discovery of native species new to the county and the rediscovery of several natives that were thought to have been extirpated from it. Many of these "rediscovered species" were last reported from San Francisco in the

Blue blossom (*Ceanothus thyrsiflorus*) frames this view of the Golden Gate Bridge from a coastal bluff in the Presidio of San Francisco. Photographs by T.F. Daniel except as noted.



late 1800s, while others had not been observed there for half a century. The occurrences of native plants documented herein highlight the need to continue botanical inventories in well-studied regions, including urban areas.

FLORISTIC STUDIES OF SAN FRANCISCO

The San Francisco Bay Area has a well-established history of botanical investigations beginning with H.N. Bolander's *A Catalogue of the Plants Growing in the Vicinity of San Francisco* in 1870. The first comprehensive account of vascular plants occurring exclusively in San Francisco was Brandegee's (1892a, 1892b) annotated list published in the private journal *Zoe*. Katharine Brandegee (1844–1920) was curator of botany at the California Academy of Sciences in San Francisco, and was the first female to attain such a position in North America. Her list accounted for 605 species of both native and non-native plants that were known to occur spontaneously in the county. It was based on collections made mostly during 1891 by members of the California Botanical Club, which Brandegee had founded in 1890. For each species listed she provided locality and/or habitat information, flowering period, common name(s), sometimes information on frequency, and additional taxonomic notes where warranted. Only rarely were collections cited in her account. In fact, most or all collections at the Academy on which her account was based were lost in the San Francisco earthquake and fire of 1906 that destroyed nearly all of the institution's herbarium.

Howell et al. (1958) presented a much-expanded annotated catalogue of the native and spontaneous exotic flora of San Francisco. It was based on pre-1906 collections subsequently obtained by the Academy, extensive collecting in the county during the first half of the twentieth

century by Academy curators and associates, literature reports, and examination of limited materials in herbaria at Stanford University and the University of California. Their list encompassed 1,055 species, for which either known collections were cited or a literature reference to an occurrence in San Francisco was provided.

Some plants included by Howell et al. (1958) were known from the county only on the basis of Brandegee's list, and questions of misidentifications naturally arise (i.e., in the absence of the specimens on which her list was based, were the species cited by Brandegee correctly identified?). Since 1958 at least two regional floras that include San Francisco County have been published (Thomas 1961; Kozloff and Beidleman 1994); however, neither of these provided a separate listing of species for the county.

The mid-1990s saw a resurgence of efforts to study and collect plants in San Francisco, with the goal of creating a new flora of the county. In addition to updating plant nomenclature and taxonomy, providing identification keys, and containing various ecological data, this new botanical guide will also offer three types of information that will be particularly useful for conservation purposes:

- non-native plants that have become established components of the flora since 1958;
- native plants that have been reintroduced during restoration efforts; and
- documented occurrences of natives either previously unknown in San Francisco or thought to have been extirpated there.

While preparing this revised account of San Francisco's flora, numerous non-native species in various plant families have been recorded from the county for the first time (Table 2). It is important to document new occurrences and the possible spread of non-native plants

since some of them might become invasive and cause alterations to existing ecosystems. In this context it can be noted that the invasive grass, *Ehrharta erecta*, which is a pernicious weed and is now likely the most common plant in the county, was not even listed as occurring in San Francisco by Howell et al. (1958).

It is also important to document the reintroduction of extirpated native species back into existing communities. Restoration efforts (including reintroductions of extirpated species) by the San Francisco Recreation and Parks Department on lands owned by the county officially began in 1997 (restoration activities in San Francisco by members of CNPS began nearly a decade earlier) and continue to the present time on up to 33 parcels of public land. A large portion of open space with remnant natural plant communities in the county is found on federal lands that are now part of the Golden Gate National Recreation Area (e.g., the Presidio and Fort Funston). Several species were reintroduced there during habitat restoration projects that began in the 1990s. Plants already reintroduced from locales outside of San Francisco into restored habitats in the county include coyote thistle (*Eryngium armatum*), alkali heath (*Frankenia salina*), scarlet monkeyflower (*Mimulus cardinalis*), straggly gooseberry (*Ribes divaricatum*), and California seablite (*Suaeda californica*).

The Presidio of San Francisco, a former military base, was transferred to the National Park Service in 1994. This urban park supports a rich mosaic of native plant habitats and 12 rare plant species, some of which are federally threatened or endangered (see Table 1). Habitats that are now rare in the county, including coastal bluffs, serpentine grassland, and old dunes, provide essential refuge for a number of species. At the Presidio Native Plant Nursery, thousands of plants are grown



Rare plant communities in San Francisco's Presidio include (top) the wetlands of Mountain Lake and (bottom) serpentine prairie and vernal pool habitat. These areas are home to numerous sensitive species.

each year from seeds collected on-site for habitat restoration projects. In the course of collecting seeds and restoring habitats, staff has conducted a full inventory of the park's natural areas. These field efforts resulted in the discovery of two native plants that have never been recorded

in the county, and the "rediscovery" of others that had been thought to have been extirpated from San Francisco. The following species accounts highlight some of these discoveries and "rediscoveries." All collections cited that document these occurrences are deposited in the her-

barium of the California Academy of Sciences, unless otherwise noted.

NATIVES NEW TO THE FLORA OF SAN FRANCISCO

Sagittaria montevidensis Cham. & Schldl. MONTEVIDEO ARROW-HEAD (Alismataceae)

In August of 2002 three plants of this annual arrowhead emerged from sandy soil along the northeastern shore of Mountain Lake in the Presidio at a site where an old water tank was removed and the soil had been scraped (Fontaine 312, Daniel 10246). [See page 25 for an explanation of herbarium specimen citations.—Ed.] This species had not been recorded previously from San Francisco County. It appears likely that seeds of the species were either present in the seed bank (and had survived there for some time) or were brought in by a natural dispersal agent.

Other native species that are infrequent in the county (e.g., slender

rush, *Juncus tenuis*) or had not been recorded for more than 50 years (e.g., river cinquefoil, *Potentilla rivalis*) also appeared spontaneously at this same restoration site. Montevideo arrowhead (*Sagittaria montevidensis*) has a more or less similar distribution in latitude in North America and South America. Like all native representatives of the species in the western United States, our plants pertain to ssp. *calycina*. Although other species of *Sagittaria* occur in nearby Marin and San Mateo counties, the nearest known locality for *S. montevidensis* is in Sonoma County.

***Trifolium albopurpureum* Torr. & A. Gray** INDIAN CLOVER (Fabaceae)

Trifolium (clover) is the most species-rich genus of Fabaceae in San Francisco. Howell et al. (1958) identified 19 species of clover from the county, and at least 23 species are now known there. Indian clover (*Trifolium albopurpureum*) was not listed from San Francisco by Howell et al. (1958), and the only known historical collection of it from the county is that of Rattan (collected in 1885, without collection number, and deposited in the Dudley Herbarium) from "Ocean View" in southwestern San Francisco. A population of 100 or more individuals of this annual, purple-flowered clover was located in serpentine grassland at the Presidio in northwestern San Francisco during the summer of 2002 (Fontaine & Menke 290). Rattan's collection was annotated by J.M. Gillett in 1989 as *T. dichotomum*. In *The Jepson Manual*, Isely (1993) treated this taxon as one of three intergrading varieties of *T. albopurpureum*. Both known collections from San Francisco conform to *T. albopurpureum* var. *dichotomum*, which occurs on the Pacific Coast from southwestern Canada to southern California. It is widespread

on the San Francisco Peninsula south of San Francisco.

NATIVES "REDISCOVERED" IN SAN FRANCISCO

***Sanicula tuberosa* Torr. TUBEROUS SANICLE, TURKEY PEA** (Apiaceae)

In her list of plants from San Francisco, Brandegee (1892a:353) listed tuberous sanicle (*Sanicula tuberosa*) from "hills near Visitacion Bay" and noted that it was not common in the county. There are no known collections of tuberous sanicle from San Francisco from either the nineteenth or twentieth centuries. Howell et al. (1958:109) noted that the species "would be expected on dry, rocky slopes, perhaps on serpentine, probably in the eastern part of the city." In the early spring of 2002 about 30 individuals of this yellow-flowered perennial were located in northwestern San Francisco growing on thin, serpentine soil in the Presidio near Inspiration Point (Daniel 10097). Tuberous sanicle is widespread from southwestern Oregon to southern California, and occurs in diverse plant communities. It is rare on the San Francisco Peninsula, apparently occurring only on serpentine slopes in San Francisco and San Mateo counties.

***Hemizonia congesta* DC.** HAYFIELD TARWEED (Asteraceae)

Brandegee (1892a; as *H. luzulifolia*) noted that hayfield tarweed

(*Hemizonia congesta*) was known in San Francisco County from Potrero and southeastern San Francisco. Howell et al. (1958; under *H. luzulifolia*) noted the localities cited by Brandegee and cited a specimen from an unstated locality in San Francisco collected by N. Andersson (collected in 1852, without collection number). Howell et al. (1958) also noted that the type of *H. luzulifolia* var. *fragarioides* came from the "vicinity of San Francisco." Both *H. luzulifolia* and its variety *fragarioides* are now treated within *H. congesta* as *H. congesta* var. *luzulifolia*. No collections of this taxon from San Francisco were made during the twentieth century; the last known collection from the county was that of C. Parry (collected in 1881, without collection number, deposited in the Dudley Herbarium). Three individuals of hayfield tarweed were located in June 2002 in a moist, thin-soiled serpentine prairie near Doyle Drive (US Hwy. 101) in the Presidio (Fontaine 305). Plants are annual, glandular (at least above), and have white corollas. This species is endemic to California and occurs in the Coast Ranges from Lake County to Santa Barbara County and in the Sacramento Valley.

***Montia fontana* L. WATER CHICKWEED, BLINKS** (Portulacaceae)

Brandegee (1892a) reported this annual, moisture-loving montia from "wet springy places in the western and southern parts of the city."

There are four existing collections of the species from San Francisco: Cannon (collected in 1895, without collection number) from southeastern San Francisco; Jepson (collected in 1891, without collection number, deposited in the Jepson Herbarium) from "San Bruno Hills" (purportedly from San Francisco County according to the

Coyote thistle (*Eryngium armatum*), reintroduced into coastal swales along the Presidio's bay shoreline.





Fort Scott at the Presidio of San Francisco.

specimen's label); *Rattan* (collected in 1879, without collection number, deposited in the Dudley Herbarium) from an unstated locality in San Francisco; and a collection from an unstated locality in San Francisco (collected in 1892, without collector's name or collection number, deposited at the University of California Herbarium). Evelina Cannon's collection in 1895 was the most recent and the only collection cited by Howell et al. (1958) under *M. hallii*, into which species they included the water chickweed.

In 2002, a large population of water chickweed (*M. fontana*) was located in moist, serpentine coastal prairie at Fort Scott in the Presidio (Daniel 10096; Fontaine 256, 266, 267; Fontaine & Daniel 274). These prostrate to erect (or floating) annuals with small (1–2 mm long) white flowers have apparently per-

sisted without detection in San Francisco for more than 100 years. The species occurs in various portions of North America, South America, Europe, Asia, and Africa. It is found throughout much of California, except desert regions, and is known from numerous localities throughout the Greater Bay Area.

***Centunculus minimus* L. FALSE PIMPERNEL (Primulaceae)**

This is a diminutive, mat-forming annual with inconspicuous flowers that bear white to pink corollas. The only existing collection of this species from San Francisco County is Kellogg (collected in 1866, without collection number, deposited at the University of California Herbarium) from "near San Francisco." Brandegee (1892a:50) reported it growing on "cliffs between Lobos Creek and Fort Point, and very abun-

dant about the Presidio in company with *Microcala* [= *Cicendia*] *quadrangularis*." Howell et al. (1958; as *Anagallis minima*) did not relocate this species in San Francisco, and based its occurrence in the county on Brandegee's report. Two populations (likely the same two noted by Brandegee in 1892) of false pimpernel (*Centunculus minimus*) were rediscovered in the Presidio in the spring of 2002 (Daniel 10193; fewer than 50 individuals on steep coastal bluffs) and in spring of 2003 (Fontaine 277; several hundred plants in a small patch of remnant coastal prairie). In both localities false pimpernel grew with or near timwort (see below). False pimpernel is a widespread species found in North America, South America, and Europe that is known both to the north (Marin County) and south (San Mateo County) of San Francisco.

Cicendia quadrangularis (Lam.) Griseb. TIMWORT (Gentianaceae)

Timwort (*Cicendia quadrangularis*) was collected at least twice in San Francisco during the nineteenth century: *Bolander* (collected in 1867, without collection number, deposited at the Dudley Herbarium) from Lone Mountain and *Kellogg & Harford* 838 in 1868–69 from “near San Francisco.” *Brandege* (1892a, 1892b; as *Microcala quadrangularis*) noted its occurrence in the Mission Hills and in the Presidio. *Howell et al.* (1958) did not relocate this species in San Francisco during their extensive field studies there. In spring of 2002, one population of fewer than 50 individuals of this tiny, yellow-flowered annual was located on sandstone coastal bluffs in the Presidio (*Daniel* 10194). One year later another population of 100 or more plants was recorded on

moist, remnant coastal prairie elsewhere in the Presidio (*Fontaine* 279). Collections from these populations were the first from San Francisco in over one hundred years. Timwort is also known from nearby counties (including Contra Costa, Marin, and San Mateo). The species has an interesting disjunct distribution, occurring in northwestern North America (California and Oregon) and South America.

Isoetes nuttallii A. Braun
NUTTALL'S QUILLWORT
(Isoetaceae)

Eastwood (1945) reported the occurrence of Nuttall's quillwort (*Isoetes nuttallii*), a fern ally native to the Pacific coast of North America, in the Presidio of northwestern San Francisco, based on a collection made by *Lewis Rose* (#38142) in 1938. *Eastwood* and *Howell* subse-

quently collected it from the same locality in the Presidio (*Eastwood & Howell* collected in 1938, without collection number). This was the sole species of the family Isoetaceae listed for the county by *Howell et al.* (1958). *Holloran* (2002) listed Nuttall's quillwort as extirpated from the Presidio.

In spring of 2003 a large population (1,000 or more individuals) of Nuttall's quillwort was found in a vernal wet, disturbed area at the site of an old quarry in the Presidio (*Fontaine* 271). Subsequently that spring, another population was discovered in nearby vernal wet depressions in serpentine grassland near Fort Scott. Although it has gone unrecognized and undocumented for nearly 70 years, Nuttall's quillwort persists in the Presidio and appears to be abundant where it occurs. It has likely been overlooked in the past because it looks similar to surrounding grasses and grasslike plants.

Nuttall's quillwort appears to be closely related to *Orcutt's quillwort* (*I. orcuttii*), which has been treated as a variety of the former species. The two taxa were treated as distinct species by *Taylor and Keeley* (1993), *Taylor et al.* (1993), *Lellinger* (1985), and *Mickel* (1979). These botanists have used the following characters to distinguish the species.

I. orcuttii: Leaves soft and flexible, 3–6 (–10) cm long, generally less than 1 mm wide at middle, and with 0 peripheral strands; megaspores white to gray, 200–380 μ m (micrometers) in diameter (averaging less than 350 μ m), smooth or minutely tuberculate; vernal pools or depressions.

I. nuttallii: Leaves rigid and brittle, usually more than 8 cm long, generally more than 1 mm wide at middle, and with three peripheral strands; megaspores white, 360–600 μ m in diameter (averaging more than 350 μ m), tuberculate or with low, short ridges; wet soil.

Plants from the Presidio have foliar characteristics that encompass

Clockwise from the upper left: Rarely seen or photographed plant and flower (inset) of timwort (*Cicendia quadrangularis*) in the Presidio; two plants of Nuttall's quillwort (*Isoetes nuttallii*) showing the cluster of grasslike leaves with spore cases at their base; male flower of Montevideo arrowhead (*Sagittaria montevidensis*); and Montevideo arrowhead growing at Mountain Lake in the Presidio.

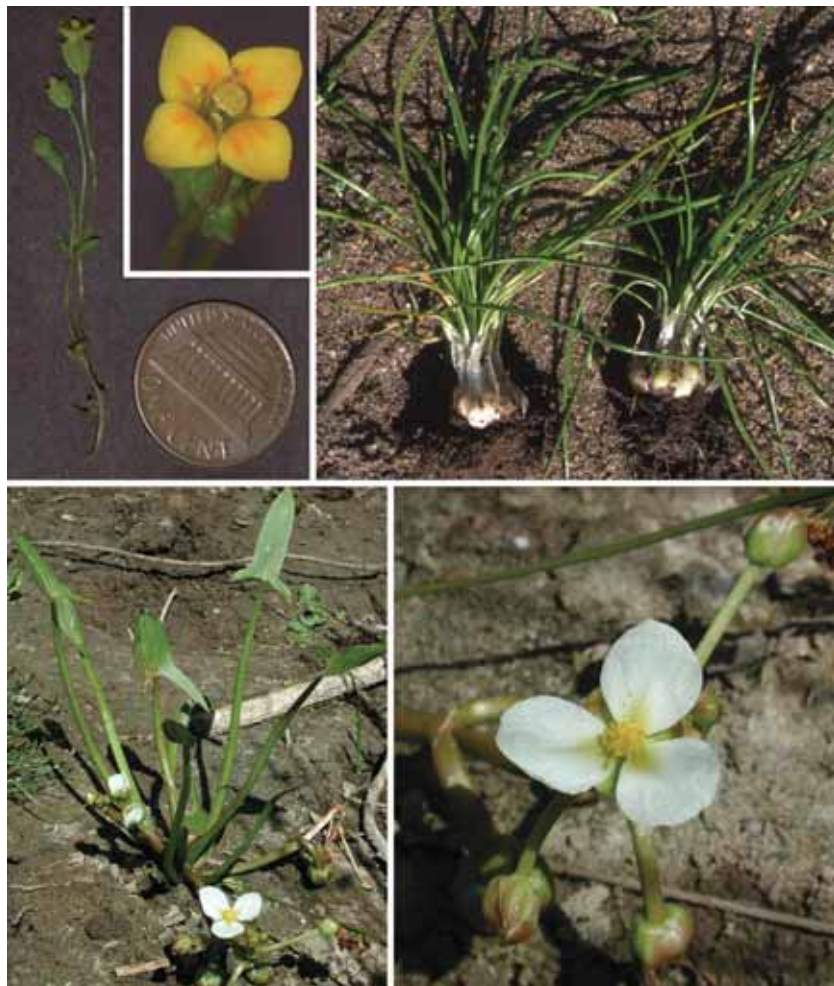


TABLE 1. LIST OF RARE, THREATENED, AND ENDANGERED VASCULAR PLANTS IN SAN FRANCISCO COUNTY

Scientific name	Common name	Family	CNPS Status*	Federal Status
<i>Arabis blepharophylla</i> **	coast rock cress	Brassicaceae	List 4	None
<i>Arctostaphylos hookeri</i> ssp. <i>ravenii</i> **	Presidio manzanita	Ericaceae	List 1B	Endangered
<i>Chorizanthe cuspidata</i> var. <i>cuspidata</i> **	San Francisco spineflower	Polygonaceae	List 1B	None
<i>Cirsium andrewsii</i> **	Franciscan thistle	Asteraceae	List 1B	None
<i>Clarkia franciscana</i> **	Presidio clarkia	Onagraceae	List 1B	Endangered
<i>Collinsia multicolor</i>	San Francisco collinsia	Scrophulariaceae	List 1B	None
<i>Equisetum palustre</i>	marsh horsetail	Equisetaceae	List 3	None
<i>Erysimum franciscanum</i> **	San Francisco wallflower	Brassicaceae	List 4	None
<i>Fritillaria liliacea</i>	fragrant fritillary	Liliaceae	List 1B	None
<i>Gilia capitata</i> ssp. <i>chamissonis</i> **	dune gilia	Polemoniaceae	List 1B	None
<i>Grindelia hirsutula</i> var. <i>maritima</i> **	San Francisco gumplant	Asteraceae	List 1B	None
<i>Hesperolinon congestum</i> **	Marin dwarf flax	Linaceae	List 1B	Threatened
<i>Leptosiphon grandiflorus</i>	large-flower linanthus	Polemoniaceae	List 4	None
<i>Lessingia germanorum</i> **	San Francisco lessingia	Asteraceae	List 1B	Endangered
<i>Lotus formosissimus</i>	coast lotus	Fabaceae	List 4	None
<i>Monardella undulata</i>	curly-leaved monardella	Lamiaceae	List 4	None
<i>Piperia michaelii</i>	Michael's piperia	Orchidaceae	List 4	None
<i>Plagiobothrys chorisianus</i> var. <i>chorisianus</i>	Choris' popcornflower	Boraginaceae	List 1B	None
<i>Silene verecunda</i> ssp. <i>verecunda</i> **	San Francisco campion	Caryophyllaceae	List 1B	None
<i>Stellaria littoralis</i>	beach chickweed	Caryophyllaceae	List 4	None
<i>Triphysaria floribunda</i> **	San Francisco owl's-clover	Scrophulariaceae	List 1B	None

***CNPS Lists:**

List 1A: Plants presumed extinct in California.

List 1B: Plants rare, threatened, or endangered in California and elsewhere.

List 2: Plants rare, threatened, or endangered in California, but more common elsewhere.

List 3: Plants about which we need more information: a review list.

List 4: Plants of limited distribution: a watch list.

** Species present in the Presidio.

Sources: California Native Plant Society, 2005 and Holloran, 2002.

the ranges noted above for both species. The megaspores are smooth (like Orcutt's quillwort) but large (like Nuttall's quillwort). Examination of other collections of these species in California reveals similar overlap or variation among these characters. Additional studies are needed to further clarify the taxonomic status of these two species relative to one another.

Orcutt's quillwort occurs in vernal pools from north-central California to northern Baja California,

Mexico. In the Bay Area, *I. orcuttii* is known only from Alameda, Contra Costa, and Napa counties. Its distributional range overlaps that of Nuttall's quillwort (southern British Columbia, Canada to southern California), which occurs in somewhat drier sites including wet ground or seepages.

CONCLUSIONS

Recent botanical activities in San Francisco have resulted in the addi-

tion of several native species to the county's flora (including the two noted above). They have also reconfirmed the presence (and persistence) of several species reported by Brandegee in 1892, but since thought to have been extirpated from the county. Although the scientific names have sometimes changed over time for these species, in each instance noted herein, Brandegee's identification proved to have been accurate. This lends support for maintaining all of the taxa she re-

TABLE 2. LIST OF SOME NON-NATIVE PLANTS NOT PREVIOUSLY REPORTED IN SAN FRANCISCO COUNTY

Scientific name	Common name	Family
<i>Centaurium erythraea</i>	common centuary	Gentianaceae
<i>Crassula multicava</i>	—	Crassulaceae
<i>Epipactis helleborine</i>	helleborine	Orchidaceae
<i>Juncus capitatus</i>	capitate rush, dwarf rush	Juncaceae
<i>Linum grandiflorum</i>	flowering flax	Linaceae
<i>Medicago minima</i>	burclover	Fabaceae
<i>Trifolium fragiferum</i>	strawberry clover	Fabaceae
<i>Trifolium hirtum</i>	rose clover	Fabaceae
<i>Trifolium subterraneum</i>	subterranean clover	Fabaceae

ported from San Francisco as historically part of the county's flora (as was done by Howell et al. 1958), whether they are known from existing collections or not.

The recent discoveries of these native plant populations highlight the need to continue botanical inventories in well-studied regions, including urban areas. It is essential to document changes to local floras over time that result from natural processes and events, continuous urbanization, the spread of invasive non-natives, and habitat restoration efforts. Whether the discoveries made are propitious or tragic, they are always important to document and record. As noted by Crane and Kinzig (2005), "whatever the future of our environmental ethic, one thing is clear: what remains of habitats and biodiversity

Hayfield tarweed (*Hemizonia congesta*), now known from three individuals in the Presidio of San Francisco. Photo by Marie Fontaine.



within the city is of disproportionate importance."

ACKNOWLEDGMENTS

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PROTECTING RARE PLANT COMMUNITIES USING THE CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

by Keith G. Wagner

The California Native Plant Society, through its Vegetation Program, has been working to identify the diversity of vegetation in the state. As described in *Fremontia* earlier this year (Vol 34, No 1), one of the original goals of the Program was to identify and define plant communities that are rare and deserving of recognition and conservation. Unfortunately, state and federal laws narrowly targeted at prohibiting the “take” of specified lists of rare and endangered plants, such as the state and federal endangered species acts (ESA), operate primarily at the species level, and therefore do not adequately consider or protect rare plant communities, except as an incident of protecting individually listed species. In the absence of more specific legal protections, several provisions of the California Environmental Quality Act (CEQA) (see Sidebar 1) discussed in this article can be used by CNPS members to help protect rare plant communities.

In enacting CEQA, the Legislature declared it is the policy of the



Vegetation team conducting a rapid assessment of spinescale scrub (characterized by *Atriplex spinifera*) adjacent to Soda Lake in the Carrizo Plain National Monument, San Luis Obispo County. Photograph by D. Hillyard.

state “to preserve for future generations representations of all plant and animal communities.” [Pub. Resources Code, §21001, subd. (c). CEQA is codified at Public Resources Code section 21000 et seq. CEQA’s statutory provisions, and the regulations promulgated by the California Resources Agency to guide the implementation of CEQA (com-

monly referred to as the “CEQA Guidelines”), are on the web at <http://ceres.ca.gov/ceqa/>].

CEQA requires that public agencies at all levels of state government must publicly examine, and mitigate or avoid to the extent it is feasible, the adverse environmental consequences of any discretionary project that such agencies propose to carry out, fund or otherwise permit or approve. [Pub. Resources Code, § 21002, 21080, 21081.] Many activities that have the potential to disrupt or eliminate rare plant communities in a given location – such as the conversion of open space or agricultural land to urbanized subdivisions, transfers of water from one watershed or region of the state to another, and the issuance of permits for a wide range of extractive industries across the state, just to name a few – require governmental approvals that trigger the need for CEQA review.

Participation by CNPS and its

WHAT IS CEQA?

The California Environmental Quality Act, (CEQA) is a complex and comprehensive environmental protection law that includes the Act itself (codified at Pub. Resources Code, §21000 et seq.), the CEQA Guidelines (Cal. Code Regs., title 14, chapter 3, §15000 et seq.) and an extensive body of CEQA case law that has been developed, and which is constantly being refined, by California’s courts. Excellent resources for understanding and applying this law for resource protection include the Planning and Conservation League’s “Community Guide to the California Environmental Quality Act” by J. William Yeates (see www.pcl.org), and “How to Comment on a CEQA Document” by T. Peterson in *Fremontia* 29(3-4):27-37 (available as PDF at www.cnps.org/fremontia/authors/Fremontia29—3-4p27-37hi.pdf)



Pickleweed wetlands in San Luis Obispo County are mostly under protected ownership, like this marsh at Morro Bay Wildlife Area. Morro Bay is one of the few California estuaries where the wetlands have not been largely filled or converted to salt ponds. Photograph by D. Hillyard.

members in public agencies' CEQA processes is important, since the agency, consultants, and project proponents may not be aware of the existence or rarity of plant communities at any given project site, or within the environment that may otherwise be adversely affected by a proposed project. By participating in the CEQA process and providing important information about a project's potentially significant adverse effects to rare plant communities, CNPS and its members may be able to convince agency decision makers and project proponents to make changes that will allow the project to move forward, while at the same time substantially reducing, or entirely avoiding, adverse impacts to rare plant communities. In addition, participation by CNPS members is required to establish CNPS's legal standing in the event an agency fails to fully and fairly comply with CEQA's requirements before approving a project that may adversely impact rare plant communities. Optimally, comments by CNPS and its members should be made as early as possible, and CNPS members should consistently participate in each phase of CEQA's public process. Such participation would include, but is not limited to, scoping comments, comments on draft environmental documents that

are released for public review, and commenting at any public hearings for the project.

In providing comments, CNPS and its members should focus on identifying and presenting the agency with "substantial evidence" supporting any assertions regarding the existence of a potentially affected rare plant community, or a project's potentially significant, adverse effects on such resources. CEQA defines "substantial evidence" to include "fact, reasonable assumptions predicated upon fact, and expert opinion supported by fact." [Pub. Resources Code, § 21080, subd. (e)(1).] Substantial evidence is not "argument, speculation, unsubstantiated opinion or narrative . . ." [Pub. Resources Code, § 21080, subd. (e)(2).]

The following provisions of the CEQA Guidelines can be used to address a project's potential significant, adverse impacts to rare plant communities, to the extent that CNPS or others are able to submit substantial evidence 1) identifying the potential existence of the rare plant community, and 2) explaining how the project, if approved, may have significant, adverse effects on that community. Where such impacts are identified, they must be addressed during CEQA review, either through the incorporation of

mitigation measures and alternatives that will *clearly* avoid or mitigate the impacts to less-than-significant levels (in which case a mitigated negative declaration may be prepared), or through the analysis of such measures in an Environmental Impact Report (EIR), in situations where it appears that the project may have remaining, unavoidable impacts.

PLANT COMMUNITIES THAT SUPPORT RARE, THREATENED OR ENDANGERED SPECIES

Section 15065 of the Guidelines requires preparation of an EIR when a proposed project has the potential to "substantially reduce the number or restrict the range of an endangered, rare or threatened species." [CEQA Guidelines, § 15065, subd. (a)(1).] The lead agency on a given project will play a significant role in determining whether substantial evidence in the record indicates that a project's impacts on given species' "number" or "range" is sufficiently "substantial" to trigger this section's protections. However, this provision is very useful to expand on protections offered by the state or federal endangered species acts, because CEQA expressly defines "endangered, rare or threatened" plants to include not only formally listed species under the state and federal ESAs, but also, to include any species that qualifies for such listing, *whether it is actually listed or not*. [CEQA Guidelines, § 15380.] This distinction is especially important, given the fact that the CNPS Inventory of Rare and Endangered Plants of California, *itself*, constitutes "substantial evidence" that a plant should be considered as rare, threatened or endangered, even if it is not formally listed under either the state or the federal ESA.

In cases where 1) a project may have significant, adverse effects on plants that are *listed* as rare, threat-

ened or endangered, or to plants that otherwise qualify for such listing based on substantial evidence, such as the CNPS Inventory, and 2) a determination is made by the lead agency that the project may “substantially” reduce such plants’ number or restrict their range, then CNPS and its members can request that impacts to the functioning of the *entire* community on which such plant(s) depend, and not just direct impacts to the individual species, should be addressed in the agency’s CEQA documents, and mitigated or avoided to the extent feasible.

PLANT COMMUNITIES THREATENED WITH ELIMINATION

Section 15065 of the Guidelines also requires the preparation of an EIR where substantial evidence indicates that “the project has the potential to . . . threaten to eliminate a plant or animal community.” [CEQA Guidelines, § 15065, subd. (a)(1).] This is admittedly a perilously low standard, similar to the “jeopardy” standard of the state and federal endangered species acts. However, there may be instances in which a large development would threaten to completely eliminate a plant community, either through direct or indirect impacts. If there is a fair argument that this would be the case, an EIR must be prepared.

PLANT COMMUNITIES ASSOCIATED WITH RIPARIAN HABITATS

CEQA independently recognizes the substantial ecological role that riparian habitat plays and its significant historical loss. The list of sample questions that the California Resources Agency has approved as its Environmental Checklist (which is found at Appendix G of the CEQA Guidelines) specifically asks public agencies to consider, as part of their CEQA review, whether a proposed project would have “a substantial adverse effect on any riparian habitat.” [CEQA Guidelines, Appendix G Environmental Checklist, sample question IV(b).] To the extent that a project’s potentially significant, adverse impacts to riparian habitats may also result in adverse effects to plant communities that depend on such habitat, the public agency’s CEQA review of the project should disclose and analyze such impacts, and propose ways that such impacts can be mitigated or avoided.

PLANT COMMUNITIES ASSOCIATED WITH WETLANDS

A similar provision of the CEQA Guidelines’ Appendix G Environmental Checklist asks if the project would have “a substantial adverse effect on federally protected wet-

lands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.” [CEQA Guidelines, Appendix G Environmental Checklist, sample question IV(c).] Although a series of recent U.S. Supreme Court decisions (which are far beyond the space available for this article) have recently raised questions about the scope of what “wetlands” are *actually* protected by the federal Clean Water Act, significant, adverse impacts to the state’s wetlands should still be considered and mitigated or avoided under state laws, including CEQA.

Put another way, the question that CEQA asks is *not* whether a federal agency has jurisdiction over a particular wetland, but rather whether the *environment* (including any identified wetland) may be significantly, adversely affected by a proposed project. In light of the State of California’s and the Fish and Game Commission’s independent recognition of the value of the state’s wetlands with a “no net loss of wetlands” policy, CNPS and its members should continue to insist that impacts to rare plant communities caused by the dredging or filling of wetlands be considered in CEQA documents that are prepared for such projects, *regardless* of the U.S. Supreme Court’s ongoing efforts to curtail *federal* agencies’ jurisdiction over such resources.

A mosaic of grassland and emergent marsh vegetation, partially created by different management practices, in the Southeastern portion of Suisun Marsh, DFG Grizzly Island Wildlife Area in Solano County. Photograph by T. Keeler-Wolf.



PREVIOUSLY IDENTIFIED SENSITIVE NATURAL COMMUNITIES

The Appendix G Environmental Checklist also specifically asks if the project would have “a substantial adverse effect on any . . . sensitive natural community identified in local or regional plans, policies, regulations . . . ,” or whether the project will “conflict with any local policies

or ordinances protecting biological resources....” [CEQA Guidelines, Appendix G Environmental Checklist, sample question IV(b) & (e).] If sensitive natural communities are identified in, and protected by an overlying General Plan or any other local or regional plans, policies or ordinances, substantial adverse impacts to such communities caused by a specific project should be viewed as significant in the public agency’s CEQA analysis for the project.

As just one example, the Land Use and Circulation Element of the Solano County General Plan states that the “County shall protect its . . . lowland grasslands which are critical habitats for marsh-related wildlife.” Therefore, a project that would propose to destroy or have other substantial, adverse effects on lowland grassland near Suisun Marsh should be considered a significant impact for purposes of CEQA’s analysis, and mitigation or avoidance, requirements.

SENSITIVE NATURAL COMMUNITIES IDENTIFIED BY RESOURCES AGENCIES

The Appendix G Environmental Checklist also asks if the project will have a substantial adverse impact on a “sensitive natural community identified . . . by the California Department of Fish and Game or US Fish and Wildlife Service.” [CEQA Guidelines, Appendix G Environmental Checklist, sample question IV(b).] The state’s vegetation classification, which is based on CNPS’ *A Manual of California Vegetation* (Sawyer and Keeler-Wolf 1995) and the state’s Vegetation MOU Group, is a work in progress and requires thorough classification and mapping of vegetation statewide before a full understanding of community sensitivity is gained. However, the California Natural Diversity Database (“CNDDDB”) maintains a list of all

vegetation communities that have been identified so far (www.dfg.ca.gov/whdab/pdfs/natcomlist.pdf). Communities that are indicated by an asterisk on this list are considered “sensitive” in that they have 100 or fewer viable occurrences in the state, based on the Department’s best information about distribution and the likelihood of the community being found in currently unmapped areas.

Again, relying on “substantial evidence” contained in the Manual of California Vegetation, information generated by the Vegetation MOU Group, and the CNDDDB, or similar sources, CNPS and its members can request that any CEQA analysis for a project included consideration, and mitigation or avoidance of, adverse impacts to these sensitive plant communities.

OTHER RARE COMMUNITIES NOT PREVIOUSLY IDENTIFIED

Finally, even if the CEQA Guidelines discussed above do not *specifically* address a potential rare plant community that may exist on a project site, impacts to such communities should still be considered by the lead agency, so long as substantial evidence provided to the agency (i.e., scientific studies, or other fact-based submittals) establishes the community’s nature and

existence. Many plant communities still need better definition with scientific data collection.

In this regard, if a project will clearly result in the destruction or degradation of a potential rare plant community, CNPS and its members can try to document and present to the lead agency evidence that the community is, in fact, a distinct and rare community. “Substantial evidence” that a community is distinct or rare might be established, for example, through vegetation sampling, classification, and mapping.

This, of course, may mean that a study has to be done quickly, which can be difficult without access to the site or where the project proponent does not agree to have a study done. However, CNPS and its members might be able to provide substantial evidence that a study *should* be done, based on a reasonable inference founded on expert opinion or facts that *are* available, that a rare community exists onsite.

For example, if the soils, geology, topography, and aerial photographic signature are similar to a nearby site that is both sampled and mapped as a rare community, one might reasonably infer that the plant community on the project site could be the same. Current vegetation mapping techniques use this type of inference all of the time, since some areas are accessible and sampled in a mapping effort while other areas are not accessible. The accuracy as-

Maritime chaparral dominated by Morro manzanita (*Arctostaphylos morroensis*) is limited to less than 1,000 acres and is threatened by residential development in the community of Los Osos and by expanding *Eucalyptus* stands in Montaña de Oro State Park, San Luis Obispo County. Photograph by D. Hillyard.



assessment of the mapping (which we hope was conducted) would test the assertions of the mapping of the nearby area and provide a measuring stick of the likelihood of any particular mapped vegetation stand actually being that type. Thus, if an unvisited area of a given signature is 80%-90% likely to be correctly identified according to the accuracy assessment, one might be able to make a "reasonable inference" based on this scientific fact (i.e., "substantial evidence") that the area is really that community type. In fact, this is one of the reasons that accurate and well-tested vegetation mapping will do a great deal for conservation advocacy.

Finally, if no map and accuracy assessment of an adjacent area are available, one might provide "substantial evidence" that a rare vegetation type is likely to occur on the site by collecting data from one or more stands in an adjacent or nearby area with similar environmental characteristics and photographic signature (or similar appearance through binoculars) to the community on the project site.

The key to effectively using the CEQA process to protect rare plant communities is to relentlessly focus on gathering and submitting "substantial evidence" in the form of *facts*, *expert opinion*, and *reasonable inferences* based on those sources. If you are providing previously undocumented evidence that a community on the project site is likely rare and should be addressed under CEQA, you must *clearly* establish 1) the facts that support your assertions and 2) the credibility of the methodology used in identifying or describing the rare plant community. Provide your credentials, if you are a botanist or biologist. After consulting with your local CNPS chapter or the state organization, affirm that you are representing the California Native Plant Society and demonstrate that you have used the accepted methodology in describing the rare community.

GOING COASTAL TO PROTECT RARE PLANT COMMUNITIES

Sections of the California Coastal Act of 1976 can be utilized hand-in-hand with various provisions of CEQA to bolster the case for protection of rare plant communities. Specific provisions of the California Coastal Act of 1976 define sensitive resources and establish policies for development in and adjacent to sensitive areas within the Coastal Zone. California's Coastal Zone extends inland anywhere from 1,000 yards to as much as five miles from mean high tide.

While CEQA broadly provides for investigation and public disclosure of a project's environmental impacts, and strives to avoid or mitigate such impacts to the extent "feasible," the Coastal Act provides even greater protections, by directing that "environmentally sensitive areas" *shall* be protected against any significant disruption of habitat values; and that adjacent development *shall* be sited and designed to prevent impacts which would significantly degrade those areas (see, e.g., Pub. Resources Code, § 30240, subds.(a) & (b)).

The Coastal Act defines "environmentally sensitive areas" as "any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments." (Pub. Resources Code, § 3107.5) This provides dual utility, by 1) designating the area as "environmentally sensitive," and, thus, affording it *direct* protections under the express terms of the Coastal Act, while, at the same time, 2) providing "substantial evidence" that CEQA review is required for any impacts that a project may have on such resources under CEQA Guideline section 15065.

The Coastal Act also protects wetlands within the coastal zone. The Coastal Act defines "wetlands" as lands "which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens" (Pub. Resources Code, § 30121). The Coastal Act then goes on to generally preclude siting of development in areas that meet the Act's definition of "wetlands." (Pub. Resources Code, § 30255).

(The California Coastal Act is codified at Public Resources Code, section 30000 et seq. The Coastal Act is available on the internet at <http://www.coastal.ca.gov/ccatc.html>.)

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- California Resources Agency Land Use Planning Information Network (LUPIN): <http://ceres.ca.gov/planning/>

This site has links to a variety of land use planning tools and information, including the laws and regulations which we have cited above: <http://ceres.ca.gov/planning/state.html>.

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Looking south across the sunny west facing slope of the Fleming garden.

A NATIVE PLANT GARDEN IN THE BERKELEY HILLS, PART THREE

by Jenny S. Fleming

The following is reprinted with permission from Rancho Santa Ana Botanic Garden. The original publication information for this article is: Fleming, Jenny S. 1997. A Native Plant Garden in the Berkeley Hills. In *Out of the Wild and Into the Garden II: California's Horticulturally Significant Plants*. 1995 Symposium Proceedings. Rancho Santa Ana Botanic Garden Occasional Publications #2. Pp. 218-225.

Near the meadow, protected from the wind by the house, we have planted three aspen trees (*Populus tremuloides*)—a reminder to Scott of his early years in Reno, Nevada, once called “The City of Trembling Leaves.”

A steep bank, created by the bulldozer in excavating a flat building

site and outdoor living area, rises above the meadow and patio. This we have treated in several ways. Behind the meadow is a 30-inch wall of volcanic fieldstone and lava set in mortar. We intended this to be a rock garden—a flat surface for 2 ft with the steep slope above supported by very large rocks stepping back to create planting sites. High moun-

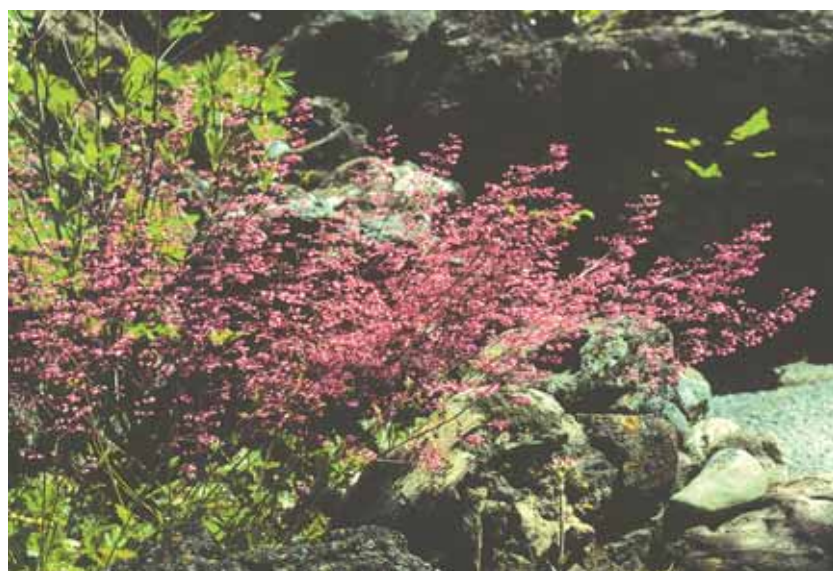
tain specimens needing deep gravel did not succeed in this area due to heavy, horrible clay, topped with a shallow gravel layer.

Crowberry (*Empetrum nigrum*) drapes over the rocks. The flat area features Fort Bragg manzanita (*Arctostaphylos nummularia*), bush cinquefoil (*Potentilla fruticosa*, a dwarf form), mountain columbine (*Aquilegia pubescens*), and Indian pink (*Silene californica*). These all grow robustly in the gravel-topped soil. Above, supported by the large rocks, are old plantings of the rare Laurel Hill manzanita (*Arctostaphylos franciscana* [Jepson = *A. hookeri*

ssp. *franciscanum*]), mountain spiraea (*Spiraea densiflora*), and western azalea (*Rhododendron occidentale*). The latter is one of our several brilliant-flowered azaleas from Stagecoach Hill above Patrick's Point State Park. Draping over and obscuring some rocks is an uncommonly beautiful juniper (*Juniperus communis* var. *saxatilis* 'Point St. George'), with flat trailing branches of silvery gray green foliage. This juniper needs good drainage to avoid root rot.

To the west of the steep rock garden is a recirculating waterfall and pool made of large lava rocks. A stream bed carrying the water to the catch basin and pump runs alongside the meadow. In and around the waterfall, taking advantage of the extra moisture, are golden monkey flower (*Mimulus guttatus*), Indian rhubarb (*Darmera peltata*), ferns, and sea thrift (*Armeria maritima*).

In a small bog just south of the waterfall we display stream orchids (*Epipactis gigantea*), the coastal corn lily (*Veratrum fimbriatum*), brook saxifrage (*Boykinia elata* [Jepson = *B. occidentalis*]), and the tiny tinker's penny (*Hypericum anagalloides*). Continuing along the cut bank is an open fireplace built of large lava rocks, rarely used today due to air pollution concerns. The bank then slopes down to the southwest, where



we built a flagstone patio and small swimming pool, edged on the hillside with partially submerged lava rocks.

In constructing the retaining walls, rock gardens, waterfall, bog, patio, paths, stairways, etc., we probably used some 300 tons or more of lava, fieldstone and other rock (I stopped counting at 150 tons). Such rock was much cheaper then than now and we were the favorite cus-

LEFT: Martha Roderick coral bells (*Heuchera micrantha* 'Martha Roderick'). • TOP: Plants of California's northern coast are featured in the rock garden: Point Saint George juniper (*Juniperus communis* 'Point St. George') and coast dudleya (*Dudleya farinosa*).

tomers of our rock supplier because we paid on delivery, whereas the commercial rock yards paid only on resale.

Extending out from the bank above the pool is a magnificent large manzanita, probably planted by the birds—certainly not by us. Manzanita experts say it most resembles *Arctostaphylos manzanita*. Also on this bank are *Ceanothus griseus* var. *horizontalis*, *Arctostaphylos* 'Indian Hill', *Iris douglasiana*, *Mimulus aurantiacus*, and hybrids. On the rocks above the pool are gray lichens, a complement to the several *Dudleya brittonii* native to northern Baja California.

Passing through the windbreak that protects the pool from the frequent westerly winds, a path curves between two beds of perennials featuring several *Eriogonum* species; *Penstemon heterophyllus*; Seaside Daisy (*Erigeron glaucus*), a prostrate lupine (*Lupinus albifrons* var. *collinus*), sunrose (*Helianthemum scoparium*), a pink Channel Island form of yarrow (*Achillea millefolium*), and many bulbs of the *Brodiaea* complex. *Triteleia ixioides* is abundant



ABOVE: Douglas iris (*Iris douglasiana*) stabilizes the steep sunny slope and stairway of Hat Creek lava rock. • LEFT: Redwood ivy (*Vancouveria planipetala*) and western bleeding heart (*Dicentra formosa*) line the stairs in a shady portion of the garden.

here and elsewhere in the garden, as it reseeds prolifically.

Just beyond these planting beds, the path turns sharply left and angles up the hill above the pool, fireplace, and waterfall. By the path are two redbuds (*Cercis occidentalis*) which are doing very poorly as they need more heat and cold than our fogbound hillside provides. Above the path are three limber pines (*Pinus flexilis*), the only California high

mountain pine that thrives at this elevation.

Our deer fence, recently installed to preclude increasingly frequent visits from deer, known hereabouts as "pigs on stilts," mars the verdant setting here. In time I expect *Vitis californica* 'Roger's Red', Matilija poppy (*Romneya coulteri*), and several evergreen shrubs to camouflage the fence.

Further on below the path is an

area of brilliant springtime color, with annuals and perennials thriving in very thin soil overlaying the grading cut. The blues of flax, *Iris*, and *Penstemon*, pinks of *Armeria* and *Clarkia*, oranges of poppies and *Mimulus*, plus much more last for many weeks from March to May. Not visible during the spring color splash are year-round groundcovers that provide erosion control and a green and gray carpet throughout the year. Still further ahead on the northeastern edge of the garden is the children's playhouse, long unused. Several yards in front of the playhouse near the end of the main uphill path, a narrower path switches back across the hill. It connects with the uppermost path, which terminates at the high corner of the garden.

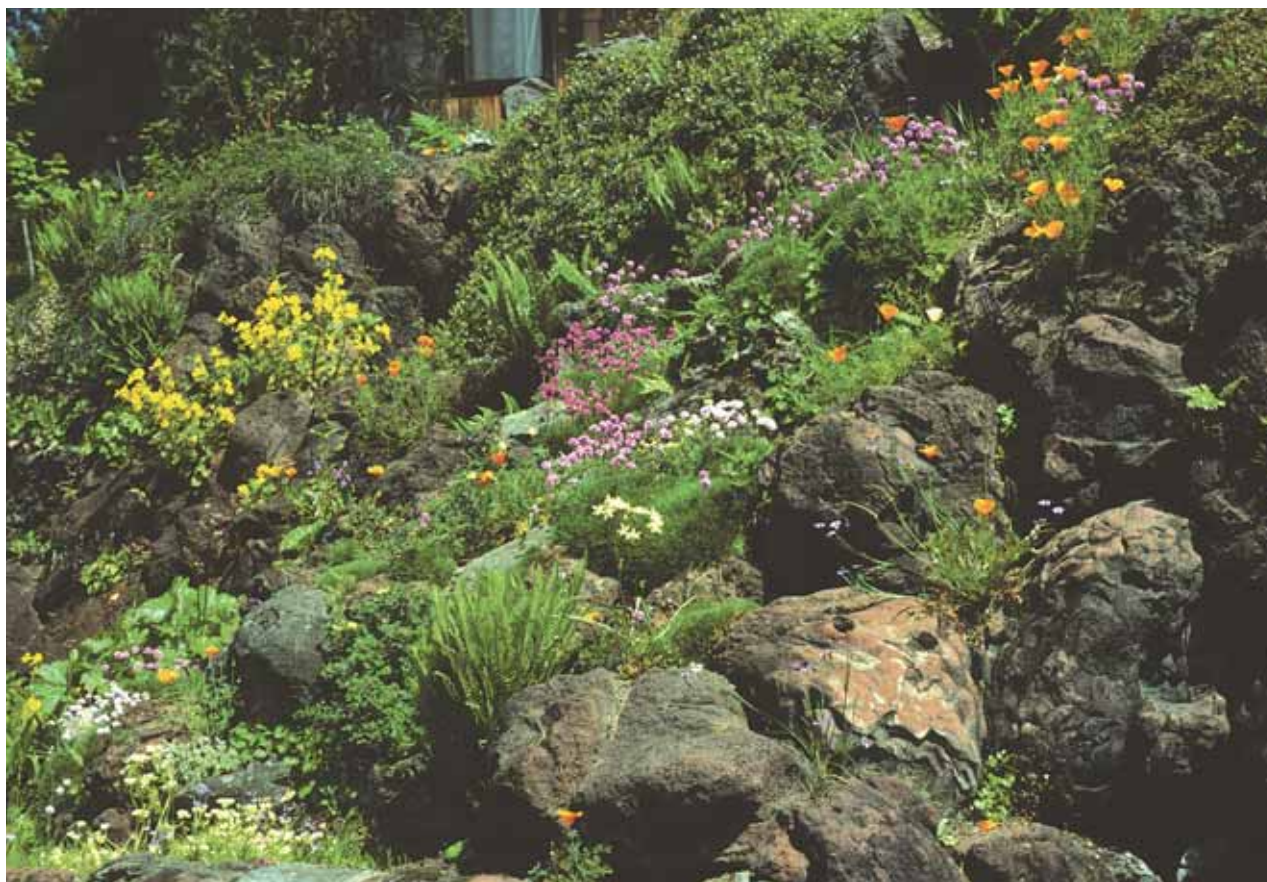
We laid these paths and our garden stairways with natural



ABOVE: Centennial ceanothus (*Ceanothus* 'Centennial') cascades over a boulder. • BELOW: The Fleming rock garden in spring.

stepping stones of Hat Creek lava from a thin volcanic flow north of Mt. Lassen. They provide a good surface to climb the steep paths whether wet or dry, and we find them quite handsome.

To preserve the view of the upper garden from the patio, we used low growing groundcovers on the lower slope and planted successively taller perennials and shrubs progressing up the hill. Several cultivars of *Arctostaphylos uva-ursi* and *A. edmundsii* lead to *A. glandulosa* ssp. *glandulosa* f. *cushingiana* and *A. hookeri*, followed by three forms of *A. pajaroensis*: 'Myrtle Wolf', 'Paradise', and 'Warren Roberts'. *Ceanothus* 'Centennial', a new cultivar only several inches in height with brilliant blue flowers, and *C. hearstiorum* on the lower slope yield to *C. 'Joan Mirov'* (a cultivar of *C. foliosus*) then *C.*





ABOVE: Flowering manzanitas (*Arctostaphylos* spp.) and currants (*Ribes* spp.) decorate this winter view looking up to the playhouse in February. • RIGHT: Jenny uses large containers to feature her collection of bulbs. *Calochortus amoenus* and *Calochortus uniflorus* share a half-barrel with western flax (*Linum lewisii*).

impressus. *C. papillosus* var. *roweanus* and our local native *C. thyrsiflorus* climb nearly to the top of the garden. Finally, at the top are *C. arboreus* from Catalina Island and *C. cyaneus*. This San Diego County gem is beyond the reach of our irriga-

tion system, as it will not tolerate summer water.

Down just above the waterfall and adjacent fireplace we have featured *Zauschneria* (now *Epilobium*) 'Select Mattole' and *Artemisia californica* 'Canyon Gray' for their won-

derful silver foliage and sea thrift (*Armeria maritima*), for the pink flower balls and bright green mats of grass-like foliage that spread over the rocks. A silver form of *Sedum spathulifolium* and *Dudleya cymosa* inhabit the rocky areas. Above them are summer flowering *Monardella villosa* and creambush (*Holodiscus discolor*).

Near the upper property line are my tall shrubs, such as toyon (*Heteromeles arbutifolia*), western spice bush (*Calycanthus occidentalis*), and *Fremontodendron californica*. A valley oak (*Quercus lobata*) provides partial shade for wood fern (*Dryopteris arguta*) a dry growing fern, and bush anemone (*Carpenteria californica*), a beautiful shrub of glossy green leaves and large white flowers that blooms in late spring.

Edging the upper path is my collection of sages: *Salvia clevelandii* 'Winifred Gilman' with deep blue flowers, *S. leucophylla* with lovely white foliage, *S. 'Dara's Choice'* a low creeping plant, and in the shade is *S. spathacea* with red tubular flowers that are attractive to hummingbirds. These are all far from the house, as the scent from so many sages could be overwhelming on a sunny day.

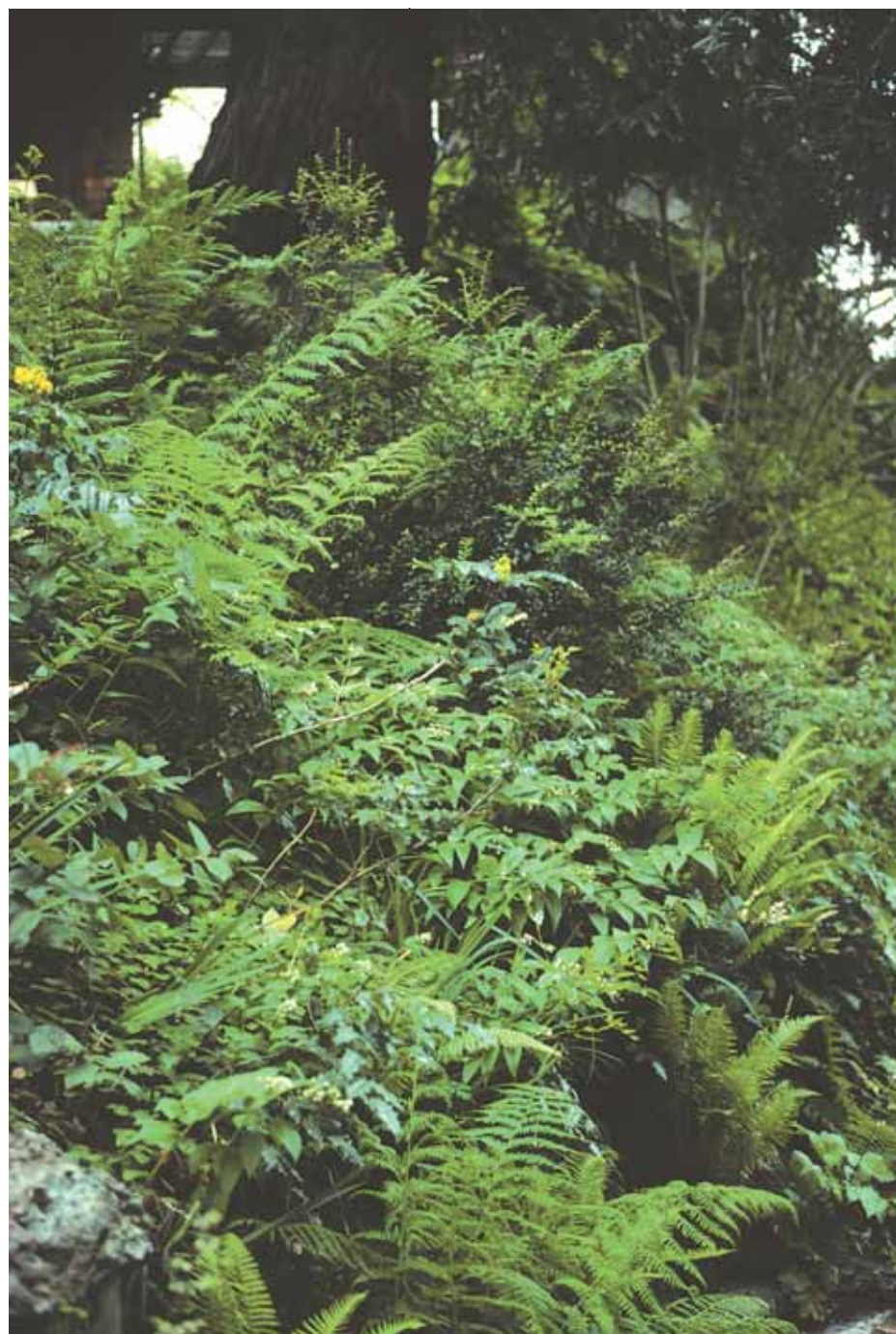
We distributed many native iris



and grasses throughout the slope above the patio for erosion control. Douglas iris and its hybrids have proven ideal for edging paths—both effective and beautiful. Over many years, wherever I have used iris or a clump grass below a rock path, we have not lost soil. Where I neglected to plant one of these, the downhill edge of the rocks has become undercut. The many shades of blue and purple of *Iris* and *Ceanothus* blooming simultaneously with the orange of poppies and gold of fremontia are a glorious sight for several weeks each spring.

In a shady area below one of the upper paths, we have a small planting of mountain misery (*Chamaebatia foliolosa*) covered with pine needles as in its foothill home.

Above the playhouse we have a Berkeley hills plant community. Most of the plants came from local sources. I collected seeds of the pale blue Douglas iris many years ago from Huckleberry Trail in the East Bay Regional Parks. Seeds collected from the same trail gave us madrone (*Arbutus menziesii*), an elegant tree with shiny green leaves and deep red bark. From Claremont Regional Park I collected nuts and grew several hazelnuts (*Corylus cornuta* var. *californica*), now large and produc-



LEFT: The endangered yellow delphinium (*Delphinium luteum*) thrives in a container in the Fleming garden. Jenny has provided seed of this rare species to many gardeners across the state. • ABOVE: The shaded slope along the garden's Shasta Avenue frontage.

ing nuts for my next crop of young plants, which I will give to local native plant sales.

Other local natives used in this community include big leaf maple (*Acer macrophyllum*), coffeeberry (*Rhamnus californica* 'Seaview'), pink flowering currant (*Ribes sanguineum*

var. *glutinsum*), evergreen huckleberry (*Vaccinium ovatum*), cream-bush (*Holodiscus discolor*), and volunteers of the local sticky monkey flower (*Diplacus aurantiacus* [Jepson = *Mimulus aurantiacus*]).

Missing from the garden now are the 13 Monterey pines we planted



LEFT: A lush groundcover of inside-out flower (*Vancouveria hexandra*) abundantly fills a narrow bed under coniferous trees. • RIGHT: The famous concrete cribbing shaded slope along the Fleming driveway is home to numerous native ferns and shade loving perennials.

long ago for privacy, then cut down when we realized they would be much too big for the garden and cast unwanted shade over the chaparral plants. We also removed a ghost pine (*Pinus sabiniana*), a favorite of ours with an open crown of gray needles on the brow of the hill. Sadly, it declined after about 25 years, unable to thrive in heavy clay soil and bay area weather and lacking the summer heat and winter cold of its home in the foothills.

As I continually seek to improve and enhance the garden, I maintain a modest nursery and plant propagation system. I especially enjoy growing perennials and shrubs from seed. This is the only practical way to obtain many natives not found in the nursery trade. I also provide a substantial quantity of plants for the annual sales of our chapter of the California Native Plant Society and the East Bay Regional Park Botanic Garden. Because my fascination with plants surpasses the capacity of my garden, I have filled our deck with

containers of seedlings and larger potted plants, including a significant collection of *Lewisia*—75 at last count.

I grow the *Lewisia* from seeds and later from cuttings of my favorites. I have had great success growing these elegant rock garden plants in clay pots using a very gritty planting mix; they have not done well in our rock gardens.

Although I have flowers in the garden year-round, I can extend the flowering time of some perennials by growing them in half-barrels in the sunny patios. Some fairy lanterns (*Calochortus* spp.) thrive in the same containers.

Although we had installed a manually-controlled sprinkler system for the lower part of the property and the meadow in the early 1970s, we continued hose and sprinkler irrigation up the hill until about ten years ago, when we installed an electronically controlled “drip system”—mostly low-flow spray covering roughly the lower half of the

hill above the living level. The main plantings in this area are perennials and some recently planted groundcovers. The mature plantings, especially the manzanitas, are much healthier, relying on rainfall and fog without additional watering. I use very little fertilizer except in new planting holes and an annual once-over-lightly for the rock garden areas.

Though the story could go on with numerous refinements and details, I think this covers the main points. In closing, I wish to express my thanks to my many CNPS friends who gave me tidbits from their gardens, and appreciation for my early days as co-chair of several CNPS plant sales for the exposure to a wondrous variety of plants, and for friends who shared their knowledge and experiences with me.

Contact the author through Bart O'Brien, Rancho Santa Ana Botanic Garden, 1500 N. College Avenue, Claremont, CA 91711. bart.obrien@cgu.edu



CLOCKWISE FROM TOP LEFT: Canyon lupine (*Lupinus latifolius*). • Golden yarrow (*Eriophyllum confertiflorum*). • California poppy (*Eschscholzia californica*). • Scarlet coyote mint (*Monardella macrantha*).

2005 SPRING BLOOM AT CUYAMACA RANCHO STATE PARK

by Phillip Roullard

Wildflowers, growing from seeds long dormant in the soil at Cuyamaca Rancho State Park (San Diego County), bloomed in a spectacular array of colors during the spring of 2005. The bloom was the result of the combination of a large amount of rain, warmth, soil conditions, and possibly the removal of shade from some areas. Oddly enough, many people stayed away from Cuyamaca Rancho State Park because of the false impression that it was completely burned over leaving nothing but

black dead trees and scorched earth. My wife and I found the exact



opposite of what many thought was a devastated landscape. Many gently rolling hills along the trails we hiked were covered with lupines. Mariposa lilies waved in the breeze and the delicate but beautiful *Calochortus albus* or fairy lantern could be found in the shadier parts of the trail.

After living in San Diego since 1960, I had never seen such a variety of wildflowers growing in Cuyamaca Rancho State Park.

Phillip Roullard Photography, 8529 Jackie Drive, San Diego, CA 92119-1936, (619) 698-9512. p.roullard@sbcglobal.net



LEFT, TOP TO BOTTOM: Canyon lupine (*Lupinus latifolius*). • Bush poppy (*Dendromecon rigida*). • Scarlet bugler (*Penstemon centranthifolius*) and golden yarrow (*Eriophyllum confertiflorum*). • ABOVE: Cuyamaca wildflower rainbow. • RIGHT: White globe lily (*Calochortus albus*) with Indian paintbrush (*Castilleja* sp.). • FAR RIGHT: Splendid mariposa lily (*Calochortus splendens*). • BELOW: Cuyamaca wildflower field. • BELOW RIGHT: Golden stars (*Bloomeria crocea*).



DECONSTRUCTING HERBARIUM SPECIMEN CITATIONS

The Daniel & Fontaine article in this issue of *Fremontia* contains herbarium specimen citations. In the past, this typically has not been done in our journal, so a brief explanation is hereby provided: Many botanical papers list herbarium (pressed plants) specimens as vouchers (reference collections) of their work. This is done so that future investigators have ready access to the original information.

Depending upon the actual specimen, herbarium specimens may be referenced several different ways:

(Smith 235 UC)

This means that the specimen was collected by Smith, that it is the 235th specimen he collected and recorded in his field record book, and it is a University of California Herbarium specimen that is housed in the combined University of California, Berkeley/Jepson Herbarium.

(Jett and Jones 10231 POM)

This means that the specimen was collected by Jett and Jones, that the number is Jett's and is recorded in her field record book, and that it is a Pomona College herbarium specimen that is housed in the combined Rancho Santa Ana Botanic Garden–Pomona College Herbarium.

(Smith s.n. CAS)

This means that the specimen was collected by Smith and that it has no collection number (s.n. is the abbreviation for *sin numero* which is Latin for “without number”) and that the specimen is housed in the herbarium at the California Academy of Sciences. In most cases it is likely that a specimen citation of this type would include more information—such as the date of the collection or the herbarium's accession number for the specimen.

Note that in the Daniel & Fontaine article, the specimen citations do not include the herbarium acronym, as they write early on that all the specimens referenced in their paper are at the California Academy of Sciences (CAS) unless otherwise stated.

Generally, botanists' collections use ever increasing numbers and a very large number does mean that botanist has collected a large number of herbarium specimens. Note too that when a collector collects duplicate specimens of the same plant at the same location on the same day all those specimens will usually share the same field collection number. (Exceptions would include collections that were done to document variation within the collected population.)

There is an on-line reference, Index Herbariorum, of all the recognized herbaria of the world (accessed at: <http://sciweb.nybg.org/science2/IndexHerbariorum.asp>). Each herbarium is assigned a unique acronym. This standard is recognized as the scientific standard for the world. Therefore, it is a matter of scientific shorthand to list CAS/DS instead of spelling out the combined herbaria of the California Academy of Sciences (CAS) and Stanford University's Dudley Herbarium (DS); UC/JEPS for the combined University of California (UC) and Jepson Herbarium (JEPS); and RSA-POM for the combined Rancho Santa Ana Botanic Garden (RSA) and Pomona College Herbarium (POM). Even though a specimen may be housed in a combined herbarium, it is always referenced to a single collection. It is a simply a matter of happenstance that California's three largest herbaria have conjoined acronyms—most of the world's herbaria are not hyphenated. This information is also published in book form (the 8th edition, published by the New York Botanical Garden Press, was printed in 1990).

WHY HERBARIUM SPECIMENS?

Herbarium specimens are reference museum specimens for the ages. A properly stored and maintained specimen can last nearly forever—there are many herbarium specimens that are 300 to 400 years old that are actively in use. Due to the changing nature of species concepts and circumscriptions it is critically important to have a physical specimen that can be thoroughly examined, interpreted, and reinterpreted.

THE CONSORTIUM OF CALIFORNIA HERBARIA

Researchers and interested botanists may like to know of a new on-line database that provides information on California collections from California herbaria (currently data is provided from 12 institutions). This new freely available information may be accessed at: <http://ucjeps.berkeley.edu/consortium/about.html>. This is a work in progress as most of these collections are not yet fully databased. The consortium data is updated regularly and promises to be the best single source of information on the holdings of most of California's major herbarium collections.

—Bart O'Brien

TEN BOOKS BRIEFLY

The following new books have recently been published and are likely of interest to our readers. Full book reviews of some of these volumes may follow at a later date.

Monocots, Comparative Biology and Evolution, Excluding Poales.

J.T. Columbus, E.A. Friar, J.M. Porter, L.M. Prince, and M.G. Simpson (eds.) 2006. x, 735 pages. This is also volume 22 of the journal *Aliso*. Rancho Santa Ana Botanic Garden, Claremont, CA. \$99.95 hardcover.

This is the first of two volumes covering the proceedings of the Third International Conference on the Comparative Biology of the Monocotyledons and the Fourth International

Symposium on Grass Systematics and Evolution hosted by Rancho Santa Ana Botanic Garden in 2003. This volume contains 50 scientific papers on many topics. Of particular interest to California native plant enthusiasts are two papers concerning *Trillium* (one on the family Trilliaceae proposes that *T. rivale* should be placed in a new genus, *Pseudotrillium*; the other on population demography and herbivory and their implications for conservation), and a paper on pollination biology and adaptive radiation in the Agavaceae. The second volume, **Monocots: Comparative Biology and Evolution—Poales** is due to be published soon.

Guide to Native and Invasive Streamside Plants, Restoring Riparian Habitats in Ventura County & along the

Santa Clara River in Los Angeles County.

County of Ventura, Planning Division. Telephone: (805) 654-2466

2006. iv, 84 pages.

Available as a free download (20.3 MB) from: <http://www.santaclarariverparkway.org/wkb/scrbiblio/vcpd2006> or: http://www.vcwatershed.org/Watersheds_SantaClara.html

This handy guide provides an excellent introduction to some of the most commonly encountered plants along these two watercourses in Southern California. There is more to this short volume than one might expect.

Field Guide to the Beetles of California. (California Natural History Guides #88).

Arthur V. Evans and James N. Hogue.

The Manzanitas of California: Also of Mexico and the World

Philip V. Wells, Department of Botany, University of Kansas

ISBN: 0-933994-22-2 LIBRARY OF CONGRESS CATALOG NO. 00-130148

Published in 2000, this book is 151 pages long and contains 150 illustrations.

This is a limited edition book – only 500 copies were printed.

BOOK PRICE: \$55.00

SHIPPING AND HANDLING (MEDIA MAIL): \$5.00

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4638 Bluebird Lane
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BOOK DESCRIPTION:

The book is based on more than forty years of original taxonomic study of *Arctostaphylos* by the late Philip V. Wells, Professor Emeritus of Ecology and Evolutionary Biology at the University of Kansas in Lawrence, Kansas, at the time of his death in 2004. His lifelong interest in manzanitas started in the late 1950s while working at the University of California in Santa Barbara and culminated in this book, the most up-to-date and complete treatise of the genus. Of the 150 illustrations, 146 are published for the first time, including digital scans of the nascent inflorescences and digital scans of SEMs of the endocarps of all 61 species of manzanitas, a truly ground-breaking work. The attractive 8.5 x 11 inches hardcover book is bound with red Kivar 7 and has gold lettering. The availability of the book is finite, as more than two-thirds of the limited edition of 500 copies have already been sold.





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\$60.00 cloth, \$24.95 paper

2006. xiv, 334 pages.

University of California Press, Berkeley, Los Angeles, London.

\$65.00 hardcover, \$24.95 soft cover.

A welcome in-depth treatment of the beetles of our state by the authors of *Introduction to California Beetles*. This volume covers 569 species in 56 families, and includes California's sensitive, threatened, and endangered species.

Native Plants, Torrey Pines State Reserve & nearby San Diego County Locations.

Margaret L. Fillius

2005. xii, 257.

Fillius Interests, 6737 Welmer Street, San Diego, CA.

\$32.95 soft cover, spiral bound.

This nicely produced field guide has numerous digital photographs and scans of 232 plants of western San Diego County. Each plant is presented on a single page with detailed images of leaves, fruits, flowers, and the entire plant. Specimens have been gathered from coastal sage scrub, chaparral, ri-

parian, and salt marsh habitats. Text is presented in a standard format that is clear and concise.

Care & Maintenance of Southern California Native Plant Gardens—Cuidado y mantenimiento de jardines de plantas nativas del sur de California.

Bart O'Brien, Betsey Landis, Ellen Mackey

2006. viii, 238 pages.

Metropolitan Water District of Southern California, Los Angeles, CA.

Available from: California Native Plant Society chapters, Rancho Santa Ana Botanic Garden, and Theodore Payne Foundation for Wild Flowers and Native Plants.

\$29.95 soft cover, spiral bound.

The text of this new book is in both Spanish and English on facing pages to facilitate communication between gardeners and homeowners. Though written by experts from and for Southern California, native plant gardeners throughout the state will find much of interest here.

Plants of San Luis Obispo, Their Lives and Stories.

Matt Ritter.

2006. viii, 159 pages.

Kendall/Hunt Publishing Company, 4050 Westmark Drive, Dubuque, Iowa 52002.

\$35.95 soft cover.

The flora of San Luis Obispo County is beautifully portrayed in this new book. This talented author and photographer includes both images and descriptions of 206 plants that are presented in six chapters: coastal scrub & chaparral, oak woodland & riparian, sand dunes, grasslands & wildflowers, salt & freshwater marsh, and weeds.

Introduction to the Plant Life of Southern California, Coast to Foot-hills. (California Natural History Guides #85)

Philip W. Rundel and Robert Gustafson
2005. x, 316 pages.

University of California Press, Berkeley, Los Angeles, London.

\$50.00 hardcover, \$18.95 soft cover.

Rundel and Gustafson have provided an indispensable volume for new students of the Southern California flora. This book does an admirable job of presenting the ecological context for the major plants and plant communities of cismontane Southern California from the border with Mexico through Santa Barbara County. The photographs are sharp and the text is well written. Although this book is written as an introduction to the region, even those long familiar with these plants will undoubtedly learn new things. Concluding chapters cover conservation issues and an all too short listing of where to see the major plant communities of the area.

Wild Plants of the Sierra Nevada.

Ray S. Vizgirdas and Edna M. Rey-Vizgirdas

2006. xiv, 321 pages.

University of Nevada Press, Reno, NV. \$45.00 hardcover.

This book presents a compelling amount of resources about the plants found in the Sierra Nevada. Much of the text is focused on providing the reader with ethnobotanic information. The text is clearly written, but the majority of it is organized alphabetically by common names which I found problematic as there are so many dif-

ferent common names for our native plants. Scientific names are provided for all the plants, so I was able to find everything I wanted to locate by frequently referring to the detailed index.

2 NEW EDITIONS OF INDISPENSABLE CLASSICS

An Illustrated Field Key to the Flowering Plants of Monterey County and Ferns, Fern Allies, and Conifers. Version 1.1

Mary Ann Matthews

2006. xvii, 394 pages.

Monterey Bay Chapter, California Native Plant Society, c/o Carol LeNeve, PO Box 1012, Carmel, CA 93921.

\$31.00 soft cover, spiral bound. (This price includes tax and shipping to West Coast addresses.)

After originally submitting the book for publication ten years ago, and being out of print for the past three years, it is indeed a pleasure to report that Mary Ann (Corky) Matthews has issued an updated version of this vital treatment of the plants of Monterey County. In the preface to this new edition, she states, "this hybrid between a reprint and a new edition is whimsically called Version 1.1,

suggesting that 10 per cent or less is actually new (but it's a significant 10 per cent!)." The binding for this edition allows the book to lay flat when opened. Kudos to the author and the Monterey Bay Chapter for keeping this valuable reference both up-to-date and in print.

Hardy Californians, A Woman's Life with Native Plants.

Lester Rowntree.

2006. lxxxii, 308 pages.

University of California Press, Berkeley, Los Angeles, London.

\$19.95 soft cover.

This classic, must-have volume by one of California's iconic horticulturists (and CNPS's Honorary President until her death in 1979) is rejuvenated by the inclusion of significant new information contributed by five authors:

A new preface by Lester B. Rowntree. A biographical sketch of Lester Rowntree by Lester B. Rowntree and Rowan A. Rowntree (her grandchildren). Lester Rowntree's Horticultural Legacy by Judith Larner Lowry. An updated list of all the plant names in the book by Allison R. Green. A bibliography of over 700 known publications of Lester Rowntree's by Rosemary Foster.

—Editor

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CONTRIBUTING PHOTOGRAPHERS

Thomas F. Daniel is a curator in the Department of Botany at the California Academy of Sciences.

Deborah Hillyard is a conservation planner with the California Department of Fish and Game where she primarily works on large-scale projects for the central coast. She also serves on the CNPS Vegetation Committee.

Marie Fontaine now lives in Montréal, Canada, where she studies the flora of Québec. Previously, she worked on the flora of San Francisco.

Todd Keeler-Wolf is the Senior Biologist for Vegetation Classification and Mapping with the California Department of Fish and Game and is the Director of the CNPS Vegetation Program.

Bart O'Brien is editor of *Fremontia* and Senior Staff Research Associate at Rancho Santa Ana Botanic Garden in Claremont. He is coauthor of two recent books focused on native plant horticulture.

Phillip Roullard is a part-time professional photographer who markets his work to many publications through his agency, Zuma Press, in Laguna Beach. One of his most important projects was documenting the recent transplanting of the only known U.S. population of the endangered palo blanco (*Ornithostaphylos oppositifolia*) from the international border between California and Mexico.

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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FROM THE EDITOR

The appearance of the new growth and flowers on chaparral currant and Refugio manzanita mark the beginning of autumn in California. It is the ideal time to plant and tend your native garden or to curl up for an evening read of *Fremontia*.

This issue addresses the breadth of plant interests found in our readership: botany, rare and endangered species, vegetation, conservation, horticulture, and the sheer beauty of our native flora.

Our first article delves into the evolving content of the flora of the City and County of San Francisco. Authors Daniel and Fontaine share their depth of knowledge of this unique part of California.

This issue also includes the fourth

and concluding article of the vegetation series brought together by the Vegetation Program's Julie Evans and Todd Keeler-Wolf: Keith Wagner's instructive piece on using CEQA as a mechanism to protect assemblages of California native plants.

The conclusion of the three-part series on Scott and Jenny Fleming's amazing garden in the Berkeley Hills provides a stellar example of what beauty one may create with an exclusively native plant palette.

The lively nature of California's wildflowers is undeniable. Phillip Roullard's compelling images capture this fleeting whimsy at Cuyamaca Rancho State Park in San Diego County after the devastating fires of 2003.

In closing this, my inaugural issue as editor of *Fremontia*, I would be greatly remiss not to acknowledge the skills and abilities of my predecessors in this endeavor: Linda Ann Vorobik (2000-2006), Diane Renshaw (2000), Phyllis Faber (1983-1999), Margedant Hayakawa (1974-1983), and Gunder Hefta (1973). They have facilitated and provided CNPS members with an unrivaled bounty of information and inspiration on California's flora. I would like to particularly thank Linda Ann Vorobik for making this editorial transition as smooth as possible, and for her continuing assistance: Linda is now a member of the *Fremontia* Editorial Advisory Board.

Bart O'Brien

CONTRIBUTORS

Thomas F. Daniel is a curator in the Department of Botany at the California Academy of Sciences. He is working on a new flora of San Francisco County.

Jenny S. Fleming is one of the founding members, and a long time Fellow of the California Native Plant Society. Throughout her long horticultural career, and as an extraordinary volunteer on behalf of our native flora, Jenny and her garden have provided inspiration and plants to innumerable gardening enthusiasts. The garden that she and her husband Scott (also a CNPS Fellow) created is legendary.

Marie Fontaine worked as a botanist at the Presidio Native Plant Nursery in San Francisco from 2001 to 2003. She now lives in Montréal, Canada where she studies the Québec flora.

Phillip Roullard is currently working on a field guide to the invasive plants of San Diego County. This past spring, he and his wife, Callie Mack, won the Best California Native Garden in the City of San Diego water districts' third annual California Friendly Landscape Contest. His photographic work has appeared in many publications, including *Ranger Rick*.

Keith G. Wagner is an attorney with the Law Office of J. William Yeates, and whose practice focuses primarily on representing environmental organizations, including CNPS, in land use and CEQA litigation. Keith also serves as the current chair of the CNPS Litigation Committee.



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