

A PETITION TO THE STATE OF CALIFORNIA
FISH AND GAME COMMISSION

For action pursuant to Section 670.1, Title 14, California Code of Regulations (CCR) and Sections 2072 and 2073 of the Fish and Game Code relating to listing and delisting endangered and threatened species of plants and animals.

I. SPECIES BEING PETITIONED:

Common Name: The CEDARS wild buckwheat
Scientific Name: ERIOGONUM CEDRORUM

RECEIVED
CALIFORNIA
FISH AND GAME
COMMISSION
2010 DEC 28 PM 2:31

II. RECOMMENDED ACTION (Check appropriate categories):

a. List

b. Change Status

As Endangered
As Threatened

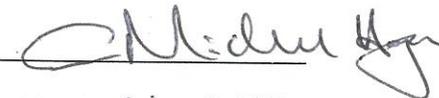
from NONE
to ENDANGERED

Or Delist

III. AUTHOR OF PETITION:

Name: C. MICHAEL HOGAN PH.D. CONSERVATION CHAIRMAN, CALIFORNIA NATIVE PLANT SOCIETY, MILWAUKEE CHAPTER
Address: P.O. Box 1118, KENWOOD CA 95452
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I hereby certify that, to the best of my knowledge, all statements made in this petition are true and complete.

Signature: 

Date: DEC 21, 2010

1. *Eriogonum cedrorum* - The Cedars wild buckwheat

Scientific Information

(Pursuant to Department of Fish and Game Code, Section 2073.5)

(1.) POPULATION TRENDS

The population appears stable over thirty years (R. Raiche, 2010, per. comm.). This is a qualitative assessment.

(2.) RANGE AND DISTRIBUTION

Rare endemic plant found only in an area known as The Cedars, Sonoma County, California. The total area of The Cedars is about 7,000 acres (Raiche, 2009) but the plants occur on less than 500 acres restricted in three limited areas (Raiche, 2009).

The plant is distributed in The Cedars, Sonoma County, California but only in the areas with serpentine talus slopes and rock crevices at 1000 – 1800 ft. elevation (Reveal and Raiche, 2009). The Cedars wild buckwheat population is restricted in three limited areas (Reveal and Raiche, 2009) within less than 500 acres of The Cedars, Sonoma County, California (Raiche, 2009).

(3.) ABUNDANCE

There are about 3,000 – 4,000 plants in existence (Reveal and Raiche, 2009). The Cedars wild buckwheat population is restricted to three limited areas (Reveal and Raiche 2009) within the The Cedars, Sonoma County, California.

(4.) LIFE HISTORY (SPECIES DESCRIPTION, BIOLOGY, AND ECOLOGY)

There is little known on the life history of this recently described rare species. The plant is a perennial. The bloom period is June – September (Reveal and Raiche, 2009). Seed production can occur from late July through mid-September (R. Raiche, 2010, per. comm.). See appendices A and B for detailed information.

(5.) KIND OF HABITAT NECESSARY FOR SURVIVAL

This is an extremely rare and endemic plant species associated with a unique and rare geological feature. Even within The Cedars, and even considering only those areas with large talus slopes, it occupies only a fraction of this habitat. This area itself contains a distinctive associated botanical community. The Cedars wild buckwheat occupies within an area less than 500 acres (Reveal and Raiche, 2009).

(6.) FACTORS AFFECTING THE ABILITY TO SURVIVE AND REPRODUCE

Unknown. However open rock and talus with little competition from other plants is characteristic of most of its habitat.

(7.) DEGREE AND IMMEDIACY OF THREAT

1. The threat of mining. The Cedars has been of considerable interest to miners. Back in the late 19th century both chromite (FeCr₂O₄) and magnesite (MgCO₃) were discovered in the area and a number of mines exploited these deposits until after World War II. This ore is considered on site and future mining could resume (Raiche, 2009). Nickel is also documented at The Cedars but, as of yet, the nickel has not been mined (R. Raiche, 2010, per comm.).

About 75% of The Cedars wild buckwheat occurrences are on Bureau of Lands Management (BLM) property. BLM permits mining. There are federally administered lands in 19 states which includes California where a party may lay stake to a mining claim site on BLM land.

(See <http://www.theprospector.com/html/howtostakeclaims.html>)

2. The Cedars wild buckwheat is not federally listed under the Federal Endangered Species Act. THEREFORE, the plant is not afforded protection under the Federal Endangered Species Act (or FESA) on federal BLM land. LIKEWISE, the California Endangered Species Act (CESA) is not enforceable on federal albeit BLM land. However, a CESA plant listing would bring attention to BLM that there is a California CESA-listed rare and sensitive plant on BLM property and future BLM management actions, such as mining, could be implemented hopefully in such a way so as to avoid impacts to areas occupied by The Cedars wild buckwheat.

The United States Fish and Wildlife Service (FWS) is not preparing a Federal Endangered Species Act listing package for The Cedars wild buckwheat as of the date of this petition submittal.(C. Nagano, FWS, 2010, per. comm.).

3. The threat of grading. As previously stated the majority being about 75% of The Cedars wild buckwheat occurrences are on federal BLM land. The remaining about 25% occurrences are on four private land owner properties. One of these land owners has recently this year, 2010, conducted grading activities (R. Raiche, 2010, per. comm.).

4. Feral pigs have damaged some of the talus slopes where the The Cedars wild buckwheat occurs. In the last decade pigs have become increasingly abundant and have taken up residence within the canyons causing serious ecological damage (R. Raiche, 2010, per. comm.).

5. There is a previous history of illegal marijuana growing/harvesting in the area (R. Raiche, 2010, per. comm.).

6. The threat of wind turbine or solar panel projects. In California on some BLM lands there are wind turbine and solar panel projects that are now implemented or are being proposed.

www.blm.gov/ca/st/en/prog/energy/wind

www.blm.gov/ca/st/en/prog/energy/solar

(8. and 9.) IMPACT OF EXISTING MANAGEMENT EFFORTS and SUGGESTIONS FOR FUTURE MANAGEMENT

1. A State CESA listing would bring attention to BLM that the State of California has intent to

conserve the The Cedars wild buckwheat. DFG by acting to list the plant would legitimately inform BLM of the rare and sensitive Cedars wild buckwheat on BLM land.

This is important because BLM uses the term “Special Status Plants” to include only State-listed Species in its management operations. As example, Nationwide Bureau policy on the management of special status species is given in BLM Manual 6840. The policy and guidelines for management of special status plants in California is given in California BLM Manual Supplement 6840.06 and manual Handbook H-6840-1.

Unfortunately, BLM is currently not managing The Cedars wild buckwheat.

2. Advocate genetic studies. Roger Raiche has recently made The Cedars wild buckwheat seed deposits into the Rancho Santa Ana Botanical Garden seed conservation program.

3. Initiate autecological studies to better understand The Cedars wild buckwheat life history, survival, and reproduction.

4. Survey for more plant locations in The Cedars.

5. A Cedars wild buckwheat CESA listing should bring attention to putting this rare geological feature and its associated rare plant community into some land conservation effort. Also, The Cedars serves as the headwaters of Austin Creek which is a tributary of the lower Russian River. The lower reaches of Austin Creek (outside of The Cedars area) provide habitat for state and federally endangered California freshwater shrimp and spawning habitat for the federally threatened steelhead.

The California Department of Fish and Game (DFG) has an interest in protecting the unique and rare geological as well as rare and unique botanical habitat in The Cedars area in Sonoma County through either fee title or conservation easements. (Liam Davis, DFG. 2010, per. comm.).

6. BLM and DFG should coordinate to assess and implement depredation on the wild pig population at The Cedars.

7. With The Cedars wild buckwheat CESA listing, DFG could coordinate with BLM for wind turbine and/or solar panel projects that provide avoidance and/or minimization of impacts to the plant. BLM uses the term “Special Status Plants” to include only State-listed Species in its management operations. As an example, the Nationwide Bureau policy on the management of special status species is given in BLM Manual 6840. The policy and guidelines for management of special status plants in California is set forth in the California BLM Manual Supplement 6840.06 and manual Handbook H-6840-1.

(10.) AVAILIBLTY AND SOURCES OF INFORMATION

1. Raiche, R. April 2009. The Cedars: Sonoma County’s Hidden Treasure. Fremontia. Vol. 37:2. 3 – 15. [in APPENDIX B]

2. Reveal, J.L. and R. Raiche. 2009. *Eriogonum cedrorum* (Polygonacea: Eriogonoideae), a new species from northwestern California. J. Bot. Res. Inst. Texas 3(2): 479 – 483. [in APPENDIX A]

(11.) DETAILED DISTRIBUTION MAP

For a detailed distribution map see APPENDIX A on page 482 (Reveal and Raiche, 2009).

ERIOGONUM CEDRORUM (POLYGONACEAE: ERIOGONOIDEAE),
A NEW SPECIES FROM NORTHWESTERN CALIFORNIA

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ABSTRACT

Eriogonum cedrorum of the subg. *Oligogonum* is proposed and illustrated for a localized endemic confined to The Cedars area of Sonoma Co., California. The new species, allied to *E. nervulosum*, differs from that species in having bright yellow flowers that are on shorter stipes but associated with longer involucre.

RESUMEN

Se propone y se ilustra *Eriogonum cedrorum* del subg. *Oligogonum* para un endemismo confinado al área de The Cedars del condado de Sonoma, California. La nueva especie, emparentada con *E. nervulosum*, difiere de esta última por tener flores amarillo brillante que están en estipes más cortas pero asociadas con involucros más largos.

The Cedars wild buckwheat, *Eriogonum cedrorum*, has been known to botanists since first collected by Freedom W. Hoffman (1880–1959) in 1947. In the mid 1980s Raiche made additional collections, which Reveal mistakenly assigned to *E. nervulosum* (S. Stokes) Reveal, leading to confusion in the description of that species (e.g., Reveal 2005). An opportunity to study the two species in the field in late July of 2009 showed that the two were not the same and The Cedars plant is now described formally.

Eriogonum cedrorum Reveal & Raiche, sp. nov. (**Figs. 1–2**). TYPE: UNITED STATES. CALIFORNIA: SONOMA Co.: The Cedars, Central Canyon area NE of Layton Mine and S of the "upper mine" on steep, gravelly, serpentine, N-facing slopes at 410 m elev., 38°37'16"N, 123°07'37"W, T9N, R12W, sec. 13SENE, 28 Jul 2009, J.L. Reveal & R. Raiche 8989 (HOLOTYPE: NY; ISOTYPES: BH, BM, BRY, CAS, GH, LL, MO, OSC, RM, RSA, TEX, UC, US, UTC).

A *Eriogonum nervulosum* floribus flavis (nec albis), involucre longioribus (4–6.5 mm nec 3–4 mm) et stipitibus brevioribus (0.1–0.3 mm nec 0.5–0.8 mm) differt.

Plants low spreading synoecious herbaceous perennials, 1–4(–10) dm long, 1–3(–5) dm across, composed of loosely arranged rosettes of tufted leaves at tips of slender, woody caudex branches arising from a stout woody taproot. **Leaves** tightly arranged in small, more or less well defined basal rosettes; petiole 0.3–0.8(–1.1) cm long, densely tannish-white tomentose, arising from a narrowly elongate triangular petiole base, 2–3.5 mm long, 1.5–2 mm wide, tomentose and minutely villous abaxially, glabrous and tannish adaxially; blade broadly elliptic to ovate, 0.7–1.5 cm long, 0.4–1 cm wide, tannish-white lanate abaxially, thinly tomentose to glabrate or glabrous and greenish to light olive-green adaxially especially with age, with a broadly obtuse to rounded base not tapering to the petiole, an entire, plane margin, and a mostly obtuse to broadly obtuse apex; midvein slightly raised, obscured by tomentum. **Aerial flowering stems** erect to slightly spreading, 2–8 cm long, villous, bractless. **Inflorescences** compound umbellate, slightly open, mostly 1–2 cm long, 1–3 cm across; branches villous, grayish to greenish white, not drying blackish; bracts 4–6 at base of inflorescence, spreading, sessile or nearly so with elliptic blades, 4–10 mm long, (1.5–)2–4 mm wide, usually white tomentose abaxially, thinly tomentose and slightly greenish adaxially; centrally positioned peduncle 5–10 mm long, villous; lateral branches 3–8 mm long, these terminated by a whorl of 4–6 linear to narrowly oblanceolate bracts, 2–8 mm long, 0.7–1.2 mm wide; peduncles atop lateral branches 2–5(–7)

mm long, villous. **Involucres** solitary, broadly turbinate, 4–6.5 mm long, 3.5–5.5(–6) mm wide, densely villous abaxially, glabrous adaxially; teeth 6–8, erect, acute (when long) to obtuse or even rounded apically, 0.3–0.6(–1) mm long **Pedicels** erect to slightly curved with age, 4–6.5 mm long, glabrous; bractlets linear, 4–6(–6.5) mm long, densely villous. **Flowers** bright yellow at early anthesis, rapidly becoming fused with red and ultimately red to reddish maroon with an undertone of yellow, 2–3 mm long when yellow becoming 4.5–6 mm at maturity on a 0.1–0.3 mm long stipe, glabrous; tepals monomorphic, obovate; stamens slightly exerted, with 2–4 mm long, slightly pilose basally filaments, and oval, yellow, 0.4–0.6 mm long anthers; pistil with styles 1–1.3(–1.5) mm long. **Achenes** light yellowish brown, narrowly trigonous, 4.5–6 mm long, glabrous; embryo straight.

Distribution.—Known only from serpentine talus slopes and rock crevices at The Cedars, 1200–1800 ft elev, Sonoma Co., California (Fig. 3). Jun–Sep.

Additional collections examined: **U.S.A. CALIFORNIA. Sonoma Co.:** Layton Mine, Austin Creek, 29 Sep 1947, *Hoffman 507* (CAS, RSA, UC, UTC); on King Ridge Road near Red Slide, E of Austin Creek, The Cedars, 550 m elev., 23 Jun 1984, *Raiche 43234* (CAS); near Layton Mine N of Cazadero, The Cedars, 370 m elev., 10 Aug 1985, *Raiche 50716* (CAS).

Eriogonum cedrorum (from the Latin *cedrorus*, of cedars) is a member of subg. *Oligogonum* Nutt., a taxon typified by *E. umbellatum* Torr., that presently is composed of some 35 species of subshrubs and herbaceous perennials that occur from Alaska to central Mexico, and from Virginia and West Virginia to the Pacific Coast. The new species belongs to a subgroup characterized by an involucre with erect teeth and smallish leaves arranged into rosettes that result in low, spreading mats. Therefore, within the subfamily The Cedars wild buckwheat may be quickly distinguished by a whorl of bracts immediately below the inflorescence, glabrous flowers on short stipes that are initially yellow but rapidly change to a red or reddish-maroon, a synoecious habit, villous involucres, and leaf-blades that are lanate abaxially. Based on the yellow flower color, *E. cedrorum* is allied to *E. ternatum*, but that species differs in its compact mat of densely arranged rosettes of leaves terminated by long (10–30 cm long) flowering stems that bear an umbellate inflorescence with sulphur-yellow flowers that remain distinctly yellow even at maturity. *Eriogonum cedrorum* differs from the more closely allied *E. nervulosum* of nearby Colusa, Glenn, and Lake counties, California, by its yellow (not white) flowers, and while both quickly become reddish, the yellow and white undertone is retained in each species. Both of these species occur on serpentine but *E. nervulosum* tends to be more compact than *E. cedrorum*. Both species have relatively short aerial flowering stems and similar leaves, but they differ in lengths of their involucres (4–6.5 mm in *E. cedrorum* versus 3–4 mm in *E. nervulosum*) and in the length of their stipes (0.1–0.3 mm versus 0.5–0.8 mm, respectively). Also individual plants of *E. cedrorum* tend to be larger than those of *E. nervulosum*, but this may be the result of the loose talus slopes where *E. cedrorum* is found rather than any significant genetically-fixed morphological difference. Both species differ from *E. ternatum* in having compound umbellate inflorescences (Fig. 2), with that of *E. cedrorum* more open (and thus more obviously branched) than that of *E. nervulosum*, which often appears to be subumbellate.

The Cedars wild buckwheat joins a small number of other relatively restricted species found within the more or less 7000 acres that defines The Cedars. This area is an isolated block of ultramafic mantle rock (Harzburgite), and its derived soils, which is only nine air miles from the moist, fog-dominated coastal climate influenced by the Pacific Ocean; nonetheless, the area is dominated by a hot dry summer more typical of the interior California climates well to the east. Six other plant species are endemic here: *Arctostaphylos bakeri* Eastw. ssp. *sublaevis* P.V. Wells, *Calochortus raichei* Farwig & Girard, *Epipactis gigantea* Douglas ex Hook. f. *rubrifolia* P.M. Br., *Erigeron serpentinus* G.L. Nesom, *Streptanthus glandulosus* Hook. ssp. *hoffmanii* (Kruckeb.) M. Mayer & D.W. Taylor, and *S. morrisonii* F.W. Hoffm. ssp. *hirtiflorus* F.W. Hoffm. In addition we are aware of an undescribed *Holodiscus* taxon.

While The Cedars terrain is dominated by Sargent cypress woodland (*Hesperocyparis sargentii* (Jeps.) Bartel) and chaparral, the extremely steep canyon slopes are mostly open rock and talus forming extensive serpentine barrens. This open rock and talus is the only place that *Eriogonum cedrorum* grows, and only a small portion of this habitat seems suitable for this wild buckwheat. The majority of plants grow in loose gravelly



FIG. 1. *Eriogonum cedrorum*, habit.

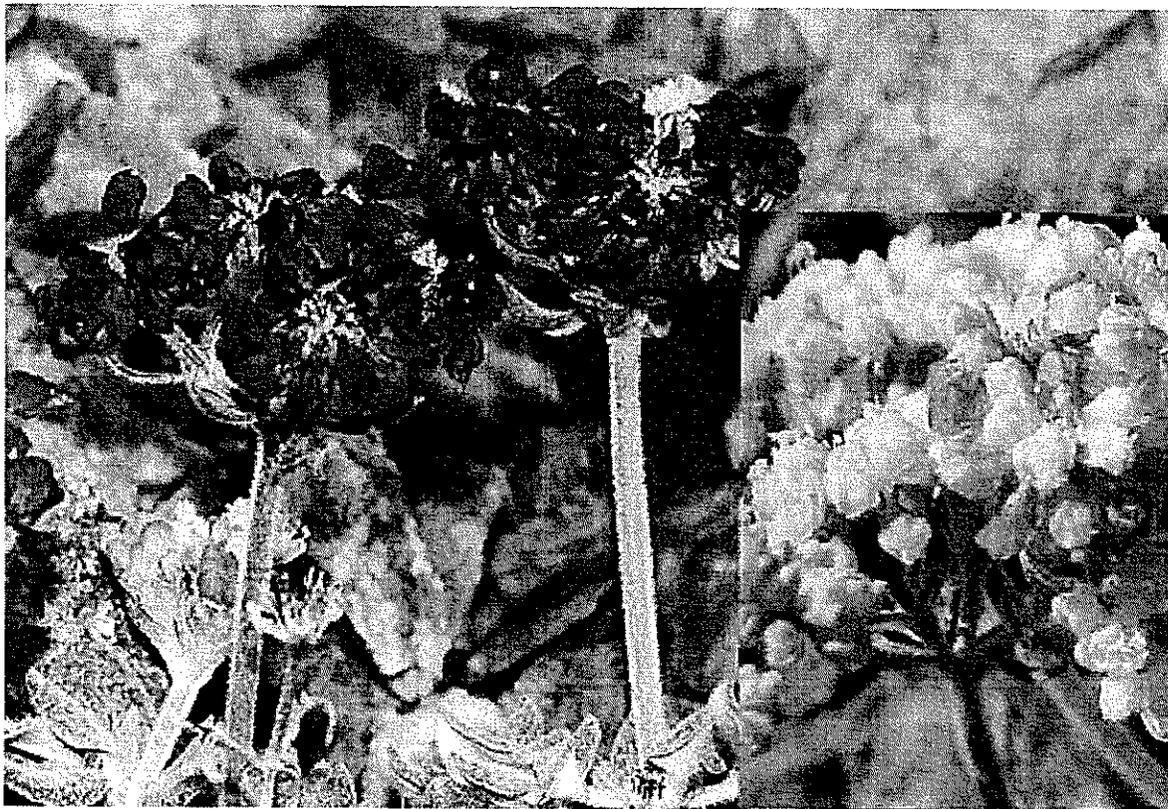


FIG. 2. *Eriogonum cedrorum*, details of inflorescences.

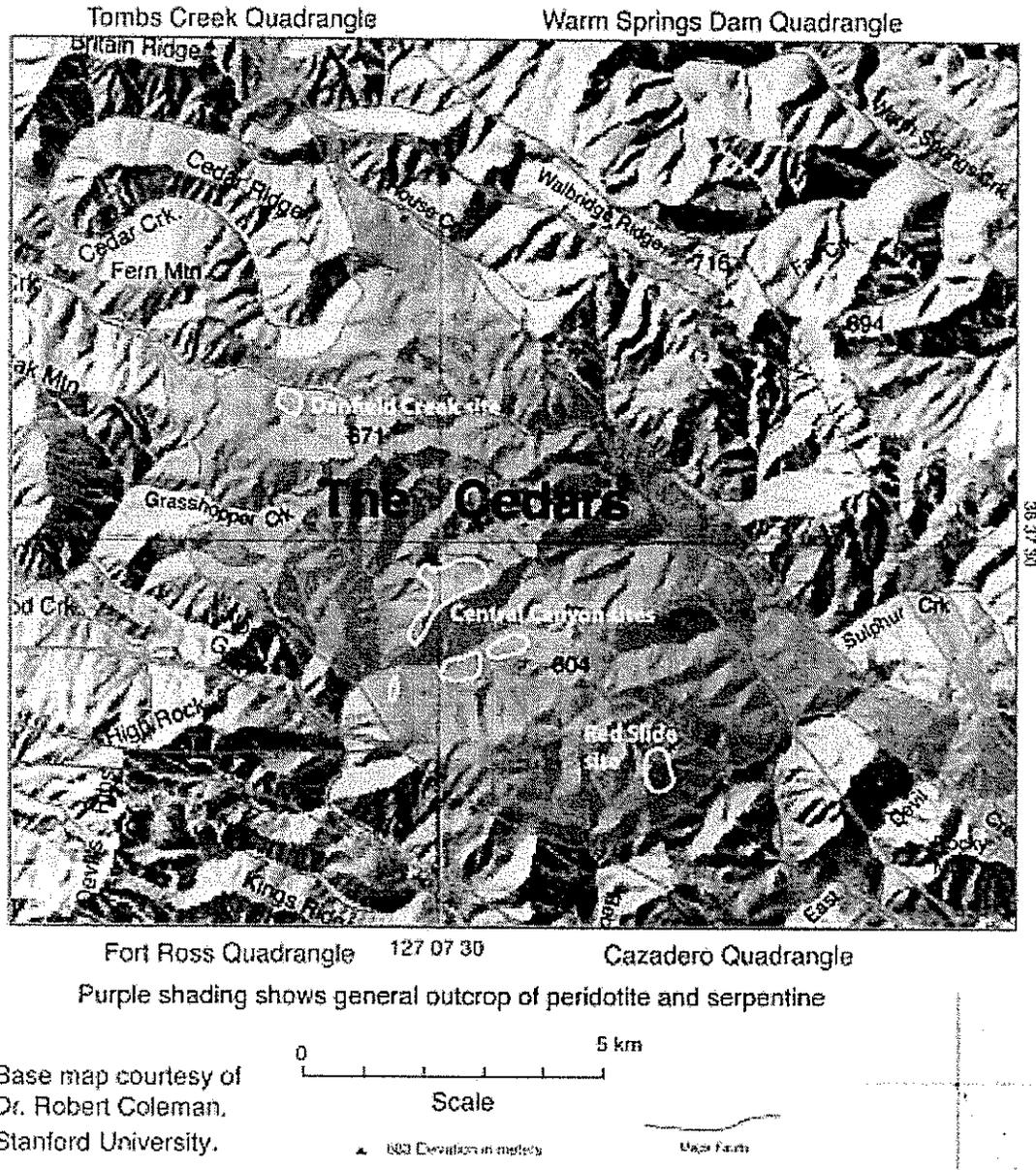


FIG. 3. Known distribution of *Eriogonum cedrorum* at The Cedars, Sonoma Co., California.

talus but a smaller number find bare rock crevices suitable; however, those on the talus are typically larger mats. There are roughly three zones where it occurs (Fig. 3); (1) the northwest part of The Cedars in upper Danfield Creek, (2) the central upper canyons of Big Austin Creek which contains the largest population, and (3) the east side near Red Slide above East Austin Creek which also harbors a large population. There seems to be no clear reason why this taxon is so restricted to these sites while not occurring nearby. While slopes with N-facing aspect account for the majority of the plants, some are on E-, S- and W-facing slopes.

There are ± 1500 to 2000 plants in existence. A recent survey of the Central Canyon sites shows the population to be extremely stable. While there were few small young plants, not a single dead mat was noted. A few plants had their crowns elevated >1.5 dm above the current rock surface, showing they had undergone that much erosion and survived. Erosion of the substrate is constant but not rapid. The lack of

any significant human disturbance at any site, the lack of senescence or death, and the persistence of plants in extremely harsh sites suggests this taxon is capable of great age.

Typical associates are these: *Asclepias solanoana* Woodson, *Aspidotis densa* (Brack.) Lellinger, *Cardamine californica* (Nutt.) Greene var. *sinuata* (Greene) O.E. Schulz, *Epilobium minutum* Lindl. ex Lehm., *Eriogonum luteolum* Greene, *E. nudum* Douglas ex Benth. var. *auriculatum* (Benth.) J.P. Tracy ex Jeps., *Hesperolinon spergulinum* (A. Gray) Small, *Minuartia douglasii* (Fenzl ex Torr. & A. Gray) Mattf., *Phacelia corymbosa* Jeps., *Sairocarpus vexillocalyculatus* (Kellogg) D.A. Sutton, *Streptanthus morrisonii*, and *S. barbiger* Greene. *Allium falcifolium* Hook. & Arn., *Eriophyllum lanatum* (Pursh) Forbes, and *Eschscholzia caespitosa* Benth. are more restricted to certain sites. The *Holodiscus* taxon mentioned above is the only hard-woody plant to occur within populations of *E. cedrorum*, but *Arctostaphylos bakeri* ssp. *sublaevis* and *A. viscida* Parry ssp. *pulchella* (Howell) P.V. Wells may occur peripherally.

ACKNOWLEDGMENTS

We wish to thank Dan Segal of the Plantsmen Nursery of Ithaca who brought us together with the idea that The Cedars wild buckwheat was "interesting." We also wish to thank Mrs. Bette Campbell of Cazadero for kind assistance not only to us but to a wealth of scientists over the years who have visited The Cedars. We thank Robert Coleman, Professor Emeritus of Geology at Stanford University, Palo Alto, California, for his geological map of The Cedars area that served as a base map for the plant's distribution, and Orion Johnson, a doctoral candidate at the University of Southern California, for help with the graphics. Guy Nesom kindly provided a prompt and useful review of the manuscript for which we are grateful.

REFERENCE

- REVEAL, J.L. 2005. 44a. Polygonaceae Jussieu subfam. Eriogonoideae Arnott, *Encycl. Britannica* (ed. 7), 5:126. 1832
• Wild buckwheat subfamily. *Fl. N. Amer.* 5:218–478.

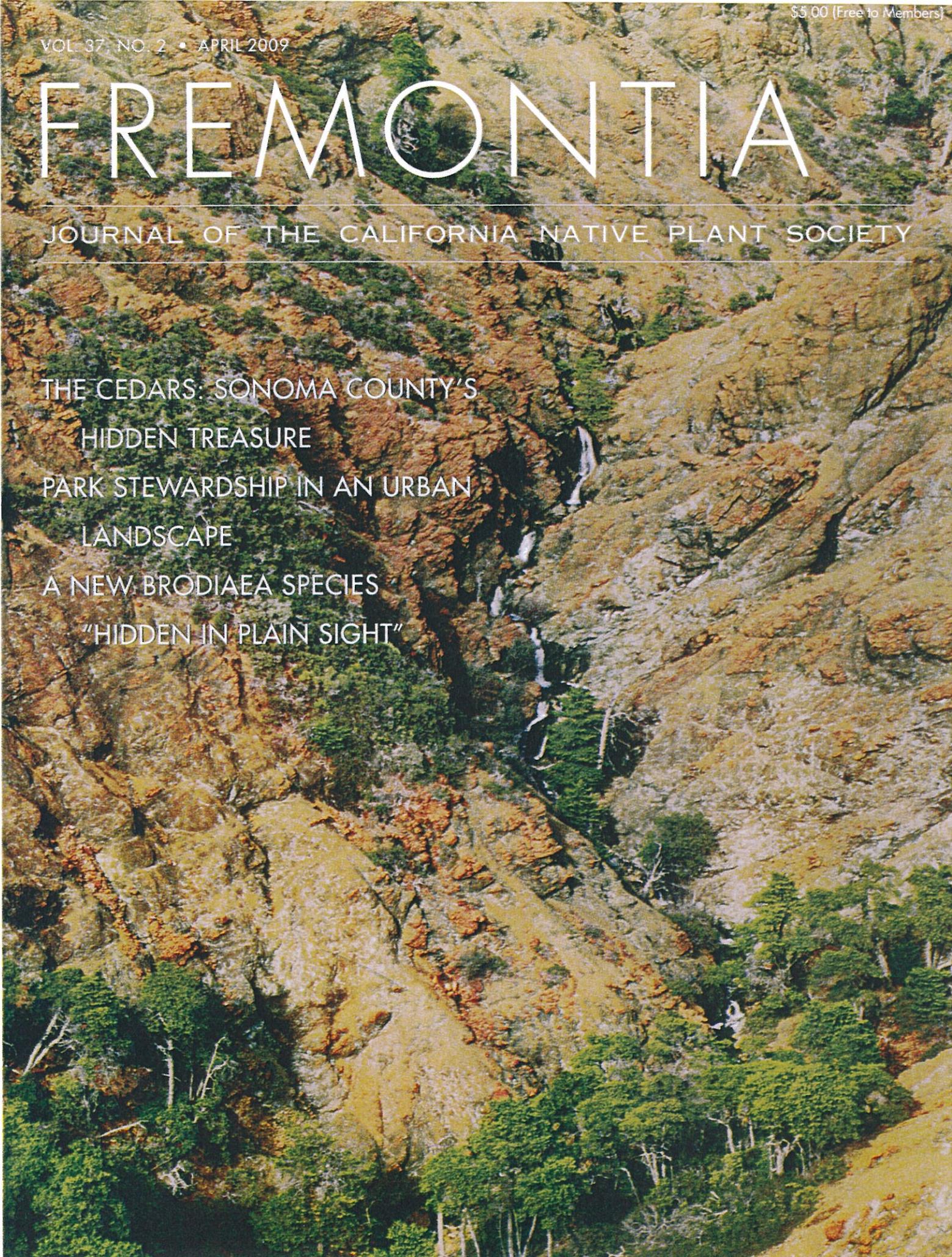
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JOURNAL OF THE CALIFORNIA NATIVE PLANT SOCIETY

THE CEDARS: SONOMA COUNTY'S
HIDDEN TREASURE

PARK STEWARDSHIP IN AN URBAN
LANDSCAPE

A NEW BRODIAEA SPECIES
"HIDDEN IN PLAIN SIGHT"





Looking west-northwest into the Main Canyon, a rare morning fog is retreating into the Gualala River side of the divide. Cypress trees are exceptionally effective at condensing fog into rain. All photographs by the author.

THE CEDARS: SONOMA COUNTY'S HIDDEN TREASURE

by Roger Raiche

A love of the California landscape and its plants is a common thread uniting nearly every CNPS member, and millions more. Yet each of us has one place that touches us far more vividly than all the others, a place we might return to again and again to take in the special connection we have established, much like renewing a friendship. The Cedars is the place that captured me.

This roughly 7,500-acre block of serpentine—used loosely here to refer to rocks and soil of ultramafic origin, i.e., high magnesium and iron (Coleman and Jove, 1992)—located in the northwestern section of Sonoma County is as unexpected as it is unique. Even life-long residents of the county find it hard to believe it exists. Indeed it is hard to see from any public road unless you know precisely when and where to

look. Though remote and obscure, The Cedars is an area of great botanic, geologic, and scenic magnificence.

Part of the Outer North Coast Ranges, it is nine miles by air to Timber Cove on the coast. Its rounded ridges are 1,700 to 2,200 feet in elevation, thus only as high as, or even lower than, many of the surrounding ridges in that vicinity. But within this area is a complex



Mineral Falls, a 20-foot waterfall, is coated with multiple layers of calcium carbonate released from ultrabasic (pH greater than 11) springs near the top. Older gray deposits visible to the left have been dated to be 5,000 years old.

system of deeply cut canyons whose creek beds are about 1,000 feet lower than the ridgetops. These canyons feed two different river systems, the Russian River via two distinct branches of Austin Creek, and the Gualala River via the Wheatfield Fork. The two branches of Austin Creek, Big (or West) Austin Creek

and East Austin Creek, have their headwaters in The Cedars but travel for over 12 miles apart before joining again two miles up from the Russian River. Cazadero, a small community, is the only nearby town. (When viewed on Google Earth, or other topographic programs, the approximate center is at

038°37'37.53"N, 123°07'21.51"W.)

It is still unclear when the name, The Cedars, was applied to this distinctive landscape. It was probably in the 1920s or 1930s when the area was mapped by the USGS. Earlier county maps labeled the area Red Slide. Today Red Slide is the specific name for the largest talus barren on the east side of The Cedars and a secondary drainage behind this barren. The Cedars' name is a botanical misnomer, as the "cedars" referred to are actually Sargent cypress (*Cupressus sargentii*). [California's cypresses are currently the subjects of differing taxonomic innovations that may result in a change in the genus name. Ed.] In popular usage, "cedar" is applied to many needle-leaved plants (including *Calocedrus*, *Juniperus*, *Thuja*, and *Tamarix*).

FIRST CONTACT

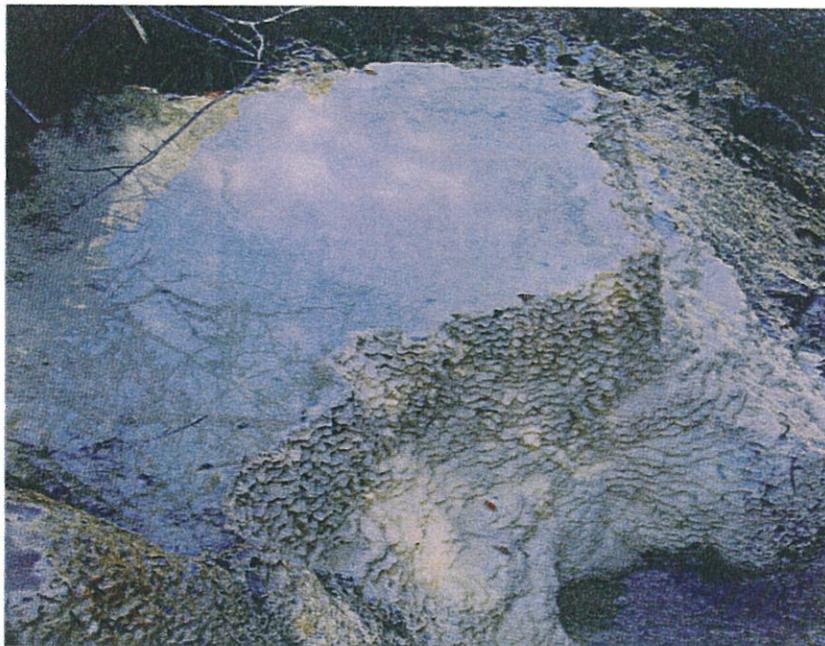
The Cedars has been an obsession since I first walked into what we now call the Main Canyon on a late July morning in 1981. In 1980, on a backroad trip to Salt Point with friends, I had spotted it from the upper section of King Ridge Road. I commented on its rockiness, its reddish coloration, and the flat-topped trees that I correctly assumed were cypress. These clues indicated serpentine, a substrate I already found fascinating. In July, as I hiked in, I had hopes of finding something interesting and unusual. Yet I was unprepared to experience a canyon so unique, beautiful, pristine, vast, and fascinating in its flora as I experienced that day. I can almost remember each footstep, each gasp of amazement as the landscape unfolded before me. There were banks dripping with huge colonies of California lady slipper orchid (*Cypripedium californicum*), bizarre mineralized formations, stunning barrens, and fascinating and rarely seen plants. I had been given permission to explore the canyon by a neighboring ranch owner, Bette Campbell,

who had described it as a “moon-
scape.” Indeed it was that, but it was
much more.

Truly massive barrens and talus
slopes, hued silver, tan, and red,
shimmering in the summer heat were
juxtaposed with ancient Sargent cy-
press woodlands, dark and thick with
a rich understory of shrubs and
herbs. This visual interplay was con-
founding but aesthetically exhilarat-
ing. After several hours exploring
the canyon bottoms I climbed one of
the knife-back ridges and saw can-
yon after canyon branching off into
the distance. I realized this place was
going to take some time to get to
know, and this day’s 11-hour explo-
ration was merely a tease. I returned
again and again during the next 15
years when I could get permission,
not always a certain thing. I needed
to explore each branch of each can-
yon over different months and over
multiple seasons to be sure I was
seeing and documenting everything.
The Cedars did not disappoint me.
There were undescribed species, odd
disjunctions, and a number of spe-
cies never collected in the county
before.

PREVIOUS BOTANICAL EXPLORATIONS

The Cedars have been visited by
other botanists since at least the early
20th century, but due to its remote-
ness and access issues, most of the
early collecting had been spotty and
incomplete. The California lady slip-
per orchid specimen collected by A.
L. Graff in 1928 from “the head-
waters of Austin Creek” is certainly
from The Cedars (Best et al., 1996).
School teacher, orchardist, and
botanical artist from nearby Guerne-
ville, Freed W. Hoffman (Morrison,
1960), had a passion for serpentine
areas and plants. He did the most
extensive collecting in the 1940s and
1950s, collecting over 100 specimens
from The Cedars (Jepson Online,
2008). He published two new taxa



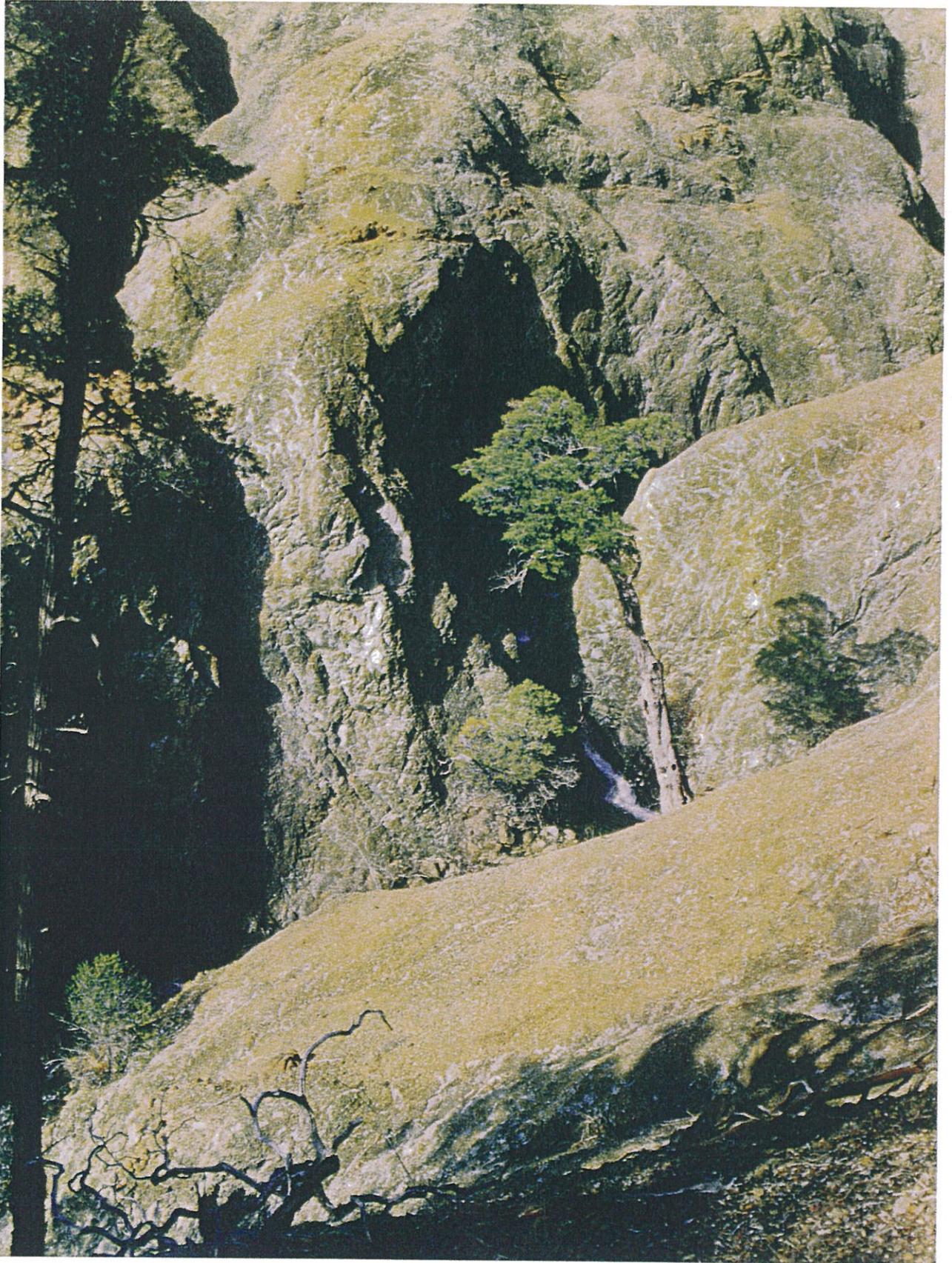
Mineral Spring, also know as the Wedding Cake, is a calcium carbonate structure that routinely gets destroyed each winter yet rebuilds in almost exactly the same form each summer.

of jewelflowers (*Streptanthus*) from
The Cedars—Morrison’s jewelflower
(*S. morrisonii*) and Dorr’s Cabin
jewelflower (*S. morrisonii* spp. *hirtiflorus*)
(Hoffman, 1952). These were named in
honor of his good friend and *Streptanthus*
expert, John Morrison who lived in
nearby Monte Rio. Hoffman referred to
his explorations as “strep-trekking.”
Art Kruckeberg, the authority on Cali-
fornia serpentines—he literally wrote
the book (Kruckeberg, 1986)—visited
in September 1966 to study the
Streptanthus and later included sev-
eral pictures from The Cedars in his
book, which is dedicated to Freed
Hoffman. Philip Wells, an authority
on manzanitas (*Arctostaphylos*) vis-
ited in the 1970s and later published
a new subspecies, The Cedars man-
zanita (*A. bakeri* ssp. *sublaevis*).
Lawrence LaPre, a botanical consult-
ant, also visited The Cedars in the
1980s to compare the jewelflowers
at The Cedars with those to the east
at The Geysers area on the Sonoma/
Lake county line. The most com-
mon interest has been with jewel-
flowers and their perplexing tax-
onomy.

Peter Warner of Mendocino did
a plant survey of the southwest cor-
ner of The Cedars in the vicinity of
the Campbell Ranch (Warner,
1994). I have combined his obser-
vations and Hoffman’s with mine to
produce a plant list of just over 200
taxa, at all levels, of natives growing
in or marginal to The Cedars and its
contiguous serpentine extensions.

GEOLOGICAL EXPLORATION

The Cedars has been of consid-
erable interest to miners and geolo-
gists. Back in the late 19th century
both chromite (FeCr_2O_4) and mag-
nesite (MgCO_3) were discovered in
the area and a number of mines ex-
ploited these deposits until after
World War II. In the 1960s the area
was investigated by both Ivan Barnes
(USGS) and Dr. Robert Coleman
(professor emeritus at Stanford Uni-
versity and authority on the geology
of serpentines). Ivan Barnes’s now
famous paper on the proof of real
time, low temperature, and near
surface serpentinization utilized



A solitary Sargent cypress (*Cupressus sargentii*) marks the confluence of two forks of the upper section of Azalea Creek, a local name for one of the primary branches of Big Austin Creek within The Cedars.

samples from one of the calcium carbonate springs (now named in his honor) in The Cedars (Barnes et al., 1964). Serpentinization is the process where igneous ultramafic mantle rock (peridotite) is metamorphosed into secondary serpentine minerals. Calcium bicarbonate is a byproduct of this process. Rock from The Cedars was used to create PCC1, Peridotite Cedars Cazadero 1 (Fanagan, 1986), an analysis of all the minerals and their percentages in the peridotite at The Cedars. It serves as a stan-

dard to which all other peridotites are compared worldwide.

A current ongoing project by geobiology graduate researcher Orion Johnson at the University of Southern California (USC) is focused on determining the types of microbes and how they survive in the ultrabasic (pH greater than 11) waters emerging in certain spots. Low sodium, ultra-high pH springs are rare on Earth, yet provide an intriguing model of how primitive microbial life may evolve on planets.

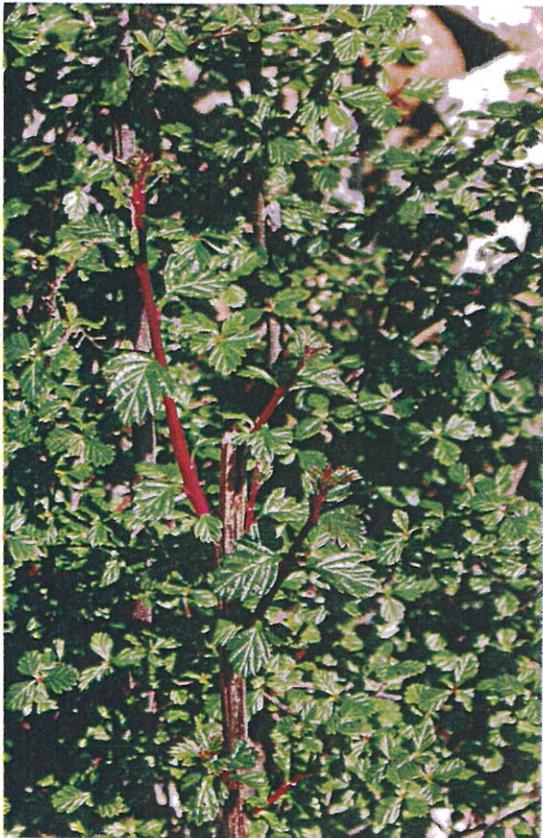
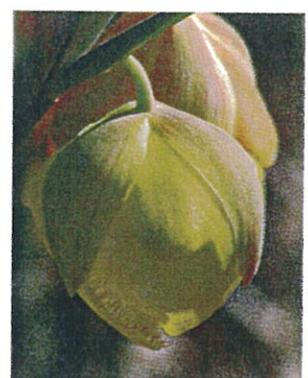
PLANTS

The Cedars is a classic example of a "floristic island," where many of the plants have no close relationship with those in the non-serpentine areas that surround it. The most interesting group is The Cedars' endemics, plants that only occur on The Cedars' contiguous serpentines. I currently consider eight entities to fall into this category, but one is not currently recognized botanically. This is a creambush (*Holodiscus*) that

ENDEMIC TAXA TO THE CEDARS

Common Name	CNPS Rarity*	Comments
<i>Arctostaphylos bakeri</i> ssp. <i>sublaevis</i>	The Cedars manzanita 1B.2	Hybridizes with <i>A. manzanita</i> on periphery of The Cedars. Type locality.
<i>Calochortus raichei</i>	The Cedars fairy lantern 1B.2	Strict endemic. Type locality.
<i>Epipactis gigantea</i> f. <i>rubrifolia</i>	Purple-leaf stream orchid None	Strict endemic but variable leaf color. Type locality.
<i>Erigeron serpentinus</i>	Serpentine fleabane 1B.3	Strict endemic. Type locality.
<i>Eriogonum cedrorum</i>	The Cedars buckwheat None	This recently described taxon is strictly endemic to The Cedars. Restricted to three limited areas. Type locality.
<i>Holodiscus</i> sp. <i>nova</i>	The Cedars creambush None	This undescribed taxon is strictly endemic to The Cedars, found growing only on serpentine. Distinct from nearby <i>H. discolor</i> ; characters "hold" in cultivation.
<i>Streptanthus glandulosus</i> ssp. <i>hoffmanii</i>	Hoffman's jewelflower 1B.3	A regional endemic, but The Cedars represents most known plants. Another subspecies of <i>S. glandulosus</i> occurs nearby with white flowers (ssp. <i>sonomensis</i>).
<i>Streptanthus morrisonii</i> ssp. <i>hirtiflorus</i>	Dorr's Cabin jewelflower 1B.2	This subspecies is currently not recognized but is a good segregate. Very limited distribution. Still tracked for rarity. Strict serpentine endemic, the rarest of all the published <i>S. morrisonii</i> subtaxa. Type locality for both the species and this subspecies.

* (CNPS Online, 2008)



CLOCKWISE FROM TOP LEFT: Closeup of serpentine columbine (*Aquilegia eximia*), a serpentine seepage endemic that flowers from June into September on four-foot-tall plants. • Purple-leaf stream orchid (*Epipactis gigantea* f. *rubrifolia*), an endemic. The burgundy foliage is already showing shades of green as is typical at flowering. • Closeup of a flower head of serpentine milkweed (*Asclepias solanoana*), a lovely prostrate-growing plant of serpentine barrens. • Closeup of endemic Cedars' fairy-lantern (*Calochortus raichei*), a late- and few-flowered bulb. Best flowering seasons depend on both early and late rains. • Unnamed Cedars' creambush (*Holodiscus* sp. nova). Both larger cane leaves and much smaller secondary branchlet leaves are shown. The combination of bright ruby-red juvenile growth, glabrous upper leaf surface, and leaf margins with teeth well below the middle is unique in California.

has not been named, but which is the most visually distinct shrub throughout The Cedars.

The Cedars fairy-lantern (*Calochortus raichei*) is a perfect example of a strict endemic here. It occurs throughout all the interior canyons—though not everywhere—and even to the margin of serpentine rock, but never beyond. In many stretches it even avoids the margins, where it might be replaced by the widespread Diogenes' lantern (*C. amabilis*), though the two never seem to overlap. It is extremely late flow-

ering for a low elevation species, typically blooming in early June to mid- or late July. Freed Hoffman first collected it in 1947 as the Mt. Diablo globe-lily (*Calochortus pulchellus*). At that time, the name *C. pulchellus* also included the now distinct *C. amabilis*.

I first saw the plant in flower in 1983, though I had puzzled over the large waxy-blue strap-like foliage the previous season. After several years of exhausting explorations to determine the range, collecting herbarium specimens, and comparing features of related species, I convinced *Calochortus* experts Stan Farwig and Vic Gerard that this was a completely new species. I was much honored when they named it for me in 1987, linking my name with the amazing Cedars.

The purple-leafed race of stream orchid (*Epipactis gigantea* f. *rubrifolia*) is another odd Cedars' endemic. At its most extreme, the plant emerges with almost black-purple foliage with a silvery iridescence that gradually fades to a dusky burgundy-green by flowering. The purple leaf character is variable. This is the only place in the entire extensive distribution of stream orchid where

purple foliage has appeared. It probably deserves a taxonomic upgrade. 'Serpentine Night' is a very deep colored selection I made in 1982.

Serpentine fleabane (*Erigeron serpentinus*) is a low herb spreading underground to form lacy colonies with wiry stems less than eight inches tall with thread-like foliage, and sparse-looking daisies composed of 9 to 13 pale lilac ray flowers arranged imperfectly around a yellow center—thus looking odd or damaged. It prefers shady, damp, or richer soils, particularly in old cypress woodland. Small marble-sized galls on the upper stems are often mistaken as buds.

Solitary flower of serpentine fleabane (*Erigeron serpentinus*), an endemic to The Cedars. The ray petals are typically irregularly arranged.

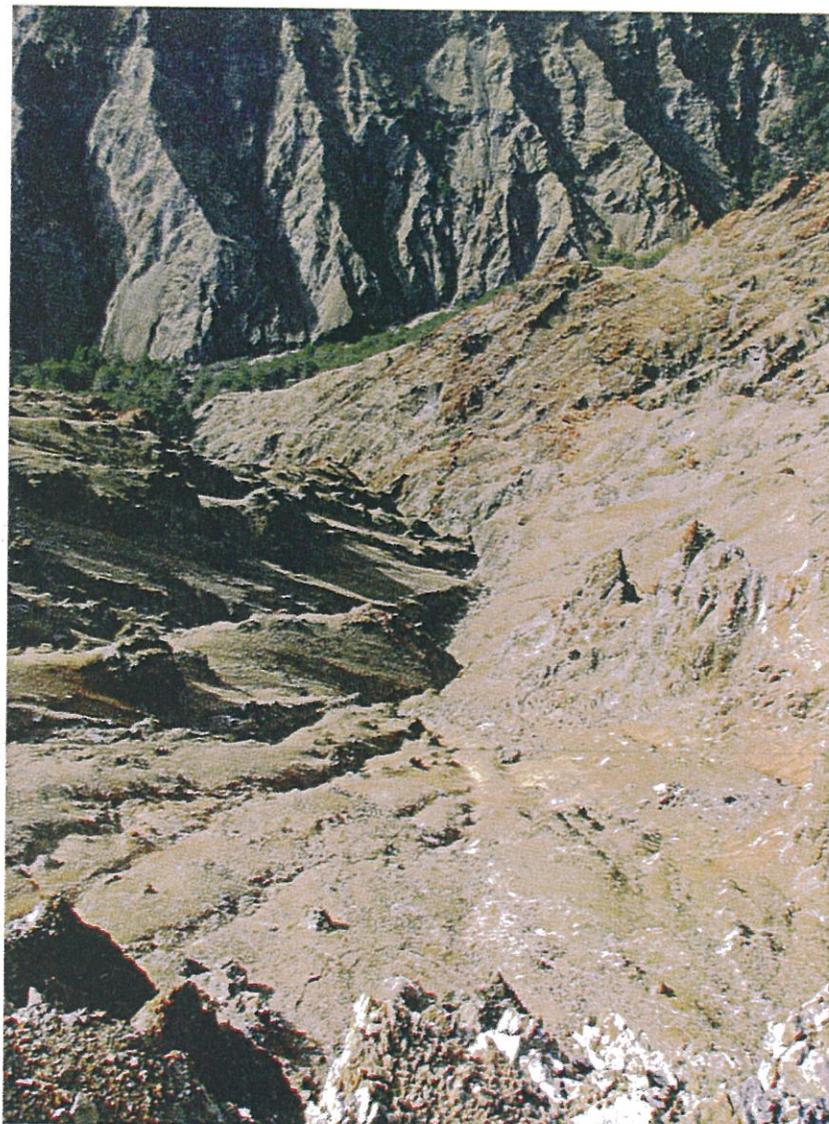


Serpentine endemics (plants that only—or almost always—occur on serpentine, but may also exist on serpentine beyond The Cedars) form another category of plants here. Sargent cypress, Jepson musk brush (*Ceanothus jepsonii*), serpentine columbine (*Aquilegia eximia*), and bearded jewelflower (*Streptanthus barbiger*) are four good examples of this restriction. Some can also be said to be disjunct, i.e., disconnected from or beyond a plant's normal geographic range. Some are also extralimital, i.e., are at an extreme in their range. Most of these extralimital plants are at either their southern or western extremes. Some notable southern-limit entities are sticky manzanita (*Arctostaphylos viscida* ssp. *pulchella*), cotton grass (*Eriophorum criniger*), California lady slipper orchid, and showy phlox (*Phlox speciosa* ssp. *nitida*). Those significantly west of their primary range include Pringle's bird-beak (*Cordylanthus pringlei*), Brewer's willow (*Salix breweri*), green deer mint (*Monardella viridis*), Venus maidenhair fern (*Adiantum capillis-veneris*), foxtail muhly (*Muhlenbergia andina*), hoary coffeeberry (*Rhamnus tomentella*), and Morrison's jewelflower. Serpentine milkweed (*Asclepias solanoana*) is at both its southern and western extremes. Only the clover *Trifolium buckwestiorum* is representative of a northern disjunction.

From a county perspective there are four plants not mentioned in *A Flora of Sonoma County* (Best et al., 1996) but which occur here.

Widespread species, which do occur in the general vicinity, often off of serpentine, also occur in The Cedars. Chamise (*Adenostoma fasciculatum*), mountain mahogany (*Cercocarpus betuloides*), wavy-leaf ceanothus (*Ceanothus foliosus*), and buckbrush (*C. cuneatus*) fit into this category.

A profound dichotomy exists between the plants within The Cedars (the core species) and a different group that grows on the periph-



Looking down Laton Gulch to the creekbed about 800' below. Laton Mine, one of the few topographic names, is near the bottom above the forest of Sargent cypress.

ery. The contact zone—where the serpentine rock/soil meets other non-serpentine substrates, results in a mix of serpentine and nonserpentine species. Ancient landslides that slid off of the main block of serpentine have created a number of peripheral serpentine meadows and chaparrals which have plants that cannot be found inside the core area. Star brodiaea (*Brodiaea stellaris*), Sonoma jewelflower (*Streptanthus glandulosus* ssp. *sonomensis*), goldfields (*Lasthenia californica*), hog fennel (*Lomatium dasycarpum* ssp. *tomentosum*), and squirreltail (*Elymus elymoides*) are just a few examples.

One plant that perfectly illustrates this inner/outer Cedars floral dichotomy is the Sonoma subspecies of bristly jewelflower, *S. glandulosus* ssp. *sonomensis* that has a white flower. Outside of the main Cedars the ssp. *sonomensis* is common in sparse serpentine grasslands, whereas the lilac-pink flowered ssp. *hoffmanii* occurs not far away on the rock and talus of the main block of The Cedars. More than a simple color difference, the two perform differently in the same season. For example, in 2007 the ssp. *hoffmanii* had a very bad flowering season, but the ssp. *sonomensis* had a spectacu-

lar flowering season. Here are two subspecies that are closely related, but which have accumulated a capacity to grow in different sites and respond to different environmental clues. This is evolution.

HABITATS

A good way to group the plants of The Cedars is to consider what habitat(s) they grow in. Natural habitats tend to blur one into another, so delineations are not absolute. However there are several primary habitats that repeat throughout this area.

Sargent cypress woodland is the most extensive habitat of The Cedars. It covers at least several thousand acres, and is often characterized by dense stands of small trees growing closely together. The cypress also occurs as tiny, dwarfed, bonsai-like specimens at the edge of barrens or as individuals peppered through chaparral. Primarily it forms a woodland with other trees, shrubs, and herbs. In richer sites, the cypress trees can be quite old and huge, and are often mixed with Douglas fir (*Pseudotsuga menziesii*), bay laurel (*Umbellularia californica*), and leather oak (*Quercus durata*). In the richest zones, canyon oak (*Q. chrysolepis*), tanoak (*Lithocarpus densiflora*) and madrone (*Arbutus menziesii*) may be present in limited numbers. These lush zones occur most commonly along the riparian corridors or on shady north-facing slopes or protected gullies. They are the most park-like of the habitats, and are especially inviting to humans. Typically, a surprisingly rich soil has developed due to hundreds of years of humus accumulation and a lack of catastrophic fires, though



Hoffman's jewelflower (*Streptanthus glandulosus* ssp. *hoffmanii*) is found on rocky areas throughout The Cedars, though populations vary enormously from year to year from nearly non-existent to colorful displays of thousands.

ground fires may have occurred. Understory shrubs are rare in the older woodlands, but The Cedars creambush is almost always present. This is the only habitat where poison-oak (*Toxicodendron diversilobum*) occurs, though infrequently and dwarfed. The understory herbaceous layer is perhaps the most interesting feature and is a complex mix of sedges, grasses, bulbs, annuals, biennials, and perennials growing tightly together, though often utilizing different seasons of growth. Over two dozen plants can

be found together in many sites as part of this forb layer. Nearly omnipresent in all canyons are the following plants that are listed in sequence of bloom: toothwort (*Cardamine californica* var. *sinuata*), woodrush (*Luzula comosa*), Indian warrior (*Pedicularis densiflora*), star zigadene (*Zigadenus fremontii*), short-stem sedge (*Carex brevicaulis*), bedstraw (*Galium californicum*), long-tube iris (*Iris macrosiphon*), milkwort (*Polygala californica*),

morning glory (*Calystegia* sp.; this plant has affinities to both *C. subacaulis* and *C. collina* ssp. *oxyphylla*), Torrey's melic grass (*Melica torreyana*), Indian pink (*Silene californica*), narrow-petal piperia (*Piperia leptopetala*), The Cedars fairy lantern, and green deer mint.

Where the cypresses are more scattered, two manzanitas are common along with the leather oak. Sticky manzanita and The Cedars manzanita may be as abundant as the cypress. Given enough time, the manzanitas die out and the area transitions to cypress woodland.

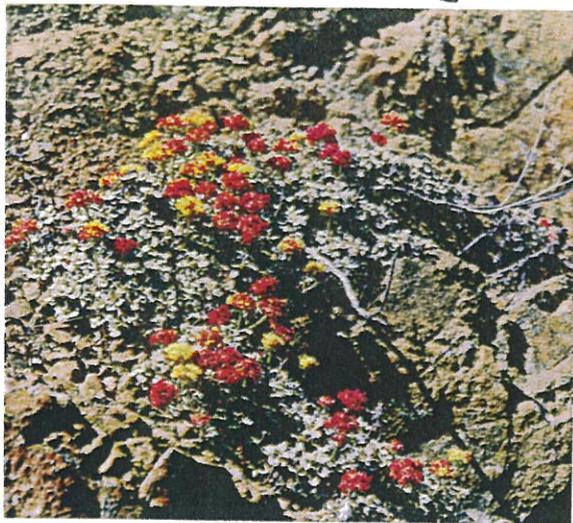
Serpentine chaparral is also common, both with and without Sargent cypress. It is frequently dominated by the two manzanitas mentioned above with leather oak as a shrub. Jepson's musk brush and buckbrush are frequent constituents, as is toyon (*Heteromeles arbutifolia*). On mesic or north-facing chaparrals, red berry (*Rhamnus illicifolia*), bush monkey flower (*Mimulus aurantiacus*) and Cedars' creambush are prevalent. Several distinct chaparral variants occur. One has many compact forms of coast silktassel (*Garrya elliptica*); another an understory of serpentine reedgrass (*Calamagrostis ophitidis*); yet another only sticky manzanita. Understory elements are identical but fewer than in cypress woodlands

ADDITIONS TO THE FLORA OF SONOMA COUNTY FROM THE CEDARS

Not in A Flora of Sonoma County	Common Name	Habitat and Abundance
<i>Adiantum capillus-veneris</i>	Venus maidenhair fern	Carbonate seepages, rare.
<i>Eriophorum criniger</i>	Cotton grass	Seepages, common.
<i>Moehringia latifolia</i>	Wide-leaf moehringia	Mesic woodlands, uncommon.
<i>Muhlenbergia andina</i>	Foxtail muhly	Seepages, uncommon.



This cliffside grotto formed by calcium carbonate deposits provides an ideal site for many serpentine columbines (*Aquilegia eximia*).

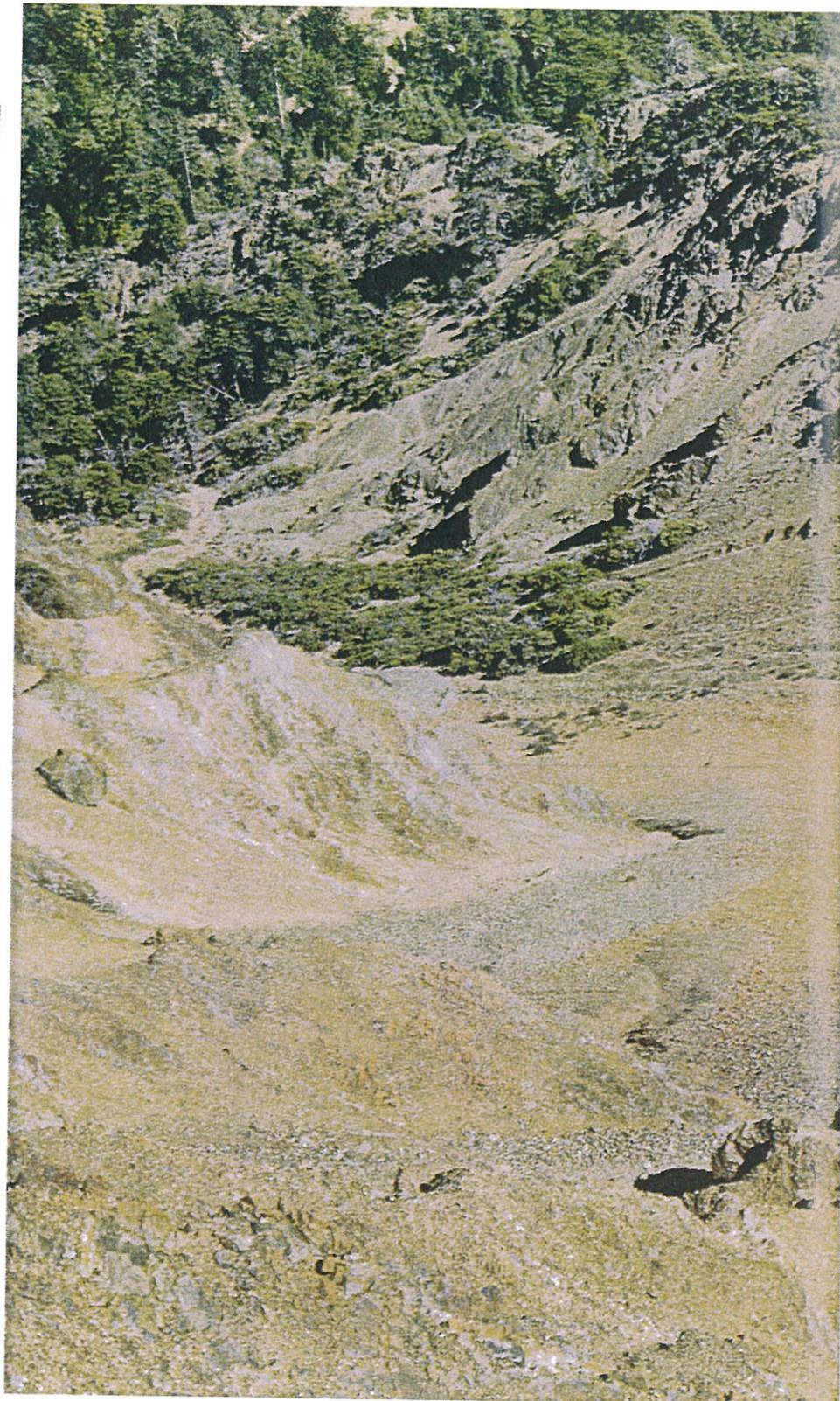


A new species of wild buckwheat (*Eriogonum cedrorum*) is located in only a few sites within The Cedars, especially considering the vast amount of rock and talus available. Its botanical affinities are with ternate buckwheat (*E. ternatum*) of the Klamath Range and Snow Mountain buckwheat (*E. nervulosum*) of the Inner North Coast Range.

and vary considerably. Diversity decreases toward the ridgetops.

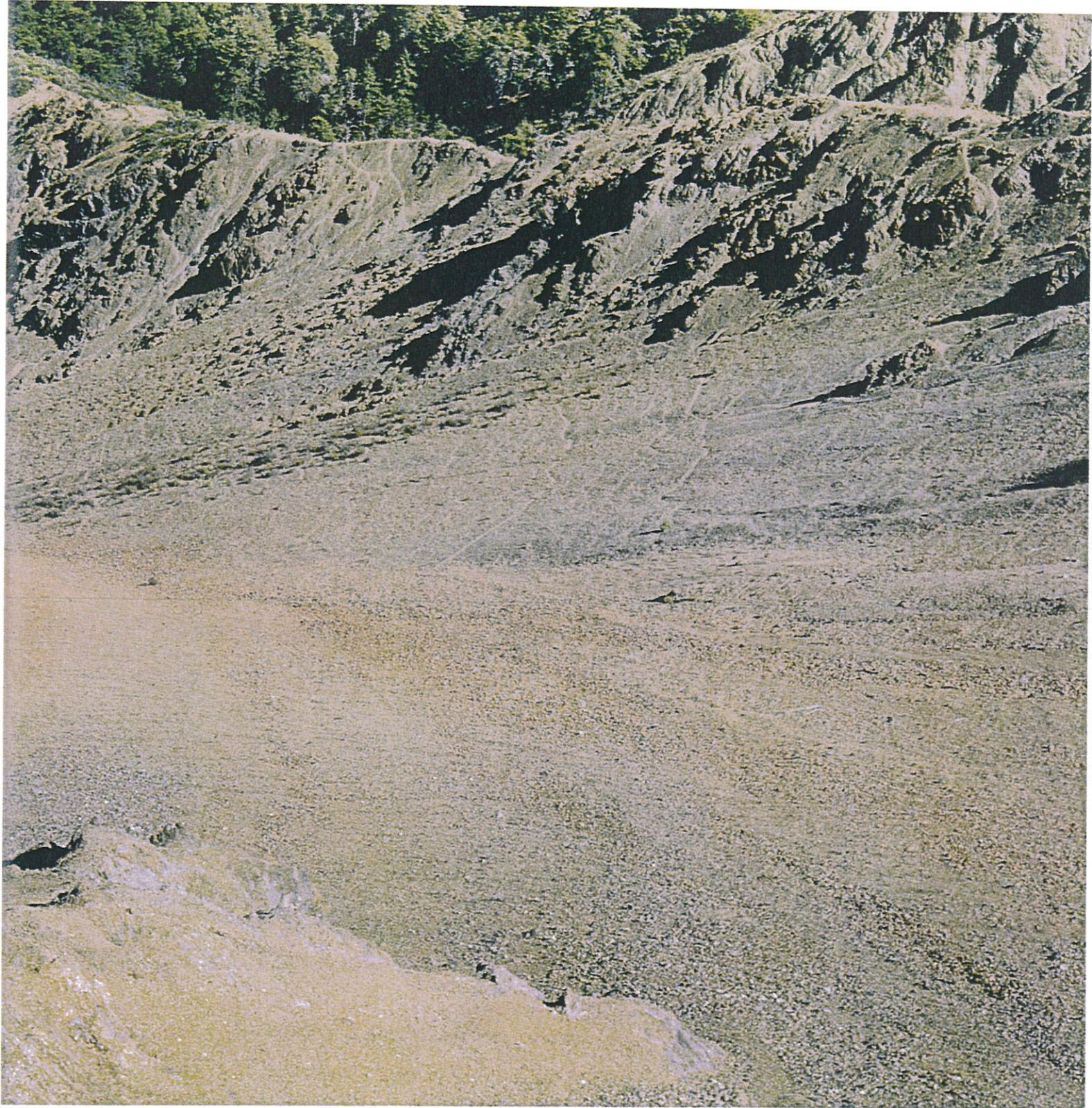
Vast serpentine barrens, talus, and acres of bare rock are another primary habitat within The Cedars. Visually quite impressive, they account for the moonscape description so frequently employed by visitors. A group of scientists working with NASA who visited The Cedars found some barrens to be quite reminiscent of pictures received from Mars!

The barrens are the most extreme habitat at The Cedars, yet they are not without plants. The biennial Morrison's jewelflower might be found alone in the most extreme sites, but bearded jewelflower can also occur by the thousands in late winter/spring. Serpentine phacelia (*Phacelia corymbosa*) is the most frequent perennial plant here. Two other perennials only occur on some sites. One is a new species of buckwheat (*Eriogonum*), and the other is serpentine milkweed, a startlingly gorgeous plant in flower. The Cedars creambush is the only large shrub that tolerates this habitat, where it is mostly restricted to deep



talus slopes. Other annual, perennial, and bulb (or corm) constituents of this hostile habitat may occur by the tens of thousands, yet are visually overwhelmed by the amount of rock or talus except when these plants are in peak flower and they may create a mist of color.

Perennial water habitats can be subdivided in various ways, but floristically there are essentially two types, creekside and seepage. In some areas the creeks pass through old Sargent cypress woodlands that form an upper level riparian corridor. But, due to the enormous quan-



Red Slide, the tallest serpentine barren, is located on the southeast side of The Cedars. This barren is one of the few obvious land features visible from miles away.

tity of water that flows through the creeks in winter (Cazadero averages over 65 inches of rainfall per year, often in huge storms of five inches or more), there are only four shrubs that tolerate the fluctuating water

levels and the powerful scouring action of the peak flows. They are Brewer's willow, Western azalea (*Rhododendron occidentale*), hoary coffeeberry, and Western spicebush (*Calycanthus occidentalis*) in decreas-

ing order of frequency. In the East Austin Creek headwaters there is a long riparian stretch that also has common riparian trees such as white alder (*Alnus rhombifolia*), ash (*Fraxinus latifolia*), madrone, and canyon



Sargent's cypress (*Cupressus sargentii*) in the Azalea Creek drainage, part of the BLM lands.

oak that line the margins, but the first two do not occur at all within the serpentine canyon of Big Austin Creek.

The primary creeks also produce two distinct secondary habitats. One is alluvial gravel bars composed of gravel, rock, and boulders. For many decades these are very sterile and have a flora paralleling the barrens, but over time shrubs and cypresses will move in. The other unusual habitat is the large stretches of

mortarbed, where the creek bottom is a solid pavement of cemented sand, gravel, cobbles, and rocks, which are far more resistant to erosion than the highly fractured bedrock. These are formed from the calcium carbonate-rich waters that ooze up through the alluvium during the drier summer months to harden as cement. Brewer's willow is the only plant capable of seeding into these pavements and surviving the winter scouring.

Seepages, the other perennial water habitat, are common on the creekbed margins but also can be perched high on cliff faces. Some are formed from the ambient waters that flow from fractures and have a normal pH range of 7 to 9. The more specialized seepages with calcium carbonate-saturated water have a pH from 9 to 12+; these have the most specialized plants. These sites represent yet another extreme anomaly. Surrounded by thousands of acres

of calcium-deficient serpentine here is a habitat with an overabundance of calcium. Most commonly restricted to these seepages are Venus maidenhair fern, with only six sites noted so far, and California lady's slipper orchid. The lady's slipper orchid has about four dozen populations; several are quite old with over 100 flowering stems per colony. Their size and numbers have increased slowly over the last 27 years.

Other seepage-identified plants can occur in either type of seepage and include the four creekside shrubs mentioned above. These may be accompanied by the following common associates: serpentine columbine, Mendocino sedge (*Carex mendocinensis*), foxtail muhly, grass-of-Parnassus (*Parnassia californica*), purple-leafed stream orchid, and cotton grass. Closer to the mouth of the canyons are five-finger maidenhair (*Adiantum aleuticum*), white wool hedge-nettle (*Stachys albens*), blue-eyed grass (*Sisyrinchium bellum*), and leopard lily (*Lilium pardalinum*). As with water, the number of species decreases as one moves upstream.

CONSERVATION

The core serpentine area is currently owned by about two dozen landowners, and most are large holdings. Over 1,500 acres in the center is a land-locked Bureau of Land Management (BLM) parcel that cannot be accessed by the public. In 2006, BLM designated this as an Area of Critical Environmental Concern (ACEC), which is the strongest protection that BLM can offer its lands.

David McCrory and I bought a 520-acre parcel in 1999 after failing to interest conservation groups in acquiring the site. We removed a century of trash and constructed a simple trail to access various features and remote areas. I have been advocating for a Cedars' preserve since 1983, hosting dozens of field trips and lecturing on the values inherent

in this special place. This was long before owning any of it, but ownership has facilitated this outreach.

In 2006, The Sonoma Land Trust (SLT) convened a series of planning meetings and field trips, bringing together a spectrum of agencies and botanical authorities to produce—with a grant from the Coastal Conservancy—a Conservation Plan for The Cedars (SLT, 2008) and surrounding areas. This document aims to guide future conservation efforts in this region. These conservation efforts would further the goals and objectives of over 11 federal, state, regional, and local plans (SLT, 2008). The core serpentine zone is envisioned primarily for conservation, education, and to promote scientific investigation. As a first step, a 40-acre parcel was acquired by the Sonoma Land Trust at the entrance to the primary canyon.

The Cedars is an other-worldly landscape that most visitors find astonishing and visually compelling. It is raw and wild, a Western landscape where rocks and plants are positioned in an exhilarating dynamic tension, much like the high arid mountains. The deep canyons, stark terrain, picturesque trees, welcoming pools, waterfalls, and remarkable calcium formations make the surrounding Sonoma County seem quite distant. It is a treasure for the county, the state, and the world.

Dr. Susan Harrison of the UC Davis Natural Reserve System, who has used The Cedars in various studies of serpentine plant diversity, concurs. "I cannot think of any other site I would consider more essential to conserve in its present pristine state for the sake of its outstanding contribution to California's flora."

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Wayne Armstrong is a retired botany and biology professor at Palomar College and author of a number of *Fremontia* articles about little-known native plants dating back to 1977. He is author of the family Lemnaceae (Araceae) for *The Jepson Manual* and the popular natural history website *Wayne's Word* (waynesword.palomar.edu).

Tom Chester is a retired astrophysicist who got hooked on botany in 2001 and since then has studied the flora of southern California full time, beginning with the plants of the Santa Rosa Plateau. He is currently concentrating on the flora of the San Jacinto Mountains and the Borrego Desert.

Barbara Eisenstein is a research associate at Rancho Santa Ana Botanic Garden. When not gardening with California native plants she is busy writing, lecturing, and sharing information about them. She initiated and leads a community park stewardship program, Friends of the Nature Park, in South Pasadena. She openly shares her most successful and not-so-successful gardening experiences on her blog: Wild Suburbia (www.wildsuburbia.blogspot.com).

Kay Madore has her own business as a life and wellness coach. She is a longtime docent at the Santa Rosa Plateau Ecological Reserve and conducts vegetation surveys for The Nature Conservancy.

Roger Raiche is an extraordinary plantsman and field botanist, and is well known for his broad horticultural expertise. He was in charge of the California Collection at the UC Botanical Garden in Berkeley for 23 years, revamping the collection and displays, and adding thousands of new plants while exploring and documenting many remote areas of the state. In 2003 he left UC to pursue garden design fulltime at his business, Planet Horticulture (www.planethorticulture.com).

FROM THE EDITOR

Transitions are an inevitable part of life. For this issue of *Fremontia*, Bart O'Brien and I are sharing editorial responsibilities, although he completed the lion's share of its contents. Beginning with the following issue, I will be taking over as editor.

Bart assumed editorship of *Fremontia* back in the summer of 2006 when he coedited the July issue with Linda Vorobik, who was his predecessor. During his tenure, Bart maintained the journal's high standards of excellence. It continued to carry articles on a variety of botanical topics contributed by some of the best scientists in the state and the country. The journal also covered many of the most significant conservation issues in California, as well as features on a host of horticultural topics. Bart was careful to ensure that the writing—even on very complex topics—remained accessible to all readers. And with the skillful assistance of designer Beth Hansen-Winter, the journal continued to captivate all with its stunning photography.

As for Bart, he will continue on as director of special programs at Rancho Santa Ana Botanic Garden (RSABG). He is currently working on two book projects. One, with coauthors Carol Bornstein and David Fross, is on alternatives to lawns; the other is editing a manuscript on the propagation of California native plants at RSABG from 1950 to 1970. Among other activities, he is leading a project to create a CNPS-type inventory for the rare, endangered, and endemic vascular plants of northwestern Baja, California, Mexico.

Both Bart and Linda will be hard acts to follow, but I intend to do everything possible to ensure that the publication remains highly regarded. To that end, I will be working closely with the revitalized *Fremontia* Editorial Committee, and also welcome suggestions from CNPS members, which can be sent to bhass@cnps.org.

—Bob Hass