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CALIFORNIA NATIVE PLANT SOCIETY

BULLETIN

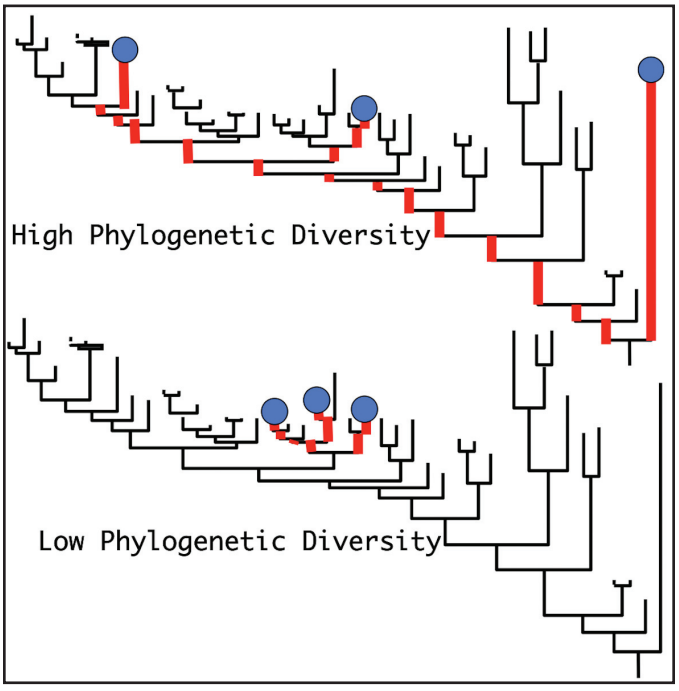
California Plant Phylogeny Working Group Established

CNPS citizen scientists needed to collect target plants

By Brent Mishler

Understanding patterns of biodiversity on the landscape is important for conservation planning, given the urgent need to prioritize efforts in the face of rapid habitat loss and human-induced climate change. Biodiversity is usually measured by counting the number of species in a location and examining the extent of their distribution, to identify areas of particularly high species diversity and endemism. However, investigation of species distribution alone misses the full richness of analyses that can result from taking a phylogenetic approach. Biodiversity is the whole tree of life, not just the twigs (species).

Phylogeny is a complex subject that can be difficult to understand at first, but is like a human genealogy: a tree showing how closely that related modern species are to each other in evolutionary history, i.e., how long ago was common ancestry. These days DNA sequences are emphasized rather than externally visible characteristics.



Phylogenetic diversity (PD) is different than species diversity. This is a hypothetical phylogenetic tree of 42 total species, the vertical lines representing the amount of genetic difference since the last common ancestor. The same number of species sampled in different locations (represented by the blue circles) can have a very different PD (the sum of the red branches on the subtree connecting them) depending on how closely they are related. Conservation efforts should focus on preserving PD rather than on the number of species, as this will maximize preservation of genetic diversity and other traits such as chemistry and morphology.

New phylogenetic methods incorporate knowledge about the *relationships* of species to provide deeper insights into the distribution of biodiversity. They can tell us how well currently protected lands cover the phylogenetic tree, and identify high-priority unprotected areas containing unique evolutionary histories in need of conservation.

(continued on page 6)

Get Ready for the CNPS Conservation Conference

CNPS 2015 Conservation Conference
Celebrating 50 Years of Progress and Promise

The CNPS 2015 Conservation Conference is coming up this January 13–17 at the DoubleTree by Hilton San Jose. Kicking off the 50th anniversary of CNPS, this special event will be larger and more exciting than ever before.

The Conference begins with 21 pre-conference workshops and five field trips to botanical hotspots on January 13 and 14. The main conference will launch into full gear on January 15 with opening plenary speaker Michael Soulé, the "father of conservation biology." Then the exhibit hall will open and concurrent sessions will begin, continuing through January 17.

We have added several new sessions this year, and two new session formats: energizing five-minute "Lightning Talks," and "Progress and Promise Talks," providing 40-minute time slots for key speakers. We are anticipating over 300 oral and poster presentations in 25 sessions by plant scientists, conservationists, and horticulturalists.

Have some fun after the first day of sessions. See the Botanical Art Exhibition, vote for the best entries in the Photography Contest, and connect with like-minded people during the Opening Reception. The "Reaching High: Poets and Writers" event will be followed by Songfest and a music jam in the seventies-style disco bar.

(continued on page 6)


Greg Kareofelas

Guest Editorial

2015 Conservation Conference: Celebrating 50 years of progress and promise

I am excited to invite you to the CNPS 2015 Conservation Conference. The conference will be held January 15–17 at the DoubleTree by Hilton San Jose. Both our 2009 and 2012 conferences were huge successes, and we expect the 2015 Conference to be an even more significant and energizing event for CNPS and the California conservation community. The 2015 Conference will be the kickoff event celebrating CNPS's 50th anniversary!

The CNPS Conservation Conference is unique in bringing together leaders, researchers, practitioners, and enthusiasts from many different disciplines and organizations. The attendees share common goals of conserving and restoring our native flora and habitats. Over 300 presenters (oral and poster) from universities, agencies, consulting firms, and nonprofit organizations, including CNPS chapters, will share current information on a broad spectrum of issues critical to plant conservation.

We have added several new elements to the 2015 conference, including a session on lichens and bryophytes and one on pathogens and pests. We have also added two new session formats to this year's schedule: "Lightning Talks," and "Progress and Promise Talks." Lightning Talks are limited to five minutes and are intended to get out a quick idea to a large audience. Progress and Promise Talks are longer than typical session talks and will provide key speakers an opportunity to share their ideas on long-term strategies for plant conservation.

The Conference will be preceded by two days of workshops, and we are also scheduling field trips to locally important botanical hotspots.

I hope you will join us next January as together we set a course for the next 50 years of plant conservation.

Carol Witham, Conference Executive Committee Chair

Strengthening Chapters, Engaging Members

CNPS now has a new Communications Manager

In June CNPS happily welcomed Deidre Kennelly, the new CNPS Communications Manager. Deidre is dedicated to making chapters more effective and more fun by improving communications within chapters, sharing chapter news and stories with the rest of California, and by helping chapters use new tools. She oversees a team with diverse skills (ranging from Web design to events coordination), united in the common goal of strengthening chapters and supporting members.


Jeff Lieberman

Deidre Kennelly

This team is the product of a year-long discussion within CNPS in which chapters identified important ways that they could be supported in accomplishing even more. Led by CNPS Fellow Steve Hartman, the process developed a list of chapter needs. CNPS staffing has been focused toward accomplishing the ambitious objectives outlined in that list, with Deidre supporting chapter communications and Becky Reilly supporting chapter events (see July–September 2014 *CNPS Bulletin*).

Please get in touch with Deidre (dkennelly@cnps.org) if you have ideas or requests for improving chapter communications, and let Becky (breilly@CNPS.org) know if you have suggestions or need assistance with chapter events.

Dan Gluesenkamp
CNPS Executive Director

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Becoming a Certified California Naturalist

Sagehen Creek is one of many training locations

The University of California's Cooperative Extension has developed a new certification program called California Naturalist. Similar programs are also now offered in many other states. The aim of the program is to foster a committed corps of volunteer naturalists and citizen scientists trained and ready to take an active role in natural resource conservation, education, and restoration.

The California Naturalist training provides a detailed overview of general ecological principles as applied to California, through engaging presentations and field sessions led by researchers, resource managers, and other knowledgeable individuals. Each presenter provides a different perspective from which to view the natural world. To become certified, participants must complete the training and perform 40 hours of volunteer service for the organization of their choice, which could be a CNPS chapter.

One of the training sites is at UC Berkeley's Sagehen Creek Field Station, in a beautiful forested valley in the Sierra Nevada near Truckee. Sagehen's "classroom without walls" allows for a structured program in an informal setting, and includes lively group discussions, naturalist interpretation, hands-on experiences in nature, and field journaling.

Sagehen Creek will be offering two course formats next summer: a six-week course on weekends with optional overnight accommodations, and a one-week residential course. An immersion course for high school youth will also be offered. Trainings are offered at a number of other locations throughout the state. For a nominal fee, participants are eligible for four academic credits through UC Davis Extension upon completing certification requirements.

General information about the California Naturalist program is available at calnat.ucanr.edu. For more information and to register for next summer's courses at Sagehen Creek, go to sagehen.ucnrs.org/events.htm#calnat, or contact Leslie Smith at sagehen-calnat@berkeley.edu.



Andy Rost, associate professor at Sierra Nevada College, reviews the water cycle with California Naturalist students. They are standing next to a general meteorology tower, and precipitation gauges and collectors, at the Sagehen Creek Field Station. Data collected there helps researchers measure changes in various climate factors. Photo by Leslie Smith

Leslie Smith, Coordinator, California Naturalist Program at Sagehen Creek

CFG Journal Celebrates 100th Anniversary with Plants-Only Issue

For the first time in its 100 years of publication, the scientific journal *California Fish and Game* has produced an issue devoted entirely to California's native plants, available at dfg.ca.gov/publications/journal/. This is the first of four special issues that will focus on different areas of conservation by California Department of Fish and Wildlife (CDFW) scientists and collaborators from other organizations, including the California Native Plant Society (CNPS).


CALIFORNIA FISH AND GAME
"Conservation of Wild Life Through Education"
Volume 100 Winter 2014 Number 1
Special Native Plant Issue
Forests, water gowest, and wild game are three of California's greatest resources. They are ours to use but not to destroy.
The United States Department of Agriculture says:
"The free marketing of wild game leads swiftly to extermination."
—*Yearbook, 1910, page 254*
Published Quarterly by the California Department of Fish and Wildlife.
California State Printing Office

The first-ever all-plant issue of the scientific journal *California Fish and Game*.

Promoting "Conservation Through Education" since 1914, *California Fish and Game* is an internationally recognized research publication read primarily by scientists in the fields of conservation, ecology, and management. It focuses on wildlife of North America's west coast (primarily California) and the eastern North Pacific Ocean, but occasionally includes material from elsewhere.

The idea for an all-plants issue arose during a conversation between CNPS Executive Director Dan Gluesenkamp and CDFW Director Charleton H. Bonham about the Department's desire for the 100th anniversary issues to be special. The plant issue (Vol. 100, Issue 1) includes the description of a new species of plant, *Silene krantzii*, endemic to the San Bernardino Mountains of Southern California. Also featured are articles on seed banking, adaptive management, the California Natural Diversity Database, and CDFW's native plant conservation programs. CNPS is mentioned in at least eight of this issue's articles. The plant issue also includes introductions by Governor Jerry Brown, Bonham, and Gluesenkamp.

The other three 100th Anniversary issues will focus on marine life, ecology of freshwater organisms, and terrestrial wildlife. Literature search services put *California Fish and Game* on their websites as soon as it is published. Volume 100(1) is available online, free of charge, at dfg.ca.gov/publications/journal.

CHAPTER NEWS

EAST BAY CHAPTER:
Meetup.com: Powerful Outreach for CNPS Chapters

In September 2012 the East Bay Chapter began using a social networking tool called Meetup for outreach. Using the tool has brought exciting results for our chapter. One of our chapter's veteran field trip leaders, Gregg Weber, observed that since using the tool, field trip participation has at least doubled and attendance by younger people has increased.

Meetup has allowed us to engage many folks who are not yet CNPS members, but who have an interest in hiking, gardening, or the outdoors in general. It has also provided opportunities for chapter and Meetup group members to interact with one another. For example, they can converse after an event to identify plants in pictures taken at the event. Finally, members that have joined our Meetup group seem to be delightfully diverse in age, race, ethnicity, and economic circumstance.

What is this powerful tool?

Meetup.com allows people to form groups based on their interests, to organize activities, and to RSVP to those they'd like to participate in. Once people join meetup.com, they can join any groups that interest them.

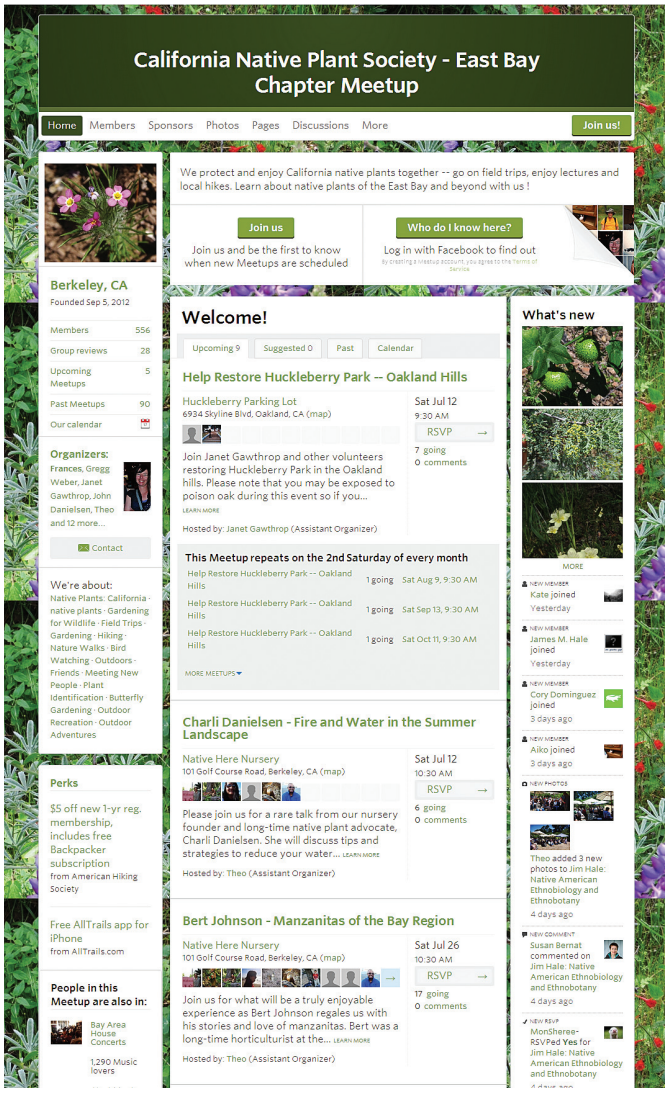
An organizer of a group can post events, such as a hike or a chapter program. Once posted, a notice is automatically sent to all group members, and members can then indicate whether they intend to come. A member can also post a comment or question about the event, either before or after it has occurred. And any member may post photos after an event, which adds to the fun.

What is its potential?

Meetup has millions of members, many of whom may be located in your local area and interested in native plants. We've gained nearly 600 Meetup members in less than two years, and more sign up each week. In a few years, it's not unlikely that we'll have a couple of thousand members. In the Bay Area there are at least eight hiking groups that have over 2,000 members, and at least two have over 6,000 members.

How much does it cost?

A group can be created (and an unlimited number of events can be posted) for $12/month. Note that the charge is per group, not per member; essentially the organizer pays the charge and members can participate free of charge. Alternatively, the organizer can choose to pass some or all of the cost along to members.



What can you use it for?

We've used it to post field trips, chapter meetings, nursery events, and restoration events.

How does your Meetup group attract new members?

Meetup asks a group to describe itself using topics (such as hiking, gardening, native plants). Likewise, members can specify topics that interest them. Meetup then recommends groups that members may be interested in, based on their expressed interests.

For more information, please see our chapter's Meetup tutorial page (ebcnps.org/meetup-training), visit the EBCNPS Meetup page (meetup.com/ebcnps), or contact Frances at 6ad40d7f@opayq.com.

Members of the East Bay Chapter

Increased Horticulture Focus at the CNPS 2015 Conservation Conference

We are planning some great horticulture sessions and workshops at the CNPS 2015 Conservation Conference "Celebrating 50 Years of Progress and Promise" to be held January 13–17, 2015 in San Jose, California.

There will be five horticultural workshops at the conference: Edible Medicinals, How to Produce a Native Garden Tour, Living Wild: Habitat Friendly Food from Native Plants, Ocean Friendly Gardens, and Native Plants Are the Added Value for the "New Normal" in Landscaping.

This meeting is for the horticulture community to brainstorm challenges and solutions. The agenda will include information exchange, identifying high-priority issues, and building partnerships. We will end the session by defining an action plan.

The conference horticulture tracks are mostly grouped in the session titled "Horticulture: Part of Conservation Is Growing." Topics for discussion include



Clockwise from top left: Karen I. Callahan, Karin Kaufman, Alicia Funk, Karen I. Callahan

reasons to use native plants in public and private landscapes, how to implement best practices, and how to help CNPS members broaden outreach to the wider public.

One of the special aspects of CNPS conferences is that participants are encouraged not only to learn about the latest science from experts in the field, but to leave the conference inspired to take action and make a positive difference in the world.

Susan Krzywicki, CNPS
Horticulture Program Director

In Appreciation:

The Natalie Hopkins Education Fund

As a founding member of the Santa Clara Valley Chapter, a former board member of CNPS, and curator of the Carl W. Sharsmith Herbarium at San Jose State University (Carl is a CNPS Fellow), Natalie Hopkins was fondly known and well regarded within the native plant community. In December 2007, CNPS received a letter from Thomas Hopkins from the estate of his mother, Natalie Hopkins, containing a check for $50,000. As a botanist and native plant ecologist for 40 years, Natalie mentored young women who pursued careers in botany and plant ecology, so it was befitting that a portion of her estate would be used to establish a scholarship fund to support female students and researchers pursuing their education in native plant studies.

In the fall of 2010, the Natalie Hopkins Education Fund was formally established, and the first grants were awarded as part of the five endowment funds from CNPS's annual Education Program grant cycle.

In the first four years of the endowment, grants have been awarded to 20 women thanks to the Natalie Hopkins Education Fund. A broad range of proposals have received support, including research on invasive species in vernal pools, litter accumulation and decomposition, climate change in plant communities, and the evolutionary history of the genus *Arctostaphylos* using a new, more powerful sequencing method of chloroplast genomes. We're sure that Natalie would have been proud to know each of the young women who have benefited from her endowment,



With the assistance of 20 undergraduate students, grant recipient Jenn Yost conducted research on two species of goldfields *(Lasthenia gracilis* and *L. californica)* to learn why these similar species flourish in the same area but have not hybridized, thus maintaining plant diversity. She completed her PhD in 2013 and is now a tenure track faculty member at Cal Poly, San Luis Obispo.

and grateful for the meaningful botanical research that continues on in her name.

Stacey Flowerdew, CNPS Membership and Development Coordinator

Phylogeny Working Group

(from page 1)

Bruce Baldwin, David Ackerly, and I of the University and Jepson Herbaria at UC Berkeley, have received a three-year National Science Foundation grant to apply a novel suite of phylogenetic tools to the exceptionally rich flora of California. In our research, we are making use of the Consortium of California Herbaria database, the online *Jepson eFlora* for California, and the wealth of published phylogenetic studies.

We are focusing on two key concepts: *phylogenetic diversity* (the portion of the overall phylogeny that is present in a local place), and *phylogenetic endemism* (the geographic rarity of that portion of the phylogeny). Our research team is developing a comprehensive phylogeny for California plants using existing data from Genbank (an international databank of DNA information) as well as fresh material for taxa whose DNA has not yet been sequenced.

This is where CNPS comes in. The grant includes financial support for an innovative collaboration with CNPS citizen scientists with knowledge and interest in California native plants and their phylogenetic history. Educational workshops will be held and financial and logistical support provided for fieldwork to collect target plants. This fieldwork will be coordinated with other CNPS activities including the Rare Plant Treasure Hunt.

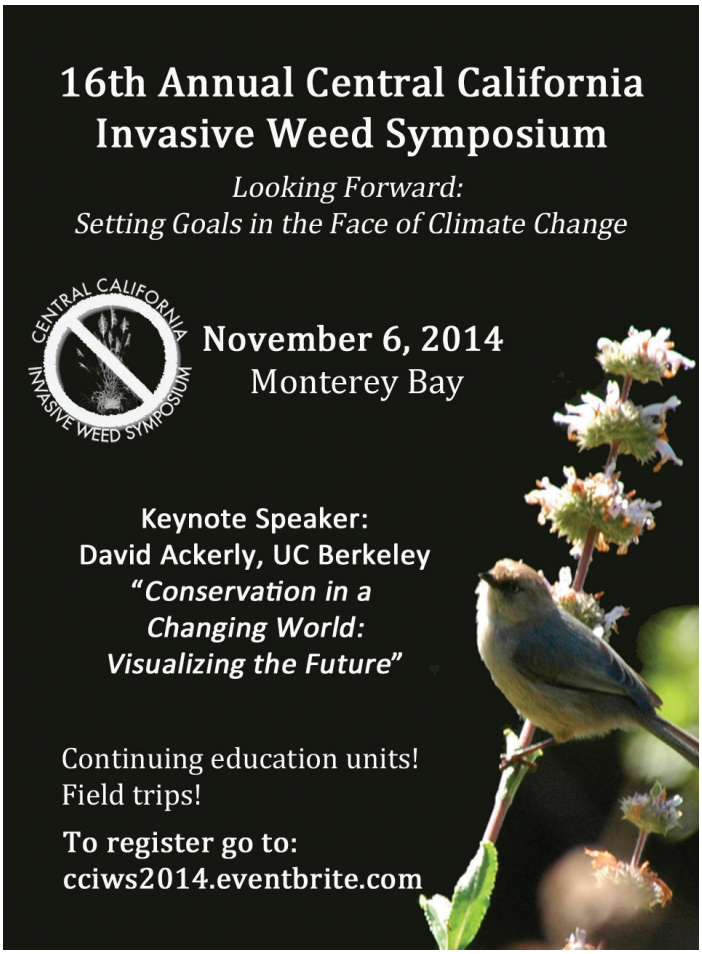
The California Plant Phylogeny Working Group will hold a "kick-off" meeting during the CNPS Conservation Conference in January 2015. To learn more about the project, contact Staci Markos in the Jepson Herbarium: smarkos@berkeley.edu. If you are interested in attending or getting involved in the project's workshops and field trips, contact Danny Slakey at: dslakey@CNPS.org.

Brent Mishler, Director
University and Jepson Herbaria

Conservation Conference

(from page 1)

The next morning will open with another new addition to the schedule, "Visions for California Protected Lands," in which a plenary panel drawn from major state and federal agencies will discuss their ideas and perspectives on the future of California conservation. Sessions will then continue, followed by the Silent Auction. Then relax and enjoy a delicious dinner to wrap up the day at the Friday Banquet, which will include keynote speaker Jared Farmer, historian and geohumanist. The Conference will conclude Saturday with Progress and Promise Talks.



While in San Jose, don't forget to explore the vibrant Bay Area from the conference's ideal central location. There are wonderful attractions nearby, including many parks and natural areas. The DoubleTree is conveniently located, and it's easily accessible whether you arrive by plane, train, bus, or car. With special discounts for conference attendees, it's the perfect place to stay—and you never have to leave the party!

The 2015 Conference will have something for everyone with an interest in native plants and conservation. Whether you're a consultant discovering the latest technology and trends, a student or researcher presenting your work, an agency employee seeking to learn best practices for land management, or a backyard botanist looking for tips to improve your native garden—you won't be disappointed. Sponsor, exhibitor, and volunteer opportunities are available, and we especially encourage students and CNPS members to attend and take advantage of discounted rates.

We hope you will join this celebration of the past 50 years of progress, and be a part of the discussion about what the next 50 years will hold for California's native plants. Full details and registration are available online at cnps.org/2015. See you in San Jose!

Becky Reilly
CNPS Events Coordinator

Native Plant Gardens of CNPS Members

Glenda Marsh, Sacramento

It may seem odd to call a drought-tolerant front-yard landscape an "oasis." However, that's exactly what has evolved since I transformed my front lawn corner lot into a drought tolerant garden.

I began replacing the lawn in 2011, starting on the narrower side of the lot, and year by year gradually moved to the two larger front sections, one on each side of the cement walkway leading to the front door. A colleague with landscape design experience got me started with a checklist that helped me resolve certain issues and decide what garden features I wanted to incorporate. Next I gathered ideas from design books and from other natural and designed landscapes I have admired.

Since the yard is large and sits on the corner of a four-way stop, I had two major needs: screening to increase privacy from a busy corner, and minimizing the amount of area covered by vegetation in order to simplify maintenance. I achieved these goals in two ways. First, I built dirt mounds with purchased organic soil along the curving corner edge and at other points across the front. Then I planted small strawberry trees (*Arbutus unedo*, not a native) across the yard behind the mounds, and deer grass (*Muhlenbergia rigens*) on the corner mound for screening. When I look out from the front porch, I now experience a sense of ease and greater privacy.

I also designated small garden areas where I concentrated perennial plants. These included various native and hybrid *Penstemon* species, silver bush lupine (*Lupinus albifrons*), California fuchsia (*Epilobium* spp.), and small shrubs including germander (*Teucrium* spp.), sage (*Salvia* spp.), bush monkeyflower (*Mimulus aurantiacus*), and St. Catherine's lace (*Eriogonum giganteum*). I can replenish any of these plants with cuttings or seedlings.



Glenda Marsh

I enjoy this somewhat private view from the front porch, where a deep shrub bed runs along the entryway toward the street, and perennial-planted mounds located at the outside edge create a separation between the yard and the busy residential intersection.

Most of these plant groupings are located close to the house, but a couple were placed next to the sidewalk so neighbors could also enjoy them. The rest of the open space between the two is covered with a rocked dry stream, gravel or mulch, and various shrubs from low-spreading ones to medium and tall ones, including various California lilacs (*Ceanothus* spp.), Oregon grape (*Berberis aquifolium*), and existing azaleas and Japanese maples along the north-facing side.

I wanted the house to appear as though it were situated within a garden rather than simply standing behind a narrow skirt of shrubs concealing the foundation. So I widened the shrub bed in front of the house to add depth. I planted a valley oak in the center of a meadow composed of Idaho fescue (*Festuca idahoensis*), California native and hybrid bulbs, and two ground covers, Sonoma sage (*Salvia sonomensis*) and Emerald carpet manzanita (*Arctostaphylos* 'Emerald Carpet').

Soil has been a challenge. The yard has poorly draining clay soil, while the constructed mounds drain too well. My solution was to place plants needing excellent drainage on the mounds, and those more tolerant of poor drainage "in the flats." That's gardening for you!

When I look out my front window I often see neighbors stopping to look, admire, and point to things that catch their eye, and drivers slowing down to get a better look. Clearly all are enjoying this neighborhood oasis. I enjoy the view as well from my vantage point and experience the serenity that only a lovely garden can bring.



Debra Ayres

Walking north on the sidewalk, neighbors enjoy this view when approaching the busy corner. The sight line opens up and follows the rock "stream" across the north side of the front yard.

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BULLETIN
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The California Native Plant Society is a statewide, nonprofit organization of amateurs and professionals with a common interest in learning about and preserving California's native plants and plant communities. Membership is open to all. Visit cnps.org

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(Details available at: http://cnps.org/cnps/admin/cc/)

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HOST CHAPTER: SACRAMENTO VALLEY

CNPS 2015 Conservation Conference

Celebrating 50 Years of Progress and Promise

January 13-17, 2015
San Jose, CA



Photography © Nick Jensen

2015 CONSERVATION CONFERENCE

REGISTER ONLINE TODAY!
www.cnps.org/2015

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