Habitat Revolution
Garden as if life depends on it

Summer in the Garden | Fire Recovery | An Antidote to the Attention Economy
Protecting California’s native plants is about more than plants.

From caterpillars and birds to our own species, life depends on native plants.

Do your part to keep California in bloom.
Go Perennial with a monthly gift.

www.cnps.org/perennial-membership

With a perennial gift, you membership is always current. You’ll never miss an issue of Flora and more of your gift goes directly to protecting California’s native plants. Call us at 916-447-2677 to learn more.
Habitat Revolution

16 Help for the Insect Apocalypse
Redefining why and how we garden. CNPS chapters and Calscape are helping California build a [wild]life-support system with local native plants.

6 Be Inspired
Highlights from the 2019 garden tour season

12 Taking Care
Artist and author Jenny Odell on the antidote to the attention economy

22 Victory at Union Mine High School
Students rally to save an oak woodland on campus

24 A New CNPS Fire Recovery Guide
A free, updated version covers the entire state

34 California Plant Biodiversity
To get the facts straight, review these concepts first

VOL 2 NO 4 SUMMER 2019

2 From the Executive Director: A special letter for everyone

5 Learn: Cool California natives to experience this summer

28 Grow: Marin County’s first public native garden

34 In the Garden: Bart O’Brien talks summer native gardens

36 Kids’ Corner: Create a sound map

38 Future-Minded: Mary Frances Kelly-Poh

41 Events: Volunteer opportunities and expert talks

ON THE COVER: An El Segundo blue butterfly (Euphilotes battoides allyni) rests on its host plant, a sea-cliff buckwheat (Eriogonum parvifolium). Ann Dalkey and the CNPS South Coast Chapter helped expand habitat in LA County for the endangered blue butterfly and other species by working with homeowners and partner organizations to plant thousands of host plants. Photo: Ann Dalkey

ABOVE: Pipevine swallowtail (Battus philenor hirsuta) chrysalis. Photo: Tim wong / @Timtast1c
Dear friend,

I hope you are well. I’m writing with an update on the Biodiversity Initiative (BDI) work you helped make possible.

When we last checked in, you heard about the launch of the BDI by Governor Brown, with a Roadmap, a couple of Executive Orders, and A Charter for Securing the Future of California’s Native Biodiversity that CNPS helped draft. You saw that we had a rare opportunity to advance projects, secure protections for plants and critters, and perhaps even fundamentally change the system and our culture. And so you made a gift to help CNPS continue to engage.

Since then a lot has happened. Last Thursday, California Gov. Gavin Newsom signed a budget that invests a game-changing $18.6 million dollars in the Biodiversity Initiative!!  This is on top of $2.5M allocated a few months ago! The funding lets California advance 21st century conservation genomics, protect biodiversity from harmful invasive species, map soil carbon storage, and hire a biodiversity coordinator. It puts $1M into vegetation mapping in the parts of California most likely to be developed, and – get this – $3.6M will go to our partners that are working hard to seed bank all of California’s rare plants! Thanks to the funding you provided, CNPS staff and legislative consultant were able to focus on this incredible opportunity. Thanks to that effort, Asm. Ash Kalra and other legislators heard how they could help. Thanks to the CNPS members who called their legislators at just the right time, the legislature and the Governor turned our need into law.

Thanks to an incredible combination of good luck, perseverance, and hard work, California now has budgeted to back up our rare plants. To ensure that, even if our best efforts fail and climate change, fire, or disease wipes out wild populations, none of our plants will be permanently lost; we will have a powerful hedge against extinction; we will still have their seeds.

Of course, this is just the beginning – yes, a really good beginning, but the best is yet to come. We are continuing to bring together the biodiversity community and advance the initiative. CNPS is leading the NGO stakeholder group, working with the other groups (agencies, and universities) to grow and diversify participation. In the
coming days we will hold the first meeting of this large and growing group, and ask them to think carefully and share ideas for how California can tackle the biodiversity crisis; these ideas will then go into an implementation plan to guide our future work. Yes, we plan to continue working for more funding for science, conservation, and collections, but funding is a relatively small part of what we can accomplish. More importantly, we are working to unite biodiversity professionals, and inspire citizens, toward new systems and norms that ensure long-term preservation of California’s incredible biodiversity. Not only are we aiming for jaw-dropping successes here in California, we are specifically working to accomplish these on an accelerated timescale so California can bring our results to the October 2020 United Nations biodiversity meetings in China, to cajole and inspire the world to join us in assertive action.

This sounds embarrassingly ambitious, and it is. We might not make it, but we’re certainly doing well so far! Already more than 500 California scientists have signed on in support of our charter; we want to add another zero to that number. As we meet and plan with state agencies and legislators, they share our excitement; a common exchange is, “Is this really as big as it feels?” and “I think it might be!”

To be honest, we all feel a little surprised at how much progress we’ve made. Hopefully you feel proud, and can see how you have helped make it possible. We’ve secured some wins that, just by themselves, would be the success of a decade, but each of them has opened up even bigger opportunities. We are coming to realize that we truly do have a once-in-a-generation opportunity, that we are surfing a cultural moment that CNPS and others have helped to create, and that we are on the threshold of system-changing things that frankly too many of us had stopped even dreaming could happen in our lifetimes.

Getting here was hard, but I hope you believe as we do that it was worth it. Please get in touch if you want to hear more about what we are planning to do next . . .

Take care,
-Dan
Now Available!

Vascular Plants of Northwest California
A catalog by James P. Smith, Jr. & John O. Sawyer, Jr.

For scientists and naturalists alike, this long-awaited checklist of the native and naturalized vascular plants of northwestern California documents 158 families, 901 genera, 3,376 species, and 3,811 taxa!

Order your copy at store.cnps.org!

Summer Sale
Up to 50% off some of your favorite books and posters!

- California’s Botanical Landscapes
- Living Wild
- Marin Flora
- California Mosses
- A full poster set for $31.99!

store.cnps.org/summer-sale
COOL CALIFORNIA NATIVES
PLANTS TO SEE AND ENJOY THIS SEASON

BY ELIZABETH KUBEY

LANCELEAF LIVEFOREVER (Dudleya lanceolata)
Hummingbirds, not poachers, are visiting these Dudleya blooms, thanks to the hard work of wardens, rangers, CNPS volunteers, and other concerned citizens. Last year’s Dudleya poachers are facing big fines and even jail time, and poaching is in decline this year. Much work remains to be done as we protect sensitive Dudleya like lanceleaf liveforever (Dudleya lanceolata), which live in rocky areas and slopes in the mountains of southern and central California and Baja. Flowers branch up to 50cm high!

FIREWEED (Chamerion angustifolium)
July through September, these four-petaled, vibrant flowers create a field of color in burned or disturbed areas. Found in the Sierra and North Coast ranges up to 3,350 meters, these flowers disappear as shrubs and trees return.

GIANT WILD RYE (Elymus condensatus)
A large spreading green grass up to 3 meters tall, this cool native grows in dry coastal sage scrub, chaparral, woodlands, and at the edges of wetlands. The grass flowers June through August and is robust after wildfires. The Chumash and Cahuilla have made arrows from fire-hardened stems.

REDWOOD LILY (Lilium rubescens)
May through August, this rare lily grows in the North Coast in forest understories and chaparral habitats. The upright waxy stem grows to 2 meters tall. Flowers are white with freckled purple spots, aging to purple and pink.

DOGBANE (Apocynum cannabinum)
This poisonous plant blooms with hermaphrodite flowers June through August. Look for the lanceolate (a narrow, oval shape that points at the end) leaves and reddish stems. Dogbane is widespread in mostly moist areas below 4,000 meters. Native peoples twist its fibers into strong cords.
Perhaps nothing makes the case for native gardening like a yard full of vibrant lupine, fragrant Ceanothus, and glowing Fremontodendron. Seasoned CNPS volunteers understand this and thus work for months each spring to host dozens of garden tours up and down the state. From San Diego to Arcata, thousands of Californians are able to tour real native gardens thanks to the generous people who open their homes and the chapter leaders who organize and promote the tours. To each of you, the entire CNPS community offers a huge round of applause and gratitude!

In the spirit of “show don’t tell,” garden tours are important tools in demonstrating the variety and possibilities of native landscaping. The tours are also instrumental in dispelling common concerns about native gardening. Whether you crave a modern, spare aesthetic or a colorful cottage garden, chances are that you’ll see the garden of your dreams on a CNPS garden tour.

Above: This stunning coastal garden in Orange County attracts and supports a variety of pollinators and wildlife. Photo: Kris Ethington

Below: Island mallow (Malva assurgentiflora) brings gorgeous color to a garden. Photo: Ged Bulat

A valuable reminder for passersby. Photo: Ged Bulat
A vibrant blend of colors from California bush sunflower (*Encelia californica*), California poppy (*Eschscholzia californica*), and Margarita Bop penstemon (*Penstemon heterophyllus* ‘Margarita Bop’) in this backyard native garden. Photo: Ashini Fernando

**Above:** A western fence lizard (*Sceloporus occidentalis*) sunbathes in Kris’ garden. Photo: Kris Ethington

**Below:** Garden visitors enjoyed sunny blue skies with beautiful chaparral yucca (*Hesperoyucca whipplei*) in this San Diego garden. Photo: Ged Bulat

**Top left:** A hoverfly (Syrphidae family) drinks nectar from blue-eyed grass (*Sisyrinchium bellum*). Photo: Kris Ethington
Water agencies across the state are helping homeowners replace their turf with climate adapted native plants that require little supplemental irrigation beyond normal rainfall. This garden was created as part of the Moulton Niguel Water District NatureScape Program, and featured on both the NatureScape and the CNPS Orange County Chapter Garden Tour. Photo: Kristen Wernick

Above: Julie Clements’ garden welcome table on the CNPS Sacramento Valley Chapter’s Gardens Gone Native Tour. Photo: Elizabeth Kubey

Right: This decomposed granite path, bordered by the purple profusion of De La Mina verbena (*Verbena lilacina* ‘De La Mina’), helps water soak into the soil while creating structure for the space. Photo: Larissa Williams
Above: A sleeping aggregation of male long-horned bees (tribe Eucerini) on Allen Chickering sage (Salvia x clevelandii ‘Allen Chickering’). Photo: Lesley Hamamoto

Below: Elegant Clarkia (Clarkia unguiculata) and California poppy (Eschscholzia californica) welcome visitors. Photo: Elizabeth Kubey

Above: A beautiful entry into this California native, certified habitat garden. Photo: Kristen Wernick

Above: Sacramento host Julie Clements spent the day sharing her garden and answering questions to inspire visitors to start their own native plant gardens. Photo: Elizabeth Kubey

Left: Orange California poppy (Eschscholzia californica), pink clarkia flowers (Clarkia ssp.), and other native blooms bring springtime color to a pathway. Photo: Cynthia Typaldos
Right: Margot Cunningham and Pierre La Plant’s Richmond garden includes a front meadow with this genetically local native clarkia. Photo: Kathy Kramer

Below: In Robin and Neil Heyden’s Alameda garden, Robin’s handmade mosaic stepping stone compliments the plants including leafy reedgrass (Calamagrostis foliosa), monkeyflower (Diplacus aurantiacus), chalk Dudleya (Dudleya brittonii), showy penstemon (Penstemon spectabilis), yarrow ‘moonshine’ (Achillea millefolium) Photo: Kathy Kramer
A rustic wooden sign brings attention to the sticky bush monkeyflower (*Diplacus longiflorus*) and California poppy (*Eschscholzia californica*). Photo: Ashini Fernando

Benches and sculptures make this garden even more inviting. Photo: Ashini Fernando

Above: A front yard blooming with life on the Going Native Garden Tour. Photo: Cynthia Typaldos

Left: This native garden on the CNPS Santa Clara Valley Chapter’s Going Native Garden Tour shows how layering low-growing shrubs in the foreground and taller shrubs in the background can draw the eye into the garden while creating depth and interest. Photo: Deborah Praisewater

Showcase your garden!

Interested in sharing your garden on a CNPS garden tour? Go to www.cnps.org/chapters to find and contact your local chapter.
A conversation with author and artist Jenny Odell

BY LIV O’KEEFFE

I recently found myself caught in a modern moment of choice: to be productive — or to just be. Traveling in New Mexico, I’d planned to use a precious spare hour to squeeze in a vigorous workout on a nearby trail. Instead, I came across a native plant demonstration garden.

“Just a quick peek,” my inner taskmaster chided. But within minutes I was absorbed in bird song and the enormous, pale pink blossoms of the Palmer’s penstemon (Penstemon palmeri). I soon lost track of time in that lovely interpretive garden, meandering through displays of the region’s riparian and high desert plants. Did I break a sweat? No. But I sure was restored, my breathing more expansive, my thoughts quieter. I was reminded yet again that in returning to our natural world, we’re also coming home to ourselves.

Author and artist Jenny Odell says this homecoming is desperately need today. In her new book, How to Do Nothing: Resisting the Attention Economy, Odell calls on each of us to reclaim our scattered focus and direct it instead toward a greater understanding and stewardship of our local ecologies. Recently, I had the privilege of sitting down with Odell, a Stanford professor and Oakland resident, to talk about the convergence of bioregionalism, art, technology, and the simple practice of noticing what’s around us.

Bioregionalism gives us a sense of home, a way to engage and feel a part of something at a time when everyone is pitted against each other and atomized.
Jenny, how do you describe the “attention economy,” and why is it a problem for both the human being and the environment?

If you were to look up attention economy online, you’d see it defined as persuasive design created to increase engagement on a platform. [Think about what you’ve read about addictive features built into mobile apps.] But I would also count things like the wording of headlines and the trickle-down effect of those headlines, where the content created on these platforms is optimized to get your attention. Even more broadly, I count personal branding and even this expectation that one should always be reachable and be branding oneself to get ahead. On a personal level, it makes it hard to pay attention to the things you want to pay attention to or that might surprise you. I think it keeps people in a state of anxiety or perpetual hyperstimulation. You can’t focus. That naturally implies that it would be harder to pay attention to the things and the people that matter to you. It’s going to be hard to pay attention to that other life around you, especially when those other systems are really complex and require a lot of attention and patience to address.

As an artist, I’m preoccupied with forgetting to look at what’s in front of you. My example comes from bird-watching. I’m always surprised by how I’m always walking along looking for birds and see that one is just right in front of me. I think that’s a metaphor for what the attention economy is doing. What if this thing that I’m grasping for in a sort of anxiety-driven way is actually right in front of me — something actually more interesting or absorbing is right in front of me?
You argue for a new “placefulness” or bioregionalism. How did you arrive at this conclusion personally?

Bioregionalism gives us a sense of home, a way to engage and feel a part of something at a time when everyone is pitted against each other and atomized.

This really came together for me in an odd confluence of events around 2015/2016: I started bird-watching and read “The Genius of Birds,” the 2016 election took place, and the Ghost Ship fire happened, in which a number of artists in my community died. I was deeply shell-shocked. As an artist, I felt unsure about what to even say or do at the moment. Then, I was befriended by these two crows on my balcony. I just started staring at them and wondering what they see, and as I write about in my book, that point of view became my escape hatch. It was the beginning of my realization that at all times I have access to a different understanding of myself through this shared environment simply by paying attention. It’s the only way I know of to reliably get outside of this myopic and narrow and overstimulated and fearful, isolated self that is cultivated online.

If I stare at a leaf for a long time, I start to think about the similarity between its vascular structures and something like blood vessels or neurons. Dwelling on this kind of similarity reminds me that as forms of life, we’re not alone.

In your book, you use the story of the East Bay hills’ “Old Survivor,” a legendary old-growth redwood still standing today, as a metaphor for survival, resistance, and bearing witness. You also recount the ancient Taoist fable of The Useless Tree in which a carpenter scornfully rejects a gnarled, misshapen tree. Because the tree doesn’t meet the human’s limited definition of utility, it’s able to mature into a large specimen supporting many other creatures to whom it is indeed useful. So, what does it look like for each of us to be an Old Survivor?

Old Survivor has qualities that prevented it from being cut down for timber. In both stories, the punch line was how narrow the idea of usefulness was at one time. There’s a sort of dark humor in seeing loggers looking up at this tree and seeing only timber. For humans, I watch people try to fit into all these different types of boxes. When we get to the point where we want to reject it all, our reaction can be to want to retreat. Instead, we can try to embody some shape of resistance in the midst of something — right here in place. It’s uncomfortable. It takes some courage.

It’s going to come at some sort of cost, especially when all the forces around us are trying to get us to fit a different definition of usefulness. From the point of view of productivity or the way we value time and activity, you will appear to be doing something wrong.

“...

If you’re optimizing your life or an environment for performance and production, something like conservation isn’t where you’re going to put your energy. The destruction that follows shows how narrow that value framework really is.
In questioning what it means to be useful, you contrast the characteristics of productivity with that of maintenance or stewardship. Can you talk about the difference and why it matters?

I think our common definition of productivity assumes that you’re putting something new in the world visibly in a way that can be measured using current systems. Anything that doesn’t fall into that becomes invisible or devalued. It makes things like maintenance disappear. Maintenance is the work that makes life possible, something I’m reminded of by my mother, who not only raised me but currently supports foster children in transition. Historically, we can also see reminders of this in the caring and reciprocal nature of indigenous land practices and stewardship.

Our current version of productivity is a selfish one, so things like altruistically helping other people would not appear to be productive from a ruthlessly narrow version of productivity. There’s a scene in the book where I describe going to Elkhorn Slough. I’d never been there before and I just started crying. I had this feeling of gratitude – you know where you feel something is above and beyond anything you deserve. We are not treating this world like we should, because if you’re optimizing your life or an environment for performance and production, something like conservation isn’t where you’re going to put your energy. The destruction that follows shows how narrow that value framework really is.

You’re a bird lover and describe your evolution from someone who heard “bird sounds” to someone who now recognizes the different calls of distinct species of birds. Plant people often have the same experience, moving from a state of what we call “plant blindness,” in which everything is a blur of green, into a more advanced understanding of individual plant species. As an artist and professor, how do you help people learn to see and observe what’s around them?

I teach an Introduction to Digital and Physical Design course where we have a field trip to Pearson-Arstradero Preserve, near campus. First we go to the visitor center. I want my students to think about how having that info at the beginning makes a difference in what they see the rest of the time. I also have them use iNat [the online citizen science app, iNaturalist]. Later in the term, their final project is to make a walking tour of some physical aspect of campus that they think someone else hasn’t noticed. Their only goal is to give another person a different experience of that space than they’ve had before.

> cont. on page 40
Caterpillars are extremely picky about what they eat.

Why should you care? Because each caterpillar is destined to become juicy bird food — or a beautiful butterfly or moth. Humans who worry about pollinator decline, birds, or biodiversity in general need to be concerned about the availability of caterpillar food.

Here’s the dietary restriction: Native caterpillars need to eat local native plants, the flora that have co-evolved with them. Some of them rely on just one or two species for food. If that plant is unavailable, the food chain is interrupted through several levels, and California’s rich biodiversity becomes poorer.
A new feature on Calscape.org, the CNPS native plant database, helps address the challenge with host plant information for more than 1,400 species of Lepidoptera (butterflies and moths). People can search by butterfly or moth species, by address, or by plant.

Lists of native ‘Leps’ and more
For example, a resident of Ojai will find a list of 169 butterflies and moths native to that location, from the monarch butterfly (*Danaus plexippus*) to the *Acronicta othello* moth, with most names accompanied by color photographs. Maps of the species’ range also open up. When users click on a species name, they see names and photos of likely host plants. In Ojai, for instance, there are three native milkweeds for the monarch and one native host plant, laurel sumac (*Malosma laurina*), for the moth.

Dennis Mudd of Poway developed Calscape to aid in the restoration of native flora in California’s landscapes, donating the website to CNPS in 2015. He hopes this new feature will increase awareness of the specific food needs of native pollinators, especially the state’s Lepidoptera.

“I think it’s a great tool. If we really care about Leps, and get the word out, maybe we can save some species, especially monarchs,” he said. “But it also shows how critical native plants are, not just for people who love plants but also those who love animals.”

“This is the whole thing that has been missing,” says Chris Lewis of the CNPS Sacramento Valley Chapter and director of Elderberry Farms, the chapter’s native plant...
nursery. “For some time, birders have been focused on things like water sources and seeds and berries, but too little has been said about caterpillars.”

Caterpillars are crucial bird food, Lewis notes. “Doug Tallamy’s research has shown that just one clutch of chickadees needed 9,000 caterpillars in six weeks.”

Tallamy, professor of entomology at the University of Delaware, has been at the forefront of research on the specialized relationships between native plants and insects. “If you care about the collapse of butterflies and other pollinators, this is a simple tool you can use to help in a very real way,” he says of the new Calscape feature.

In his upcoming book “Nature’s Best Hope,” excerpted on Calscape, Tallamy writes:

“To improve your yard’s ability to support life, you have to use the plant species that are good at passing the energy they have harnessed from the sun to animals.”

**Fast-tracked and accessible to all**

The new Calscape feature came together in just a few months, Mudd says. A user of the website, Bridget Kelly, inquired whether it was going to support host plant data. She then volunteered to help set it up. “We got a lot of help from her,” Mudd notes.

The Calscape team mined data, range maps, algorithms and photographs from numerous sources, including the (London) Natural History Museum’s of the World’s Lepidopteran Hostplants, UC Berkeley’s Jepson Herbarium as well as the Essig Museum of Entomology, the National Wildlife Federation’s Native Plant Finder, the Calphotos website and Tallamy’s own university lab. Reusing the Calscape setup for plants helped speed things along.

“The data are out there; they had never been aggregated,” Mudd says.

The listings for host plants include names of nurseries, seed stores, and other plant sources for gardeners. The default listing for the host plants is by popularity, Mudd notes. “We make it pretty easy to find the plants you want.”
A sense of urgency

“We need more local native plants everywhere,” Lewis emphasizes. She and other volunteers from the CNPS Sacramento Valley Chapter are developing a project they call Homegrown National Park, a concept made popular by author Richard Louv (“Last Child in the Woods”) and Tallamy. They hope to engage the public in taking quick simple, action to help avert extinction, right here at home. “We’re not telling you to take out your favorite gardenia, but maybe you can put five local native plants in a corner. It’s just about expanding habitat.

“Every community can focus on its five most ecologically important plants. It’s probably always going to be an oak, a Ceanothus, a Baccharis.”

Boosting habitat in the neighborhood

Not far from the busy avenues of Torrance, Calif., the CNPS South Coast Chapter maintains the Point Vicente Interpretive Garden, a refuge for wildlife and humans alike. Located in Rancho Palos Verdes, the ocean cliffside garden is home to hundreds of butterfly host plants, including sea-cliff buckwheat (Eriogonum parvifolium) for the El Segundo Blue Butterfly.

Two years ago, the chapter along with CNPS garden ambassador Ann Dalkey created the Patch Habitat Program to improve habitat for the El Segundo Blue Butterfly and other local native butterfly species. Volunteers planted hundreds of host plants across the community, including those in the Point Vicente garden. Today, hundreds of students and neighbors visit the garden each season where they can take tours, read educational signage, and experience a native habitat garden firsthand.

“Not just about butterflies

The endangered monarch butterfly has become the poster species for what’s been dubbed the “insect apocalypse,” but Mudd believes we can still help the monarch. “Milkweed is amazingly effective at attracting and supporting monarchs,” he says. “I’ve counted close to 100 monarch caterpillars this summer in a small milkweed patch in my garden, and seen a steady stream of monarch butterflies passing though.”
Milkweed (*Ascepias*) includes 14 native species in California. These range from the familiar narrow-leaf milkweed (*A. fascicularis*), native of most of the state, to serpentine milkweed (*A. solanoana*), which grows only in the North Coast ranges from Lake Berryessa north, and skeleton milkweed (*A. subulata*), found in southeast California’s desert terrain. Once established, milkweed easily reseeds, Mudd notes.

Lepidoptera also covers moths, which are pollinators, but unlike butterflies have an image problem. “They are a little harder to love,” Mudd notes of moths. “But they are bird food — that’s how you have to sell it. Ninety percent of bird species depend on caterpillars.”

Another image problem that gardeners have to get past if they want to help Lepidoptera: the idea of the perfect, untouched plant. Caterpillars chew leaves, after all.

The United Nations biodiversity report released in May underscores the urgent need for humans to rethink how they’re treating the natural world.

“If you don’t see chewed leaves, you’re probably not going to see birds, see butterflies, see life,” Mudd notes. And chewed leaves do not present an issue for the plant, if it’s well established, he adds. “We’re really talking about sterile environment vs. natural environment,” he says.

An urban community learns about natives

San Francisco, a built-out city of just 49 square miles, does not have much native vegetation left, but it does have a Biodiversity Resolution, passed in 2018 by the Board of Supervisors.

“A resolution is an aspiration, the way San Francisco is doing it,” explains Eddie Bartley, vice president of the CNPS Yerba Buena Chapter. The city departments had a year to decide how policy changes would move toward the spirit of biodiversity. The problem? City staff wasn’t sure how to translate a desire for biodiversity into something real. “We’ve been on an education push ever since,” he says.

With projects such as the renovation of Golden Gate Park’s Middle Lake also coming up, chapter representatives have been at two or three meetings a week with city staff members and the several commissions that advise city departments. “They like what we say, but moving it to the ordinance phase is more difficult,” Bartley says.

The chapter also is working to change what Bartley calls “the Arbor Society mentality” in S.F. that pushes to plant more street trees – even though most of the current sidewalk trees are stressed-out conventional landscape choices. (Just 1 percent of S.F. trees are natives.) Commercial landscape design in the city is based entirely on ornamentals, with no awareness of the benefits of local options, he says. To counter this mindset, the Yerba Buena Chapter has created a sidewalk-strip planting guide with a list of recommended local natives. The chapter also provides a native butterfly host-plant list and a general plant guide for commercial landscapers.

“It’s very much a learning thing,” Bartley says of the chapter’s efforts with government and non-government organizations. “Just saying ‘native, native, native’ isn’t gettin’ it.” But, he notes, “We’re feeling like we’re making a difference.”
Natives on a waterfront

Sausalito’s waterfront Bay Model Visitor Center now includes Marin County’s first public California native plant garden.

The garden came about through the efforts of CNPS Marin Chapter members Charlotte Torgovitsky and Laura Lovett, as well as many Marin Chapter volunteers, working with Park Manager Chris Gallagher. The beauty of the site inspires visitors to plant their own native habitat gardens, chapter members report.

To read more on the Bay Model Garden, turn to Featured Garden, page 28.

To help nature, to help ourselves

The United Nations biodiversity report released in May underscores the urgent need for humans to rethink how they’re treating the natural world. The report concluded that 1 million plant and animal species are on the verge of extinction, with alarming implications for human life as well.

But there is hope still, notes Robert Watson, a British chemist who served as chair of the U.N. panel that released the landmark study. “The report also tells us that it is not too late to make a difference, but only if we start now at every level, from local to global,” he says.

Tallamy, on his website bringingnaturehome.net, stresses the importance of making residential and commercial landscapes part of the natural ecosystem:

“Though vital as short-term refuges, nature preserves are not large enough to meet our ecological needs, so we must restore the natural world where we live, work and play. Because nearly 85 percent of the U.S. is privately owned, our private properties are an opportunity for long-term conservation if we design them to meet the needs of the life around us.”

And the insect world is an ideal place to start. “Everyone needs to understand the plight of insects right now,” Lewis says. “Not next month, not next week. There are things we need to be doing now to help them:

1. Don’t use pesticides.
2. Reduce competition from invasive weeds.
3. Plant more local native plants everywhere: your yard, your homeowners’ association or apartment complex, your church, your kids’ school, your granddaughters’ school. Plus, encourage your parks, developers, water districts, and local governments to do the same!”

Or, as Tallamy has put it: “Garden as if life depended on it.”

Demonstrating the value of natives

What if you’ve never seen a native plant garden? How confident would you be in planting one?

The Alta Peak Chapter, in Tulare and Kings counties, is working with the Tule River Parkway Association to establish 18 native plant demonstration gardens along the Tule River through Porterville. Cathy Capone, a CNPS board member and liaison to the CNPS Chapter Council, says these gardens will demonstrate to homeowners what a native plant garden looks like while providing much-needed habitat for pollinators and birds.

In addition, the chapter is updating its plant palette to advise the city of Porterville on street tree selection. Capone says the city is open to revising its plant list partially because of the high percentage of street trees that are dead or dying.
In the end, the oaks won — so did the students, green energy, and even the school district.

But it didn’t look that way a few months earlier when Union Mine High School science teacher Rick Kientz discovered oak trees near campus marked for removal. He learned the El Dorado Union High School District intended to install solar panel arrays at each of the four district high schools, projects designed to save the district more than $12 million over 25 years. But while the other three projects would cover parking lots, Union Mine’s was planned for an area of oak woodland next to the school.

The site in western El Dorado County is home to blue oak (Quercus douglasii), black oak (Q. kelloggii), and interior live oak (Q. wislenzii). About 40 to 50 would have to be pulled out, removing an irreplaceable habitat and educational resource. Kientz and other teachers often bring students to the area for easily accessed field trips. It’s not an undisturbed property, but it includes a creek and other native plants, such as buckbrush (Ceanothus cuneatus), waxy checkerbloom (Sidalcea glaucescens), and yellow star tulip (Calochortus monophyllus). In this outdoor classroom Kientz’s students study water quality, survey native plants, and learn species co-evolution.

Kientz questioned the district about the Union Mine plans, which didn’t seem to include information on biological surveys, grading, heritage resource surveys, or much else that typically goes into required California Environmental Quality Act reviews. The answer his queries received: “We wish we could have had this conversion earlier in the process.” It looked like the project was unstoppable, Kientz informed his students.

But he discovered the city of Placerville was installing a solar array of about the same size and scope that was going through the CEQA process. Whether the school district...
believed it was exempt from CEQA or just wasn’t aware, Kientz and his students realized the project was not set in stone. They redoubled their efforts to save the oaks.

The school board planned to consider the project on April 9. In preparation, Kientz’s students took on different roles: The freshman earth science students made signs; the AP environmental science seniors researched CEQA rules. Others wrote an open letter to the board that was published in the Mountain Democrat.

“A huge number of students on campus were talking about it,” Kientz said. Parents, alumni, and other community members took notice. The CNPS El Dorado Chapter’s conservation co-chair, Lester Lubetkin, contributed a letter to the board, noting the fragility of the blue oak species in particular.

About 20 students attended the meeting, bringing their signs and cogent, and targeted arguments. The board listened, Kientz says. “Student voices and community involvement won the day.” The district agreed to renegotiate the contract, moving the planned solar array to the UMHS parking lot and preserving the oak woodland.

“Conservation takes people working together,” CNPS Conservation Program Director Greg Suba says. “Mr. Kientz and his students have given us this great example of how important work gets done one community at a time.”

Why every oak matters

✓ Oaks are the supermarket of the natural world. Oak woodlands support hundreds of animal, pollinator, and bird species.

✓ Oaks fight global warming by capturing carbon dioxide. The heavy wood of oaks stores more carbon than most other trees.

✓ Oaks bring economic benefit. A University of California study found that a neighborhood located 10 percent closer to an oak stand showed a $4M increase in the overall value of the 544 houses in that community.

Want to help oaks? Connect with the California Oak Foundation or get involved in Re-Oak California. Learn more at www.cnps.org/reoak.

Acting locally
You can make a difference in your community, too. Here are three great ways to get started.

1. Learn about your local CNPS chapter’s conservation priorities. Go to www.cnps.org/chapter-priorities.


3. Know your local plants. Your chapter is the best place to begin. Find your local chapter at www.cnps.org/chapters.
The second edition of the CNPS Fire Recovery Guide is a free public resource that distills the complex topic of fire recovery science into an 92-page booklet for California. The “new normal” of intense fire seasons requires us to be informed and aware of how fires start, how they spread, and what to do post-fire to benefit our land and the biodiversity we steward. Some key takeaways of the guide are included here.

Oaks (Quercus sp.) from charred earth after the 2017 Nuns fire. Photo: Saxon Holt
Fire recovery is built into the state’s ecosystems. Nature knows how to heal and recover on its own.

Clearing your property exposes it to erosion and invasive weeds that can become flashy fuels. Instead, protect your home from the house out, starting with a 5-foot no-fuel zone around the house, removing debris, leaf litter in your gutters, wood piles, flammable welcome mats, etc.

Erosion is a much greater concern. The loss of vegetative cover and the natural, internal stability of the soil require attention to prevent sediment erosion that could endanger fish and other aquatic life.

Many native trees and large shrubs are adapted to fire and can recover over time, sometimes by resprouting at their branches and bases as soon as the next spring. Even a completely dead tree’s roots can help hold soil in place.

Four ways California native plants respond to fire

1. **Tolerate** - Plants like the giant sequoia (*Sequoia giganteum*) have adaptations like thick bark that help them survive fire’s extreme heat.

2. **Burn and regrow** - Many shrubs and trees like manzanitas (*Actostaphylos* spp.) and coast live oak (*Quercus agrifolia*) will resprout from their base or branches following a fire. A number of bulbs and perennial herbs also have the ability to regrow from underground vegetative structures.

3. **Seed banks** - Some California plants die during a fire but re-emerge later thanks to their seed banks. Species like the knobcone pine (*Pinus attenuata*) actually require the heat and chemicals of a fire to release their seeds.

4. **Disappear and disperse** - Some plants like ponderosa pine (*Pinus ponderosa*) don’t survive wildfire, but nearby populations may be able to seed and recolonize burned areas.

A bouquet of wildflowers including canyon larkspur (*Delphinium nudicaule*), California buttercup (*Ranunculus californicus*), and Fernald’s iris (*Iris fernaldii*), among others, all regenerating vigorously the spring after a fire. These plants are benefiting from the nutrient flush provided by the fresh ash. Photo: Lech Naumovich

Top Right: The 2018 Camp Fire burns on the horizon. Photo: Jennifer Jewell, Cultivating Place
Defensible space: what you need to know

To protect your home from fire, think less about the trees that could catch fire 20 feet away and more about those flying embers. What might catch fire if a wind-swept ember were to land on your doorstep or roof? Experts now recommend a 5-foot no-fuel zone around the home, which means no trash cans, wood piles, door mats, leaf-filled gutters, or other flammable materials in that zone. Beyond that, both Cal Fire and organizations like the National Fire Protection Association provide specific instructions for the zone up to 30 feet from your home and an expanded zone 30-100 feet focused on three concepts:

1. **LAYOUT:**
   The space between plants and other fuel

2. **PLANTS:**
   High moisture, low-flammability plants

3. **MAINTENANCE:**
   A well-kept and monitored property

For more specifics, please download the CNPS guide at www.cnps.org/fire-recovery and see our recommended resources on page 27.

Did you know?

A post-fire landscape can be especially vulnerable to invasive weeds. The following is a list of common weeds that spread quickly and hurt local ecosystems.

- barbed goatgrass (*Aegilops triuncialis*)
- cheat grass (*Bromus tectorum*)
- filaree (*Erodium* spp.)
- French broom (*Genista monspessulana*)
- Italian thistle (*Carduus pycnocephalus*)
- medusahead (*Elymus caput-medusae*)
- mullein (*Verbascum* spp.)
- mustards (*Brassica nigra, Hirschfeldia incana*)
- red brome (*Bromus madritensis* subsp. *rubens*)
- yellow star thistle (*Centaurea solstitialis*)
- stinkwort (*Dittrichia graveolens*)

French broom (*Genista monspessulana*) has invaded this oak woodland, posing higher fire risk, because fires can easily jump from the broom into the tree canopy. Photo courtesy of Marin Municipal Water District.
Dos and Don’ts on your property after a fire

First, get the go-ahead from local fire officials before entering a burned site. Hazards may not be obvious.

Minimize foot traffic, equipment, and disturbance on burned landscape.

Consult professionals on whether to install soil stability measures.

Check drainage systems and clear out culverts, gutters, and the like to allow water to drain.

Slow water from channeling on slopes. Instead, allow water to dissipate across the soil. Well-placed wattles, rocks, branches and mulch can help.

Clear all burned vegetation. This removes all chance of the native plants regenerating and increases the likelihood of soil erosion.

Assume a burned tree has been lost without giving it some time to recover. As long as it’s not an immediate hazard to people or structures, let it be.

Use imported mulch, which could bring in invasive weed seeds.

Break up soils, whether they are water-repellent or not, especially on slopes prone to debris flows or landslides.

Reseed large burned areas with non-native grasses. These just provide fuel for the next fire. They also introduce invasive weeds while blocking the regrowth of natives.

Helpful resources


Local Fire Safe Councils, https://cafiresafecouncil.org/resources/fire-safe-councils/

Cal Fire, www.readyforwildfire.org

California Chaparral Institute, www.californiachaparral.com

Calscape, https://calscape.org

University of California Cooperative Extension: Fire in California, https://ucanr.edu/sites/fire
(Note: UCCE is updating the site and expects to post the updated version soon)

California Licensed Foresters Association, www.clfa.org

International Society of Arboriculture, www.treesaregood.org

A special thank you

The Fire Recovery Guide is made possible thanks to support from an anonymous donor, the Butte County Fire Safe Council, Giles W. and Elise G. Mead Foundation, Leonardo DiCaprio Foundation, Marin and Mount Lassen chapters of CNPS, North Valley Community Foundation, U.S. Fish and Wildlife Service, and individual CNPS donors. We also want to acknowledge the dozens of topic experts who generously shared their time and knowledge to bring the latest science and information to our readers. We all owe them a debt of gratitude.
Bay Model Garden

Featured Garden

CNPS Marin Chapter: Gardening with Natives Co-chairs
Charlotte Torgovitsky and Laura Lovett

Native plants for native pollinators

BY KRISTEN WERNICK

The Bay Model Visitor Center is now home to Marin County's first public California native plant garden, thanks to a collaboration between Park Manager Chris Gallagher, CNPS Marin Chapter members Charlotte Torgovitsky and Laura Lovett, and numerous Marin Chapter volunteers. The garden focuses on the natural connections between native plants and pollinators. As noted in “Habitat Revolution” on page 16, many native pollinators have co-evolved with native plants.

To demonstrate this beautiful relationship, the horse-shoe-shaped space features pollinator-focused areas. Each section includes locally native plants that support different types of pollinators – butterflies, hummingbirds, and songbirds. The garden provides resources these creatures need, such as pollen and nectar, seeds and berries, food for the larval stages of butterflies, and cover for nesting birds. A solar-powered birdbath and a misting fountain offer water. Uneven surfaces of the stones and boulders allow small puddles to form for insects.

To protect the creatures attracted to the garden, volunteers only use sustainable, organic gardening methods to maintain the garden.

The Bay Model Garden is designed to demonstrate that native plant gardens can be both easy and beautiful. All the plants in the garden feature labels, and

Above: Lupine, checkerbloom, and foothill Penstemon dancing in the garden. Photo: Laura Lovett

Right: As an expression of their enthusiasm and support for community partnership, the Army Corps of Engineers honored the CNPS Marin chapter in a special ribbon-cutting ceremony. From left, Charlotte Torgovitsky; LTC Travis Rayfield, USACE San Francisco District Commander; Laura Lovett; and Chris Gallagher, USACE Bay Model Park Manager. Photo: Stephanie Clarke
colorful interpretive signage explains which section of the garden is intended for which pollinator. Visitor brochures includes plants listed by pollinator. Anyone can visit the garden any time of the day or year – but it will always be a little different!

The garden is located along a popular waterfront where it is easily accessible, and people often stop to enjoy it. Each year, the Bay Model Visitor Center receives nearly 150,000 visitors, including Bay Area school groups and people from all over the world. Now, those thousands of people can experience a California native garden.

The garden’s creators’ trust its message is clear: Individuals can create sanctuaries, enhance resources, and support wildlife corridors on a very local level by planting native gardens.

> cont. on page 30

People don’t expect native plants to look this good. Many people have said that they want to go home and do the same thing, which is exactly the response we were hoping for.

Beautiful blooms in the butterfly section, May 2019. Photo: Rob Badger

Top three plants to look for in the garden

- **Silver bush lupine**
  (Lupinus albifrons var. collinus)
- **Narrow-leaf milkweed**
  (Asclepias fascicularis)
- **Cobweb thistle**
  (Cirsium occidentale)

Below L-R: Prepping the site, February 2018. Photo: Rob Badger; First planting day, June 2018. Photo: Harry McGrath; Bay Model Garden, May 2019. Photo: Rob Badger.
Garden location: Bay Model Visitor Center, 2100 Bridgeway, Sausalito, CA

Garden size: The planting bed is about 5 or 6 feet wide and 100 feet long, and includes an extended squared corner. In total, the garden is about 750 square feet.

Style inspiration
Our goal was to show others the beauty of plants native to our immediate area and that many of them can thrive in garden conditions. We also wanted to demonstrate the beautiful cycle of natural connections among native plants and pollinators. We created pollinator focus areas for butterflies, hummingbirds, and songbirds, and of course the native bees will use all of it. Each garden area features plants that are important for the life cycle of each type of pollinator. For example, we planted narrow-leaf milkweed (Asclepias fascicularis), an important host plant, in the Monarch Way Station. In addition, we planted species typically associated with redwood habitat under two existing mature redwood trees that provide shade in the garden.

Design and installation
We began planning and developing plant lists in December 2017. Soil preparation and hardscaping installation took place February through May 2018. Planting began in June 2018. We hosted several volunteer planting sessions as different plants became available and finished planting in March 2019. In May 2019, we installed interpretive signs and permanent fencing.

Go-to native plant nurseries
The plants for this garden came from the California Flora Nursery in Fulton, as well as Home Ground Habitats, a volunteer-powered local nursery.

Irrigation
We installed individual drip emitters to all the perennial plants but used mini-sprinklers for areas with bulbs and wildflowers. The sprinklers can be shut off after the wildflower season. The irrigation is on five different stations so that water features can be controlled separately. A hummingbird mister comes on three times a day for a few minutes. The birdbath, powered by a solar panel and backed up with a battery, bubbles throughout the day.

Maintenance
The CNPS Marin Chapter and local volunteers are responsible for ongoing maintenance. Weeding, pruning, and mulching will be done about four times yearly, plus we will add wildflower seedlings every fall and into the spring. The garden is not large, so four or five people can do the work in about three hours.

Wildlife spotted
Night herons roost in the redwoods, and great blue herons come to rest there too. Bees and butterflies visit often, and a hummingbird is creating a new nest!

Favorite element
The reaction from people when we tell them that all the plants are local natives. People don’t expect native plants to look this good. Many people have said that they want to go home and do the same thing, which is exactly the response we were hoping for.
Give a little now
or leave a little behind.

Supporting your favorite cause (native plants!) is easy.

“Give a little now” by donating a portion of your annual IRA distribution.
Then “leave a little behind” by including California Native Plant Society in your will or trust, or as a beneficiary of your life insurance or retirement account.
Make a gift that reflects your values. No matter your age, income, or asset, you can leave a legacy for California’s native flora.

Visit us at cnps.org/legacy
or contact us today to learn more.
916-738-7622 / legacy@cnps.org

HABITAT WEST
NATIVE HABITAT RESTORATION

Restoring California’s Native Habitat Since 1993

Now Hiring Foremen, Habitat Technicians & Supervisors
email@habitatwest.com  (760) 735-9378
Q: I’ve heard that California native plants go dormant in the summer. How do I keep my native garden looking its best during the summer?

A: California is the most spoiled of the world’s Mediterranean climate areas due to the vast scale of our increasingly engineered water-delivery systems. All we have to do is turn on the faucet, and even in droughts, cheap water always emerges from the tap. That’s not the case in the other Mediterranean climates of the world, however, where most treat water as the precious, limited resource that it is. It’s doubly ironic then that of the world’s Mediterranean climates, California’s is the hottest and has the longest dry period — and yet we have the cheapest water! This has created an illusion that water-thirsty, turf dominated landscapes are appropriate for our climate, when in reality they are not. As Californians it’s our responsibility to use water wisely, and in our landscapes, California native plants offer both natural resource conservation and habitat benefits.

The vast majority of California’s native plants have adapted to our unique climate and are summer-dormant, especially those that are drought-tolerant and found at lower elevations where most of us Californians live.

Coming to grips with our summer’s dry Mediterranean climate has bewildered many who move here. Few people, especially those of us who are continually fascinated by plants, fully embrace the reality of a summer dry garden.

There are so many different ways to address this topic, but here’s the quick and easy answer: Plan ahead!

**Plants with structure**
Select plants that will bring summer interest to your garden, whether it is the silvery trunks of summer-dormant California buckeye tree (*Aesculus californica*) or the spiky silver-grey rosette and towering infrutescence of chaparral yucca (*Hesperoyucca whipplei*).

**Summer and fall blooms**
Many native plants reach peak flowering in summer and fall. Some are well-known garden plants like the California fuchsia (*Epilobium* [formerly *Zauschneria*) canum]). Others are less well-known, but equally showy, such as many of the color forms of desert willow (*Chilopsis linearis*), a deciduous (rarely evergreen) shrub to small tree. Desert willow reaches peak flowering in late spring, but in hot areas, it is easily brought into repeated bloom through summer and into fall by deep-watering the plant’s root zone every two to four weeks during the dry season.

Left: Saint Catherine’s lace (*Eriogonum giganteum*) and Canyon Grey sagebrush (*Artemisia californica* ‘Canyon Grey’) together offer contrasting textures. Regional Parks Botanic Garden, July 27, 2017. Above: White sage (*Salvia apiana*) is dramatic even when the flowering stems have dried. Regional Parks Botanic Garden, August 8, 2014.
For smaller gardens, there are many wild buckwheats (Eriogonum spp.) and dozens of daisies. Of the latter, I particularly recommend the Santa Susana tarweed (Deinandra minthornii), a long-lived, long-blooming, pungently aromatic evergreen perennial. Gumplants (Grindelia spp.) are an incredibly variable group of summer-blooming, erect to prostrate, evergreen perennials. California aster (Symphyotrichum chilense) blooms all summer.

Contrasting textures
Think, too, of texture contrast to bring visual interest to your summer garden. A dense mass of wire grass (Juncus patens) adds vertical stiffness to a planting, as do strategically-placed clumps of deer grass (Muhlenbergia rigens). Though most think of wire grass as a plant of damp or wet areas, in gardens it is surprisingly adaptable to a range of conditions and thrives even in heavy clay. The same applies to deer grass – though you should know that deer grass is a warm season grower. If you cut it back (I almost never do, but many seem to want to know when to do this), be sure to do this in spring just before the new growth emerges in late spring. Some bunches never seem to recover their graceful form if they’ve been cut back incorrectly.

Embrace California’s summer
If all else fails, remember that the summer browns and greys of California’s dry and dormant plants are beautiful colors, too, and can be used to great effect in your native plant garden.

Bart O’Brien has been the manager/director of the Regional Parks Botanic Garden in Tilden Regional Park in the Berkeley Hills since late 2013. A fifth-generation Californian, Bart is an authority on California flora and flora of northwestern Baja California, Mexico. He is also an accomplished collector, grower, photographer, lecturer and author. He has helped write numerous books and publications, including the award-winning California Native Plants for the Garden (2005). Bart was named Horticulturist of the Year in 2005 by the Southern California Horticultural Society and was listed as one of “The 100 Most Powerful People in Southern California” by the editorial staff of the Los Angeles Times/West Magazine (Aug. 13, 2006). In 2018, he was named a Fellow of the California Native Plant Society.
Communicating about California’s spectacular botanical diversity can be a daunting task. The jargon used by botanists can confuse even seasoned plant enthusiasts. To help, we’ve put together a quick overview of commonly used terms and the latest numbers for native plants in California. From professional botanists to new native plant gardeners, each of us can benefit from a review of these important concepts.

**Taxonomy** – a science of organization

Taxonomists classify and arrange taxa (plural of taxon) in a hierarchy.

**How a California poppy is classified:**

- **Kingdom:** Plantae
- **Phylum:** Tracheophyta
- **Class:** Magnoliopsida
- **Order:** Ranunculales
- **Family:** Papaveraceae
- **Genus:** Eschscholzia
- **Species:** Eschscholzia californica

**Species** – Populations of organisms capable of exchanging genes or interbreeding.

**When it comes to plants**, things can get complicated. Processes like hybridization (the interbreeding of two closely related species), and apomixis (asexuality) can make species delineation a challenge sometimes. Botanists have come up with a variety of criteria to name California plant species that include ecology (a plant’s relationship to other organisms and its environment), morphology (form/structure), and genetic evidence.

**Minimum rank taxa (MRT): subspecies & varieties**

A species can be more finely divided into taxonomic groups called subspecies and varieties. If there are no subspecies or varieties described under a species, then the minimum-rank taxon is the species itself.

**Example: Coast live oak**

Coast live oak (*Quercus agrifolia*) has two recognized varieties, *Quercus agrifolia* var. *agrifolia* and *Quercus agrifolia* var. *oxyadenia*. Therefore, there are two minimum-rank taxa of *Quercus agrifolia*. But there are no subspecies or varieties of coast redwood (*Sequoia sempervirens*), so *Sequoia sempervirens* is the minimum rank, whereas *Quercus agrifolia* is not.
The California floristic province

Conservation International ranks the California Floristic Province (CFP) as a global biodiversity hotspot, one of just 36 hotspots on Earth. This is the portion of California and nearby areas of Baja California, Mexico, Oregon and Nevada under the influence of a Mediterranean-type climate. Nearly 90 percent of the CFP is in the state of California. The Mojave and Sonoran Deserts and the Modoc Plateau are not considered part of it.

Botanical names

Botanical names are Latinized and contain a genus name plus a specific epithet (the second element in the Latin binomial name). For example, the species, Sequoia sempervirens is in the genus, Sequoia, and the specific epithet is sempervirens.

Other important terms

Endemic: A taxon that is limited to a certain area. Plants that are said to be endemic to California are found only within the state’s borders.

Cultivar: Plants that originate through hybridization in cultivation. For example, Fremontodendron ‘Ken Taylor’ is the result of hybridization of F. californicum and F. decumbens.

Vascular vs. non-vascular plants: Vascular plants include all flowering plants, conifers, and ferns and contain specialized living tissues that conduct food and water (xylem and phloem). Non-vascular plants (mosses, liverworts, hornworts) lack these specialized tissues for conducting food and water.

Got something for us?
The science is changing quickly, thanks to our amazing diversity. Send us your stats, suggested corrections, or updates to cnps@cnps.org.
Sounds of Summer

BY ELIZABETH KUBEY

School’s out for the summer! Do you play an instrument or like to listen to music? You can explore the music of the natural and urban sounds that surround us. Nature is everywhere. Try these activities near your home or in different habitats like a wetland, forest, meadow, or the coast. Listen at different times of day and in different seasons to discover changes in the ecosystem soundscape.

Ecosystem: The interaction of living and non-living parts in a given area. Can be as small as your thumb or as big as California.

Soundscape: The sounds heard in a given location viewed all together.

Sound Off

Best for ages 6+  15 minutes  Notebook

Native plants provide habitat for all sorts of life. We can listen for the wind blowing through a grassland, birds chirping next to a bus stop, or bees buzzing among flowers.

Find a place outside to stand or sit. Close your eyes for one minute and count on your fingers how many different sounds you hear. Before you start, how many sounds do you think you’ll hear? Now try it out!

Write down your observations in your notebook. Did you hear more or fewer sounds than you expected? What natural sounds did you hear? What were the human-produced sounds you heard (cars, people talking, airplanes)?

How do these sounds make you feel? Now, move to a different setting and try this activity and the next one again. What is the same and what changes?

Nature is everywhere.
These Kids’ Corner activities are adapted from Opening the World through Nature Journaling: Integrating Art, Science, and Language Arts by John Muir Laws, Emilie Lygren, Emily Breunig, and Celeste Lopez. Download free digital copy or purchase a copy at store.cnps.org

Sound Map

Best for ages 8+  25 minutes  Notebook  Drawing supplies

Have you ever used a map? Maps show where things are located. Usually, maps are drawn from above as if you were a butterfly flying overhead. We use different symbols or marks to help share what is located in an area. Today we are going to make sound maps to represent different sounds in an ecosystem.

Making the map

Stand or sit for five minutes and record on your map every sound that you hear. Use a different symbol for each sound. Instead of writing the words “I hear a squirrel chirping,” for example, draw a symbol that looks like what squirrel talking sounds like to you.

Try to place each sound at an accurate distance and direction from where you are on the map. Once you’ve created a symbol, include it in a legend so that your friends can understand your map. Draw the symbol and then write what it represents. For extra detail, include observations here like “bird call, repeated every three seconds.”

Reflection

In your notebook or with a friend, reflect on this activity. What does it feel like to really listen to a place? How might sounds affect native plants?

Studies show that sounds, directly and indirectly, affect plants. Some plants will sweeten their nectar in response to the vibration of pollinator wings. How might this action benefit the flower?

Experiments also show that birds like scrub jays prefer quieter areas. That means that trees like the pinyon pine, which rely on them for pollination, are disadvantaged by increased human or machine-produced sounds. Other researchers found that black-chinned hummingbirds were more active in noisier environments, which benefits hummingbird-dependent plants.

Share a picture of your sound map with Elizabeth! Have a parent or adult help you post on social media and tag @californianativeplantsociety or email ekubey@cnps.org.
No one would ever accuse Mary Frances Kelly-Poh of being bashful or reserved. Talkative, confident, and outgoing, she has more than a few stories she’d like to tell.

While some may know Mary Frances as a tenured fixture at CNPS Chapter Council and a charter member of the CNPS Willis Linn Jepson Chapter, she is also an artist, choir singer, registered nurse, feminist, environmentalist, community activist, award-winning embroiderer — and that’s an abbreviated list. As a testament to her commitment to the environment, Mary Frances was one of five women to take on the oil refinery in her community, winning a $15 million settlement to be directed to environmental causes in Benicia. It should be no surprise that someone who cares so much about this world would be a CNPS Legacy Circle member, but maybe what is surprising is that it’s all thanks to a hummingbird.

What sparked your interest in native plants?

Originally, a tree in my courtyard had a nest of two baby hummingbirds. The mom was blown away by the wind and the babies did not survive. I didn’t know how to rescue them. Later, lo and behold, I found a hummingbird nest with two little eggs in my rose bush. One hatched when I was at church Sunday morning, and the other didn’t survive.

The baby was almost ready to fledge when we had one of our horrible wind storms and the mother got blown away. After losing these hummingbirds, I researched who in town did bird rescue and found Lisa Burton with the Suisun Wildlife Rescue Center. When I called her she heard the panic in my voice and came to my house with a Dream Whip container to collect the baby.

Lisa had a greenhouse of native plants in the back of her yard. Almost three months later she called me and said, “We’re going to release the baby. I’m going to bring her some native flowers and you can watch her eat from them.” They brought in all sorts of beautiful native flowers, and she was busy eating out of all of them.

This is basically why I’ve chosen to leave a legacy with CNPS — because they’ll take care of the plants... We are at the base of what’s going on.”
All the time, people talk about, ‘Oh, this animal is going to die, and that bird is going to die, and this butterfly is going extinct.’ And nobody thinks about the fact that these things eat and drink off plants. If you don’t save the plants, you can’t save the animals.”

– Mary Frances Kelly-Poh

That’s what started me in changing my yard over from merely “drought-tolerant” to California native. My garden is 9,000 square feet and about 90 percent native now.

**You’re an environmentalist, singer, embroiderer, painter...**

Yep, I’m having fun. I’m also a traveler. I love going around and looking at what native plants are in an area and how they’re using their native plants. All the time, people talk about, ‘Oh, this animal is going to die, and that bird is going to die, and this butterfly is going extinct.’ And nobody thinks about the fact that these things eat and drink off plants. If you don’t save the plants, you can’t save the animals.

This is basically why I’ve chosen to leave a legacy with CNPS – because they’ll take care of the plants. First of all, if you’re interested in plants at all, and you’re interested in the environment, you should belong to CNPS. We are at the base of what’s going on.

When we were an agrarian society, we were looking at the rhythm of the seasons. We were shepherding and stewarding that land. Now, if we own anything, it’s a yard the size of a patio, and we’re working so hard, and we’re not taking the time to sit down and look, and smell, and listen. So we’ve lost that connection to the land.

The generation coming up though is concerned about it. They will have to fix the mess we are leaving them, even though some of us are trying to fix that mess before we go, which of course is part of leaving a legacy – to give people the resources to be able to continue fixing it after we go. I’m providing CNPS with resources to continue its work after I go.

**If you had to describe yourself, what adjective would you use?**

I think I’m a bit of a Renaissance person.

**You’re a multitude of mosaic tiles.**

(Laughs) Yes, yes, I am.

Are You Future-Minded?

Find out how to become a CNPS Legacy Circle member today.

Email us at legacy@cnps.org.
Curiosity is another thing. I wish there was a word for it that didn’t sound so frivolous, because it’s the flip side to fear. Both are approaches to what we don’t know. It’s seeking to be surprised on purpose.

do that for me. We know there are so many other forms of knowledge. So much of what we see is through our body.

Curiosity is another thing. I wish there was a word for it that didn’t sound so frivolous, because it’s the flip side to fear. Both are approaches to what we don’t know. It’s seeking to be surprised on purpose.

How can organizations like CNPS help to heal a 24-7 society that is at once hyper-connected and severely disconnected from each other and our land?

Something like Calscape.org is huge. Somebody may not know it exists unless they look up a specific plant. It’s important to meet people where they are. Things like iNat or Calscape can become the gateway drug. Your interest is piqued, then you’re going to go and seek out more of those things. If the problem is that people are spending too much time online, then we may have to go over to this area to reach them.

Liv O’Keeffe is the CNPS Senior Director of Communications and Engagement
Upcoming Events | JULY 21 - NOV 2

Enjoy the summer sunshine with your native plant community! Be sure to check cnps.org/events for the latest details and registration information.

Featured Event | Fall Native Gardening Workshop: The Resilient California Native Garden
San Diego Chapter

SEPTEMBER 14

Learn ways to enhance the natural resilience of native landscapes. Presenters, including Mike Evans and Greg Rubin, will provide resources and recommendations on how to create a flourishing and durable garden. Topics range from gardening for birds to fire-resistant landscapes.

JULY

JUL 21, AUG 18, SEP 15
Volunteer Days at the Point Vicente Interpretive Garden
South Coast Chapter
Lend a hand at this beautiful Palo Verdes oceanfront garden. Volunteers learn about native California plants and gain valuable gardening skills.

JULY 23
Alternative Lifestyle of Plants
El Dorado Chapter
Learn about the carnivorous and parasitic plants of California. Jamie Kneitel will share evolution, ecology, and conservation in these two groups of plants.

JULY 24
California Butterflies and Global Change
Redbud Chapter
Learn how California’s rich butterfly fauna is affected by the many facets of global change, including habitat destruction and climate change.

Below left: Point Vicente Interpretive Garden. Photo: Megan Wolff
Below right: Tiger swallowtail butterfly on ookow (Dichelostemma congestum) Photo: Nancy Gilbert

Right: Native plants bring color to even the smallest of spaces in this San Diego garden. Photo: David Peery
Upcoming Events

**August**

**August 1**
Insect Apocalypse?
Yerba Buena Chapter
Dr. Leslie Saul-Gershenz researches native solitary bees and nest parasites. Learn if insect biodiversity and biomass are declining based on recent studies.

**August 3**
Habitat Restoration at Carpinteria Salt Marsh, Carpinteria
Channel Islands Chapter
Every first Saturday of the month, come help improve habitat conditions at the marsh.

**August 3**
Lochmond Recreation Area Hike
Santa Cruz Chapter
Andy Werner will lead a six-mile hike through a recovery area of native vegetation.

**August 12**
Bryophytes: What Are They and Why Should I Care?
Willis Linn Jepson Chapter & Solano College Horticulture Club
Join Dr. Stephen Rae, Curator of Bryology at UCD, to identify those little plants in the dirt, on the rocks, and stuck to trees around Solano County.

**August 15**
Marin Third Thursday Weeder's
Marin Chapter & Environmental Action Committee of West Marin
Tackle invasive weeds that threaten important plant habitat in the Point Reyes National Seashore.

**August 22**
Movie Night with Pasadena Audubon
San Gabriel Mtns. Chapter
Meet new friends while watching a documentary by Dr. Doug Tallamy about the critical interaction between locally native plants and the birds that use them to live and raise their young.

**August 28**
Tahoe's Spectacular Wildflower Trails
Redbud Chapter
Julie Carville will provide a photo presentation from her book and adventures along Tahoe's gorgeous trails.

**Design & Build**


Restoration Landscaping Company
Http://www.restorationlandscaping.com/ (530) 723-6207

Biological Resource Surveys, Assessments & Monitoring
Habitat Restoration Management Plans
Mitigation & Monitoring Plans
Rare Plant Surveys
Regulatory Permitting
Vegetation Mapping
Wetland Delineations & Functional Assessments

www.wra-ca.com
UPCOMING EVENTS

AUGUST 31
Plant Propagation Class: Vegetative Propagation and Cloning
Marin Chapter
In this class, we’ll look at a number of different plant species to learn about specific methods and media, and the timing critical to getting the best results from cuttings.

SEPTEMBER
SEP 10
Chumash Ethnobotany
LA/Santa Monica Mtns. Chapter
Learn the traditional botany knowledge of the Chumash, whose ancestral homeland includes parts of LA County.

SEP 19
Hydroseeding
Kern Chapter
Ron Dietz will help you learn about hydroseeding, which uses a slurry of seed and mulch.

SEP 19
Native Horticultural Symposium with Doug Tallamy and Bart O’Brien
Santa Clara Valley Chapter
This one-day symposium will help landscape professionals and home gardeners create habitat gardens.

SEP 19
Field Bryology Workshop
Bryophyte Chapter
David Wagner will lead a three day intensive bryophyte identification workshop at the Andrews Experimental Forest in Blue River, Oregon.

SEP 23-27
Field Bryology Workshop
Bryophyte Chapter
David Wagner will lead a three day intensive bryophyte identification workshop at the Andrews Experimental Forest in Blue River, Oregon.

Get Involved! CNPS chapters hold regular monthly meetings, field trips, and restoration work days throughout California and Baja California. Look up your local chapter and see what’s happening at cnps.org/chapters.

Protect California Wildlands!

Join Cal-IPC to protect our environment and ecology from invasive plants. www.cal-ipc.org

1600 species of native bees live in California’s rich ecosystems.
Identify bees on the wing with these guides

http://ucanr.edu/ca-bees

CNPS Members SAVE 25% Enter code BEEAFRIEND at checkout!
upcoming events

SEP 25
Jewels of the Garden: California Native Bulbs, Corms, and Rhizomes
Redbud Chapter
Nancy Gilbert will present on the ethnobotanical and ecological importance of California native bulbs, corms, and rhizomes.

SEP 26
Potluck, Art Display, Poetry Reading, and Slideshow
San Gabriel Mtns. Chapter
Bring your own plate, cup, and utensils for a night full of native plant fun. See event details online to contribute.

SEP 28
Manzanita Day at Native Here Nursery
East Bay Chapter
5 local manzanita species will be on sale. John Danielsen will give a talk on caring for manzanitas.

Below: Sierra fawn lily (Erythronium multiscapideum)
Photo: Nancy Gilbert

FALL native plant sales

Aug 24 - Bristlecone Chapter
Sep 28 & 29 - Sacramento Valley Chapter
Oct 5 - El Dorado Chapter
Oct 5 - Monterey Bay Chapter
Oct 5 - Redbud Chapter
Oct 5 - Tilden Regional Park, Regional Parks Botanic Garden
Oct 5-6 - Napa Valley Chapter
Oct 12 - Milo Baker Chapter
Oct 12 - San Diego Chapter
Oct 12 - Santa Cruz Chapter
Oct 12 &13 - LA/Santa Monica Mtns. Chapter
Oct 19 - Shasta Chapter
Oct 19 - Santa Clara Valley Chapter
Oct 19 - Sequoia Chapter
Oct 24-26 - Theodore Payne Foundation
Nov 2 - San Gabriel Mtns. Chapter
Nov 2 - Riverside/San Bernardino Chapter

Protecting Endangered Sandhills Habitat

Santa Cruz Wallflower, Ben Lomond Spineflower, Santa Cruz Cypress, Mount Hermon June Beetle, Zayante Band-winged Grasshopper

www.zayantesandhills.com
Paul Burrowes, 831-295-5130

Zayante Sandhills Conservation Bank

PLANTS OF THE SAN EMIGDIO MTNS. REGION OF CALIFORNIA
Including the Gorman Hills, Frazier Mtn. & Mt. Pinos Recreation Areas
by Pam De Vries, $19.95+ tax

Get Your Copy Today from: F.M. Roberts Publications
web: FMRPublications.com
also the CNPS Store, Amazon

While visiting FMRPublications.com, check out our other books & T-shirts (art by Fred M. Roberts)
DITCH YOUR GRASS.
CLAIM YOUR REBATE.
bewaterwise.com®

RAKE IN $2 OR MORE PER SQ. FT.
The website that helps you restore nature one garden at a time!

- Discover which native plants grow in your exact location
- Create a personal plant list for your yard
- Search by water needs, pollinators, flower color, and more!
- Find nearby native plant nurseries
- New! Discover host plants for local butterflies

Start your free account today! Calscape.org