Extraordinary World
A discussion with
Esri visionary
Jack Dangermond
Our plants, our people, our stories

Welcome to Flora, California Native Plant Society’s new magazine! Flora replaces the CNPS Bulletin, a change that reflects an exciting era for CNPS.

Why does CNPS need a new publication? In short, to inspire each other and grow our movement. In the past year, we’ve listened to hundreds of people throughout our community, and one message was clear: We need to celebrate our victories while reaching a larger, more diverse audience.

CNPS has been incredibly successful, but we’re a bit quiet about our victories. I (Dan) am mindful of this. You may have heard, a few years ago I discovered an extinct manzanita growing at the Golden Gate Bridge. The rescue of this mother plant was a great success story that demonstrated the strength of our partnerships, the advanced state of conservation science, and ultimately the incredible depth and breadth of public support for rare plant protection. However, I have been uncomfortable talking about this, generally just referring people to the article in Fremontia 38:1. Recently I returned from an emotionally powerful visit to San Francisco’s De Young Museum, where an entire exhibit focused on this manzanita to explore themes of cultural displacement, personal loss, and life in a time of radical shifts. I found new perspectives, deeper meanings, and realized how our conservation success stories are being reformulated as myths that shape our culture and our collective understanding of what is possible.

This is what we hope Flora will help accomplish. Yes, it will keep our Society connected and informed about what we are accomplishing. Yes, it will attract new members and engage a growing diversity of supporters. Yes, this will help save rare plants and special places. However, that is not enough. What is protected today will endure only if future generations feel that saving species and wilderness is a cultural norm. We do this by sharing stories that resonate and are retold until they become our mythos, part of what defines us as people and shapes our intentions at a subconscious level. All Californians must feel deep down that losing species is a diminution of spirit, society, and self. All Californians must feel, not know but feel, that together we can save California’s places and in doing so save not just species but also ourselves.

This premiere issue of Flora is a step toward that future. Please join us in boldly sharing news of our successes, and amplifying stories coming from new and little-heard voices, so that together we can save the incredible place we call home. Most of all: enjoy!

— Dan Gluesenkamp and Liv O’Keeffe
Extraordinary World
A discussion with Esri Founder and CEO Jack Dangermond on the value of the big picture

Plant Exploring: Discovering California’s Rarest Conifer
CNPS teams with the Klamath National Forest to map yellow-cedar (Callitropsis nootkatensis)

Nature Restored: The Fort Ord Story

Tejon Ranch
Botanical riches at the southern end of California’s Great Valley

ON THE COVER: A seasonal display in Mono County featuring Sierra juniper (Juniperus grandis), white pine (Pinus flexilis), quaking aspen (Populus tremuloides), and Fremont cottonwood (Populus fremontii). (Photo: Jeff Bisbee)
Above: Fall color in the Eastern Sierras (Photo: Jeff Bisbee)
De-Extinction in Action!

In a small, protected area in Los Angeles County, the CNPS rare plant science team has discovered what appears to be the presumed-extinct Parish’s gooseberry (*Ribes divaricatum* var. *parishii*), a taxon not seen for 20 years. Genetic testing is underway to confirm the findings. Rare Plant Program Manager David Magney found the Ribes, which grows only where shallow groundwater is available. “Sometimes, even small natural areas surrounded by development can sustain rare species,” says Magney. “This is why we must never stop looking, and why we must be mindful about how we use these remaining open spaces.”

Parish’s gooseberry is distinguished by its hairy leaves and stems. (Photo: David Magney)

VICTORY!

**Dogwood Timber Lawsuit Settled**

The battle to stop a poorly planned timber harvest along the lower Gualala River has come to a close – for now. Since 2015, CNPS (represented by the Dorothy King Young chapter), Friends of Gualala River, and Forests Unlimited have fought the “Dogwood” timber harvest plan (THP), which proposed redwood harvesting within flood-prone areas, a direct violation of California’s forest practice rules. The plan also failed to provide current survey data for nearly all special-status fish, wildlife, and plant species in the THP area.

In March, CNPS and partners won the lawsuit to stop the Dogwood THP with the judge directing CAL FIRE to revoke the original plan. Recently, CAL FIRE filed the necessary paperwork to stop the plan but provided only minor input on needed changes. “The real problem isn’t going to go away until the Board of Forestry and CAL FIRE follow their own rules, including CEQA. Until they do, we are not going away, either,” says Charlie Ivor, president of Friends of Gualala River. Will CAL FIRE hold companies to the requirements of the law the next time? CNPS and others will be waiting to see.

**HISTORIC Newhall Ranch Settlement**

CNPS and partners – the Center for Biological Diversity, the Wishtoyo Foundation, and the Santa Ynez Band of the Chumash – have secured historic endangered species protection in a settlement over the controversial Newhall Ranch development in northwestern Los Angeles County. The agreement saves thousands of acres, commits $25 million to conservation efforts, and engages CNPS scientists for ongoing protection of the San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*).

“Our greatest hope has been that this site remain wild,” says CNPS’ David Magney. “But with development pending and permitted, we’ve ended up in a better legal position than we would have if we hadn’t settled.”

Despite environmental concessions, the Newhall Ranch project is “still sprawl,” says the *L.A. Times*. (Photo: David Magney)

The agreement follows a nearly 20-year battle over the site and a decisive 2015 state Supreme Court victory (California Native Plant Society, et al. v. County of Los Angeles, et al.), which ruled in favor of CNPS and directed the Newhall project to comply with environmental law. California owes a debt of gratitude to the chapter conservation volunteers who gave time and expertise to fight this ill-advised development.
COOL CALIFORNIA NATIVES
PLANTS TO SEE AND ENJOY THIS SEASON

Mountain Hemlock (*Tsuga mertensiana*)
One of 10 species in the *Tsuga* genus of the pine family, this beautiful tree can be found in the Sierra Nevada, Cascade, Klamath, and North Coast ranges. Note the striking purple color of its young cones.

(Photo: Neal Kramer)

Lace Lichen (*Ramalina menziesii*)
This beauty became our official California state lichen in 2016. You’ll find it draped over oaks along the California Coast and Sierra Nevada. Lace lichen was once widespread in Southern California, but the area’s smog killed its large populations.

(Photo: David Magney)

Dendroalsia Moss (*Dendroalsia abietina*)
This is a branched moss commonly found blanketing tree trunks in Coastal California and the Sierra Nevada. It curls into a ball when dry and unfurls in moist conditions. As the name implies, the leaves are reminiscent of the leaves of fir trees (the *Abies* genus).

(Photo: Steven Serkanic)

California Polypody Fern (*Polypodium californicum*)
This fun polypody creates fern grottos and fiddleheads throughout California. It’s one of 40 species in the genus *Polypodium*, a group of plants whose reproductive spores are entirely exposed on the underside of leaves.

(Photo: David Magney)

DID YOU KNOW?

- California has more ecological regions (or biomes) than any other state in the continental U.S.
- At least one-third of California’s plants are found nowhere else in the world!
- California’s most common Yuletide tree, the Douglas-fir (*Pseudotsuga menziesii*), is not an actual fir. This genus means “false hemlock” and has four species in North America and Asia.

Toyon (*Heteromeles arbutifolia*)
People call this shrub “Christmas berry” for its display of bright red berries in December. With its dark green foliage, Toyon makes a lovely seasonal wreath.

(Photo: David Magney)
Long before Google Maps existed, there was Esri, the Redlands-based company that created the ubiquitous geographic information system ArcGIS. Described by some as one of the world’s “stealth” tech giants, Esri has transformed the way we understand our natural world, plan communities, and even organize disaster response.

Esri founder Jack Dangermond says the power of GIS is not so much the technology itself but in its application. Dangermond, a California native who grew up working at his family’s Redlands nursery, believes we can use GIS to raise human consciousness and make wiser choices for our world.

Recently, I had the privilege of talking with Jack about the future of design, conservation, and the possibilities within what he calls the “extraordinary world.”

What I search to do in my work is to create better understanding of cultural or physical or biological or hydrological patterns. Because I think through that understanding, people can better act.

— Jack Dangermond, founder and president of Esri
What the world needs now is for all of us to get more involved. That starts by getting conscious, understanding what’s going on, and taking collaborative action.

Jack, what about GIS first captured your imagination? Did you know you were onto something special back then?

**JD:** The lights really went on for me when I was a graduate student working in Harvard’s Laboratory for Computer Graphics and Spatial Analysis. The world of digital cartography, and cartography itself, is a way to visualize relationships, patterns, and processes. For me, it was a thrill to be able to put that into the computer and then see the hidden dimension of relationships and patterns. What plants grow on what soils? What happens when heavy rainfall occurs on certain soils or certain vegetations? Those four-dimensional patterns we could begin to model in the computer; it was like seeing things that we could not see.

This was during the time of the Vietnam War, Silent Spring, and the birthing of the environmental movement. I could see how system analysis and computer modeling and visualization could be used to solve problems and help answer questions. I didn’t know exactly what I was doing, but I felt driven to push forward with what I was learning. I realized I was not as interested in the technology as I was in its application.

In some of your presentations, you talk about the “extraordinary world” as opposed to the ordinary world. Could you talk about what this means to you?

**JD:** My sense is that I live simultaneously in both an ordinary and extraordinary world. In my ordinary world I mostly respond unconsciously to various events or circumstances. For example when I am walking along, and sense something, food or smell or sight, I react almost automatically like I am a machine that’s been wired or programmed.

At the same time I live in an extraordinary world where I can see and create context and also where I have freedom of choice and action. In this space, I can magically switch to the creative world where I have enormous power to create and see things differently. For me the extraordinary world starts by seeing context. That is why GIS and geography are so important. They help me see relationships and patterns — for example the dynamic living world...the plant world, the animal world, and how it’s all interrelated.

You’ve probably had these experiences in your life where you’re walking along and everything is just sort of ordinary, but then you suddenly wake up and see, ‘Wow, I see...these are trees, and they’re growing and absorbing carbon and putting out oxygen and housing millions of insects. As a conservationist, I’ve then created a context for myself to get involved somehow and do something to protect those trees.

In the ordinary world, in large part, we live at the effect of the circumstances. We don’t really choose that a tree gets sick or dies. But in the extraordinary world, you see something, take responsibility for understanding what’s going on, and move into action.
My sense is what the world needs now is for all of us to get more involved. That starts by getting conscious, understanding what’s going on, and taking collaborative action. That’s what I am working on now, creating a global WebGIS that creates a kind of nervous system of geo-consciousness for our planet.

That perspective seems especially important for conservation. If more of us were able to see this way, we might make different choices.

JD: My good friend Richard Wurman, who started TED, has a nice saying, ‘Understanding precedes action.’ And so, if you get to understand, for example, an ecology, then you act differently than if you don’t. You’re more respectful of plants or animals. You’re less disruptive. What I search to do in my work is to create, through geography or computational geography, a better understanding of cultural or physical or biological or hydrological patterns. Because I think through that understanding, people can better act.

Some people are afraid of the AI revolution that’s going on. For me it’s very exciting, because this machine learning can provide us with a framework for more informed decisions and better guidance. I don’t buy into the concern that machines will run our lives. My great hope is that by using computational methods we will come to create greater wisdom as a foundation for human behavior. There are some things we know, but we don’t know them as explicitly as we should. In cities, for example, machine learning can help us see patterns surrounding nature’s effect on human health and psyche. All those relationships and patterns ought to be leveraged.

What’s new on the horizon at Esri that excites you?

JD: I’m particularly interested in the concept of geodesign. Geodesign takes all of these layers of data and applies them to the design field. Landscape architects, planners, and others are taking scientific geographic information and embedding it into their design practices. It’s not just creative design then, but a more directed design based on an understanding of consequences.

At Esri, we’re working hard on new geodesign tools both in the city and for the landscape. In the city, we use CityEngine, where instead of graphically sketching something out and making it pretty, we’re looking at urban patterns inside of cities to understand the consequences on nature, infrastructure, and so on. In the natural world, we’re using GeoPlanner, where I can sketch alternative land plans, forest management plans, or ecological plans, and very quickly understand the consequences of those using computer models running in the background.
Find something that you really like to do. Get involved and play at 100 percent.

Jack, you are a conservationist, and Esri has been very supportive of CNPS. What about the native plant mission is meaningful to you?

**JD:** First, I deeply love plants. I grew up in the nursery so it’s in my DNA. CNPS stands for protecting, enriching, and inspiring us with the living world of plants. I think that’s a noble thing to do both at the consumer level and at the science level. Ed Wilson [E.O. Wilson, noted ecologist] once said, ‘Everybody has a biological connection.’ There is an innate part of us that yearns to connect with plants.

What do you see as the most pressing environmental concern for California today?

**JD:** Disappearing landscape. I’m not anti-development, but we need to grab our remaining fragments of landscape — some big, some small — and make sure that they’re not lost. In them, we have full ecosystems.

What’s your advice for today’s geographers, plant lovers, and citizen scientists?

**JD:** Find something that you really like to do. Get involved and play at 100 percent. Geographers, work hard to help people understand the value and application of geographic patterns. For plant lovers, help others become conscious of the role plants play in our well-being. Citizen scientists, work hard to participate in collecting valuable information for the government and other science organizations. You provide the bottom-up information that can only happen through volunteerism. You provide the voices and the checks and balances for democracy and better governing.

*Thank you, Jack Dangermond!*

Liv O’Keeffe is Director of Marketing and Communications for CNPS
Victory for California: An Improved Off-Highway Vehicle Program

A MESSAGE FROM CNPS CONSERVATION PROGRAM DIRECTOR GREG SUBA

Thanks to a new law, California’s off-highway vehicle (OHV) program will allow people to enjoy off-road recreation in a more environmentally sustainable manner. Senate Bill 249, by Sen. Ben Allen (D-Santa Monica), permanently reauthorizes the State Parks OHV Program while making several improvements, including enhanced resource protection and conservation requirements, better integration within the State Parks, and improved management of its grant funding.

The CNPS Conservation Program played a key role in researching, drafting, and lobbying for this OHV reform legislation. CNPS Legislative Consultant Vern Goehring and I – and hundreds of CNPS members who signed petitions, made phone calls, and sent emails – worked together toward positive changes for California through this new law.

SB 249 permanently authorizes the OHV program, which was due to expire at 2017’s end, and puts into law a number of important environmental protection measures, including:

• Formally recognizing natural and cultural resources protection as a priority for the OHV program
• Incorporating best available science into the program’s planning, monitoring, and management
• Preventing unauthorized OHV trails from being grandfathered into the State Parks trail system
• Requiring a full California Environmental Quality Act (CEQA) review process for new trails
• Increasing repair and restoration opportunities through the OHV grants program
• Revisiting the commission’s leadership through a stakeholder review process and a five-year sunset

Senator Allen and his chief legislative director, Tina Andolina, worked tirelessly to negotiate the bill’s language with Gov. Jerry Brown’s administration, the Department of Parks and Recreation, OHV groups, and environmental groups. The final version made it through both state houses, and was signed by the governor October 3. Most think the bill is a good thing for California’s natural and cultural resource protection and OHV activity.

Most, that is, but not all. CNPS was part of a coalition of organizations that worked to chart a course for this legislation. The coalition’s effort on OHV reform, spanning decades, has brought together diverse goals and opinions. While the two-year effort behind SB 249 resulted in unanimous votes in both Assembly and Senate, not all conservation groups supported the final bill. Our coalition has more work to do as we regroup and help shepherd OHV activity along in California.

We set out to update conservation measures within OHV recreation areas, and we arrived at a win-win for California.

We set out to modernize how conservation gets done where OHV recreation occurs, and we arrived at a win-win for California.

Examples of illegal riding at Carnegie State Vehicle Recreation Area in the East Bay. Here, only the horizontal trails are legal. (Photo: SB 249 Coalition)

CNPS can make a difference. We have to be willing to commit to the effort when the call comes.
California is home to some of the most diverse assemblages of plants in the world, and the interactions between these numerous species can be seen in patterns of vegetation. At CNPS, we’ve begun a multi-step process to identify, inventory, map, and track these natural communities throughout the state, with an emphasis on identifying rarity. Through this initiative, we’re developing tools, training individuals and entities, and providing information to identify and protect rare vegetation types as key units of biodiversity. One recent example of this work is our yellow-cedar project with the Klamath National Forest.

With yellow-cedar in decline in the Pacific Northwest, the U.S. Forest Service wanted to understand what that might mean for the status of this rare species in its southernmost range, California’s Klamath and Six Rivers National Forests. Representing the California Native Plant Society, we recently participated in a collaborative mapping and inventory project for the yellow-cedar in partnership with the Klamath National Forest.

To help answer the Forest Service’s question about the yellow-cedar, we visited eight of California’s 12 known populations — all in the Siskiyou Mountains. In each area we collected data on stand health, reproduction, and plant associations. This initial work will inform future studies across the range of this species and drive management practices in the Klamath Mountains.
Yellow-cedar: A natural history

Yellow-cedar (also called Nootka cypress) is a common tree of Alaska and British Columbia south to northern Oregon. The species reaches its southern range extension in California, represented by a few small, isolated groves. In this southern extent of its range, yellow-cedar has a unique ecological amplitude compared to habitats further north. Over most of Alaska and Canada, it is a tree of the coastal mountains, growing from sea level to 3,000 feet (915 m). As the species ranges southward into southern Washington and Oregon, it moves upslope into cool, wet, rocky, north-facing glades where subalpine conditions prevail. This is the case in the Siskiyou Mountains, where the species is a true relict, surviving in a handful of specific microsites that maintain a cool wet climate and late, persistent snow.

Research by Brian Buma from University of Alaska is finding that mature yellow-cedar at the northern extent of its range are in declining health and that little to no reproduction is occurring.

A total of four “cedars” call northwest California home, which makes documenting and identifying the rare yellow-cedar a challenge. Other regional cedars include western redcedar (Thuja plicata), incense-cedar (Calocedrus decurrens), and Port Orford-cedar (Chamaecyparis lawsoniana). While western redcedar is coastal and does not overlap in habitat, the others can be distinguished from yellow-cedar by having a leaf silhouette that can be described as lacy or flattened (Port Orford-cedar) and vertical and greener (incense-cedar). Yellow-cedar has droopy, yellow-green foliage that falls from a distinctly conical crown and jutting branches in a definable pattern, creating a wet and tired look. The drooping is an effective adaptation to slough off weighty winter snow without branch breakage.

The leaves of Port Orford-cedar are distinguishable by stomatal bloom in the shape of an X on the underside of the needles, while yellow-cedar has no bloom. The spherical cones are similar between the two conifers, but yellow-cedar has fewer than six cone scales, while Port Orford-cedar has more than six. The unopened cone looks like an armored ball because the end of each scale presents a sharply tipped umbo. Most of the year the cones remain closed, like cypresses. Though cone production does not occur every year, one may find remnants on the ground from previous years, greatly aiding proper identification. The bark is similar to the North American cypresses but thinner. It appears gray to brown to rarely black between scaly or shallow ridges. Only the juvenile bark characteristics are important in the region because trees do not get very old (or big) in this range.

These three “cedars” all occur in the Siskiyou Mountains, sometimes together. The real challenge lies in finding locations where the regionally uncommon yellow-cedars still survive.

Most of the year the cones remain closed, like cypresses. Though cone production does not occur every year, one may find remnants on the ground from previous years, greatly aiding proper identification.
Early findings for California’s yellow-cedars

The Klamath Mountains are home to more than 3,500 plant taxa, many of which are outliers of a broader range reaching their western, northern, or southern range extension in the area. With populations in only 12 known locations in California, yellow-cedar epitomizes the rarity that makes the Klamath Mountains special. For this project we started with collecting known locations using herbarium specimens from the Consortium of California Herbaria, CalPhotos, CalFlora, and iNaturalist reports. With these data, we created two maps: one for known locations and another for predicted locations.

Funding by the forest has allowed us to visit 10 known stands across the Siskiyou Mountains, managed mostly by the Klamath National Forest. In these stands we conducted 20 rapid assessments in which we looked at stand density, seedling and sapling presence, cone production, and health, among many other factors.

General trends within our surveys show that the trees at the southern extent of the species’ range are healthy, producing cones, and reproducing through both germination and cloning. In many cases, trees are expanding their range into newly accessible habitat including areas on north-facing slopes where persistent late snowpack is no longer remaining late in the growing season.

The growth and reproduction we are finding in California are the antithesis of what Buma and his colleagues are seeing in the northern range. For now, yellow-cedar appear to be thriving in California’s Siskiyou Mountains. We hope our findings will aid in the development of a management plan as well as a better understanding of the species across its range.

Julie Evens is the Vegetation Program Director for CNPS; Michael Kauffmann is a member of the CNPS North Coast Chapter and editor of Fremontia.
Forty-five square miles of prime California coastal land, crisscrossed with roads and permeated with munitions from almost 80 years of military training — this was Fort Ord in the early 1990s when the massive Army base on the Monterey Peninsula was scheduled for decommissioning. Yet within this environmental disruption lay the seeds, literally, for the land’s renewal and reuse. It would take time and hard work, research and money, and a good deal of creative thinking.
It’s still a work in progress, but a little more than two decades after habitat restoration began, the 14,650 acres of land that became Fort Ord National Monument are rich with wildlife. Vernal pools are refuges of the endangered California tiger salamander. The native maritime chaparral habitat fosters such rare plant species as sand gilia (Gilia tenuiflora ssp. arenaria) and seaside bird’s-beak (Cordylanthus rigidus ssp. littoralis). The grasslands are being reclaimed from invasives including poison hemlock and yellow star thistle.

Restoration sites in the public lands now number 206, says Bureau of Land Management botanist Bruce Delgado, also chair of restoration and invasives for the Monterey Bay chapter of CNPS. A few have been especially challenging, but not one site has failed. The spider web of random Army roads and trails has thinned considerably, with hikers, mountain bikers, and horseback riders traversing the hills and dunes where military vehicles and troops once roamed.

The progress at Fort Ord has been perhaps as transformative to the people involved as it has been to the land. “I was reborn out there,” says Bree Candiloro of her time as an AmeriCorps crew member circa 1996-97. These days she’s a restoration professional at the Elkhorn Slough Reserve’s nursery a few miles north.

Soldiers out, students in
Delgado, who’s also mayor of Marina, is a driving force at Fort Ord, but he says credit for the BLM’s leadership role belongs to the late Steve Addington, who died in 2004. Addington was working at the agency’s Hollister office in the early 1990s when he caught wind of the base’s possible closure. The site would need to be managed and restored for eventual public use. Addington believed the BLM could handle conservation “as good as anyone,” and successfully sold his vision to both the BLM and the Monterey Bay community, explains Delgado.

Fort Ord officially closed in 1994, and California State University, Monterey Bay (CSUMB) opened on 1,350 acres of the former base. In 1996, even before the land was under BLM’s jurisdiction, the agency began working with CSUMB to reclaim roads, says Delgado. At the University, the new Watershed Institute’s Return of the Natives (RON) program started a native plant nursery. Here, the Institute reclaimed seeds from Fort Ord lands and painstakingly grew the plants for restoration sites. The AmeriCorps service program joined in, hiring people willing to work hard at erosion control.

“I literally saw an ad in the paper that said ‘come work at Fort Ord,’” says Candiloro, who grew up in the Monterey area. “I was clueless.” But, at age 24 and feeling directionless, she says she needed labor.

Learning on the job
According to Candiloro, those early crews received training in unexploded ordnance and were limited to certain areas while patching the Army roads. “We were always on the lookout for grenades,” Candiloro says. “There were bullets everywhere.” Some roads charged straight up mountains, and sandy soils were eroding.
The crews also learned to monitor plants and animals. Candiloro became entranced with the many rare species. She became especially fond of the Monterey spineflower (*Chorizanthe pungens*), an endangered native. “I used to monitor for that, crawling on my hands and knees” through the dirt looking for it. “I learned to LOVE that thing.”

Candiloro says Delgado was an inspiration to her and the others. Charismatic, knowledgeable and generous with his time, he was a “guiding force” for the varied-age AmeriCorps crews. Another friend from that time made a lasting impression: Chuck Haugen, a marine biologist and self-taught botanist who also edited the CNPS Monterey Bay chapter’s newsletter. A dedicated volunteer on BLM lands for six years, Haugen, 72, hit a nest of yellowjackets in July 2002 and died from an allergic reaction to the stings. Friends held an annual picnic in Haugen’s honor, and later Candiloro and Delgado created the Chuck Haugen Conservation Fund, affiliated with the CNPS Monterey Bay chapter. “Chuck always had a spring in his step, a positive attitude,” she says. “Be that leader. That’s what he taught me; that’s what Bruce taught me.”

Delgado himself had arrived in the region in 1990 via Humboldt State, where two years before he had joined a BLM training program as a wildlife management student. Thor Anderson was another transplant. He transferred to CSUMB from Sacramento State, where he’d taken a botany class and “fell in love with plants.” CSUMB lured him with its hand-on possibilities: “My lab was the outdoors.” After time as a restoration volunteer, he interned with the RON program through one of 10 to 15 internships the BLM funds annually. Anderson researched invasive plants for a semester, then spent a summer on the BLM weed crew. In 1999, he coordinated the first Central California Invasive Weed Symposium, now in its 19th year.

Chase Jones arrived from West Virginia as a Student Conservation Association enlistee. New to California, he was “absolutely blown away” by Monterey. Each crew member was assigned to study an invasive plant. His was the infamous *Carpobrotus edulis*. “I grew to despise iceplant,” he says. A journalism major, he also designed backcountry signs and represented Fort Ord at fairs and other events. “We did a lot of outreach [to get the community engaged],” he says. “We were really fired up about it. It was a really great time.”

Plenty of trial and error

Restoration efforts evolved to focus on the largest diversity of plants that would survive, explains Delgado. The crew narrowed its palette, moving away from hard-to-germinate plants like manzanita and opting instead for yarrows, coyote brush (*Baccharis pilularis* ssp. *consanguinea*), and stipas like purple needle grass (*Stipa pulchra*). In addition to planting changes, the BLM realized it would need to bring in heavy earth-moving equipment, as erosion control dams kept blowing out.

“Originally we were just poking holes in the ground with Pulaskis,” Delgado says. “That’s not the way to do it.” About 95 percent of the BLM restoration sites have involved using bulldozers — which is not to say the work is unsubtle. Delgado describes Tom McCoun, the BLM’s heavy equipment operator, as “an artist” of re-grading. “In his head he can see everything finished” before he even starts.

Most restoration sites cover about an acre but a few have been larger. One five-acre grassland site took several years to accomplish, McCoun notes. Delgado credits
McCoun’s “soft engineering” for turning a cut-in Army road across an eroding gully into gently rolling hills with “contour ripping” to hold water. “Eventually the rip marks melt together as the vegetation comes up,” McCoun explains.

With the drought, the crew also began watering young plants using five-gallon buckets or hoses from mobile tanks. That was a change from early on when planting conditions were fairly harsh, recalls Christina McKnew, manager of the RON greenhouse and nursery at CSUMB. A seedling would go in the ground “and you wished it good luck.”

The energy of the perennially young

Over the years, a continual supply of hardy college-age workers has been key to habitat restoration, but the effort also depends on the Monterey community at planting events through the year. Early on, a young staffer suggested bringing in musicians for the public plantings. Since then, mariachis, reggae bands, bagpipers, and even a didgeridoo player have serenaded volunteer crews. “It’s just great,” says Delgado. “You’re digging holes and there’s live music! You’re out in the middle of nowhere, and there’s live music!”

As many as 1,000 students a year, of all ages, help with planting at Fort Ord; even more are touched by BLM outreach. “Ranger Tammy” — Tammy Jakl — has become a local celebrity the past 16 years. Jakl visits K-4 classes monthly in five districts but is best known at Toro Elementary, just across the fence from the BLM lands. Field trips with her might include a lesson in how to collect native seeds or, later, how to transplant the seedlings. The program multiplies its effect, because the kids then go home and teach their parents, Jakl explains.

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The work continues

The public lands became a national monument in 2012; BLM manages 7,200 acres, about half the site. Still, challenges arise. Attention is now on the lower-priority grasslands, but they’ve been “surprisingly difficult,” Delgado says. This year the young plants came under attack from a hungry population: “We just got murdered by rodents.” Of 5,000 plants, about 400 remained by September. “And digging! Really hard digging!” in tough, dry, unshaded clay.

BLM lands have just a few sites left to restore. “It’s a most fulfilling experience to visit older ones and see how they’re thriving,” says Delgado. “Over the 20 years, the average cost has been about $70,000 a year, and that includes everything.”

Anderson now is a manager at the environmental services firm Burleson Consulting, focused on the 7,450 acres not yet deemed safe by the Army. Burleson has care of 19 restoration sites, from one-tenth of an acre to 14 acres in size, mostly maritime chaparral. Meanwhile, Candiloro built on her AmeriCorps experience by completing college, studying botany, and earning a teaching credential. Jones moved to Missoula, Mont., where he is the city’s energy conservation and climate action coordinator. He recalls Fort Ord as “a magical place,” for the land and the relationships it fosters. “I just feel really lucky to have been a part of that.”

Candiloro notes that restoration work is less anecdotal and more research-based than 20 years ago, with a higher awareness of pathogens, for example. But she sees no nemesis in the plant world, admiring even the invasives for their toughness. “Plants are amazing, and I get completely humbled by them every time.”

Kathy Morrison is a Sacramento-based writer and editor.
Garden

BY KRISTEN WERNICK

CNPS is filled with inspiring individuals statewide, eager to share their dedication to California native gardening and the amazing projects and partnerships they have developed. All the hard work and perseverance of these dedicated people has paid off. CNPS is now perfectly poised to turn a new leaf in California native gardening.

To bring this community of inspiring individuals together, support their continued efforts, and honor their accomplishments, CNPS is proud to announce the Garden Ambassador project. With Conze Fund support, this project shares the beauty and possibilities of California native plant gardens. It will also provide the platform and resources for the state’s native gardening enthusiasts to share their experiences, inspire their neighborhoods, and grow communities.

One of our first Garden Ambassadors is Karen Taylor of the South Coast chapter. A SoCal native from Long Beach, Taylor has been working with elementary and middle schools in her community for over 10 years. What started as an edible learning garden in her children’s kindergarten class has blossomed into a robust K-5 curriculum, three California native school gardens, and a nonprofit dubbed Grounded Education.

Known as “The Garden Lady” by students, Taylor is self-described “science person” who is keenly aware of children’s affinity for nature. “Kids are naturally curious. They want to see ants climbing up and down a tree. They love to see the patterns a plant’s shadow makes on the sidewalk.”

Through the outdoor curriculum she developed through her nonprofit, Taylor is proving the versatility and importance of an outdoor classroom. “We do everything in the garden – computers, art, math, every subject! It’s fun, pertinent, and hands-on. Kids remember going outside and doing activities.”

Along with these lessons, Taylor has helped developed native gardens at three schools. Of particular interest is

Interested in being a Garden Ambassador? You can choose the activities that suit your interests, including:

- Sharing your garden with others.
- Hosting “In the Garden” talks/visitor events.
- Contributing to Garden Ambassador blogs and social media.
- Participating in CNPS Garden Tours and gardening events.
- Volunteering at retail nurseries to teach others about California native plants.

Garden Ambassadors enjoy some great rewards too! Contact kwernick@cnps.org for more information.

Thanks, and we look forward to hearing from you! – The CNPS Team
Garden Ambassadors

the school habitat garden at Lowell Elementary. What started as a bluff covered in iceplant is now a thriving, coastal chaparral habitat filled with Long Beach natives. Taylor has found numerous teaching opportunities with these native plants – for both the kids and their parents. Narrow leaf milkweed is used to demonstrate the variety everyone should be growing and why. White sage is incorporated into lessons about the Native Americans and the resources they depended on. Bladderpod is engaging with its rattling pods and funny smells, while the coffee berry and lemonade berry provide food and habitat for the critters the kids love to observe. The kids even make their own dye by grinding up the berries from elderberry.

Yet most important is that these gardens provide a space for the kids to “go outside, take a deep breath, and observe the natural world.” says Taylor.

She is thrilled that these schools have found value in taking kids outside to let them use their senses and explore naturally. Habitat is becoming a part of the schools, and is changing the way campuses are used while restoring a sense of place.

“Teachers are starting to understand, and parents are starting to learn. We are building a whole community,” says Taylor. “We are showing the kids that there is value in appreciating the natural world; it is there for all of us to explore. It is so fun to share what you are invested in and curious about yourself. It’s an awesome and rewarding experience.”

Her greatest piece of advice? Patience. “Whether you are doing a home garden or working with bigger stakeholder groups, you have to be relaxed. If you give it time, people will realize the value of it for themselves, their kids, and their communities.”

She also emphasizes the importance of listening – to everyone. “You never know who in the community might be a champion for your project, or provide a helping hand.” Last but not least, “You have to trust the process and be flexible. Be in it for the long haul. Build it and they will come, critters and people.”

Kristen Wernick is the horticulture Outreach Coordinator for CNPS.
The fall brings an abundance of native food and beverages from our beloved gardens. As regular vegetable gardens start to wind down, many of the native plants begin producing.

One of my favorite foods to gather with my family is oak nuts (acorns). All species of Quercus have edible nuts when properly prepared. I dry and store the nuts for the winter and then use as them as a gluten-free flour after leaching out the bitter tannins. Classes of fourth-graders at my son’s school love pounding the acorns open with rocks, and I always have a hard time getting them to stop. The same thing happens when adults get their hands on acorns and two rocks.

Manzanita cider is a traditional drink of California, enjoyed by indigenous inhabitants in many parts of the state. Although all species have edible berries, I use Arctostaphylos viscida, since it is abundant in the foothills of the Sierra Nevada where I live. The cider is easy to make, high in antioxidants and naturally sweet. Fill a blender with the dry berries and grind on low-medium for about a minute. This is a modern technique to crush the berries and expose the sweet powder, without crushing up the large seeds. Cover the crushed berries with cold water and soak for several hours to overnight. Strain and enjoy cold or hot.

Healthy tea from a fir tree

The tart, lemonlike flavor of Douglas-fir (Pseudotsuga menziesii) is delicious as a drink or a sorbet, packed with the extra vitamin C we need in the fall and winter. The basic recipe for making tea is to bring four cups of water to a boil, turn off the heat, and add two cups of fir tips. Let steep for 10 minutes and then strain out fir needles. Making vegan fir tip sorbet just requires a little more steeping time and an ice cream maker.

The leaves of yerba santa (Eriodictyon californicum) taste like nothing else – it’s a flavor that people either love or hate. Though bitter when chewed, they stay sweet and quench the thirst if sucked. At least seven indigenous groups in California relied upon it as a tea for colds and congestion. I prefer to take my medicine in the form of dessert, so I developed a recipe for raw chocolates made from yerba santa.

A walk through the woods in fall wouldn’t be the same without the taste of madrone berries (Arbutus menziesii). I gather them from the base of the tree and eat them raw, dry and grind them into a spice, or make them into a cranberry sauce substitute for our Thanksgiving celebration.

Native foods connect me with the place I call home and give me a delicious reason to treasure, tend, and grow California’s native cuisine.
MANZANITA HARD CIDER
Collect berries in summer.
Makes 1 gallon. Ready to drink in 2 months.
YOU’LL NEED:
4 quarts manzanita cider (see story for how to make it)
2 pounds raw cane sugar
8-quart pot
1-gallon jug
INSTRUCTIONS:
Pour cider into pot, add the 2 pounds of sugar, and allow to simmer over heat until sugar dissolves. Let cider cool and use a small amount of iodine to sterilize the jug. Pour cider into sterilized gallon jug and add yeast. Seal jug with the airlock and store in a cool location, 65-75º F.
Let the cider bubble for approximately a month. After the bubbling subsides, allow it to sit for another week. Siphon the cider into sanitized bottles, avoiding the yeast that has settled on the bottom of the jug. Seal bottles and allow cider to sit for another 2 weeks or more for added flavor.

DOUGLAS-FIR TIP SORBET (Vegan)
YOU’LL NEED:
3 cups water
1 cup sugar
1 quart fresh or frozen Douglas fir tips, plus a few extra to use as garnish
INSTRUCTIONS:
Bring water and sugar to a boil, stir, and turn off heat. Add fir tips and steep, covered, for 30 minutes. Keep liquid and strain out fir tips. Chill overnight in refrigerator. Freeze in ice cream maker according to manufacturer’s directions. Garnish sorbet with extra fir tips and serve.

YERBA SANTA RAW CHOCOLATES (Raw, Vegan)
Collect leaves in fall.
YOU’LL NEED:
1 cup raw cacao butter
1/2 to 1 cup raw cacao powder
1/4 to 1/2 cup powdered, dried yerba santa leaves (or substitute coyote mint leaves)
1/4 cup raw, local honey
Sea salt to taste
4 silicone molds
INSTRUCTIONS:
Note: Use more or less honey depending on desired sweetness. Makes approximately 60 chocolates.

MADRONE “BEYOND CRANBERRY” SAUCE
Collect berries in late fall.
YOU’LL NEED:
1 3/4 cup fresh madrone berries (stems removed)
1/4 cup fresh toyon berries (stems removed)
1 cup water
1/2 cup apple juice, plus 2 tablespoons, divided
1/2 cup honey
1 tablespoon arrowroot or organic cornstarch
1 tablespoon grated orange zest
INSTRUCTIONS:
Mix berries, water, apple juice, and honey in a pan and bring to a boil. Simmer for 15 minutes. Stir arrowroot or cornstarch into 2 tbsp apple juice. Pour into berries and stir constantly while bringing to a boil. Remove from heat and add orange zest. Allow to cool before serving. Store in refrigerator for up to 2 weeks.
Variation: If toyon berries are plentiful, instead of madrone berries, simmer 1 cup dried toyon berries, 1 cup water, 1 cup apple juice and 1/2 cup honey, and then follow the same recipe.

All recipes adapted for CNPS from Alicia Funk’s The Living Wild Project.
Tips and advice from California’s native plant gardening experts

fall planting season is here, and most folks are sure to throw in some native plants that will help feed local bees, butterflies and other insects ... but why let the bugs have all the fun?! Let’s feed our families too! Below are a few pointers for some edible California native plants that look good in your garden and even better on your plate.

Note from Anthony: Special thanks to local native folks who have taught many of us how to use and respect these foods and traditions. Buen provecho!

Edible Greens and Bulbs

Claytonia perfoliata – Commonly called miner’s lettuce, it is our state’s easiest-to-grow (and eat) leafy green. Sow the seed of this annual in light sun/shade with winter and spring rains for months of lettuce.

Atriplex lentiformis – Saltbush produces thousands of edible, salty leaves that are excellent mixed into potato tacos or baked in lasagnas. Young leaves have the mildest flavor.

Calandrinia menziesii – This is another easy-to-grow annual with tasty edible leaves. Its common name is Red Maids.

Also, most of our native Allium and Triteleia are gorgeous in the garden and delicious in meals. Use all parts of Allium as you would chives and onions, and Triteleia corms make excellent small potato substitutes.

What edible native plants would you recommend I plant for my home garden “foraging”?

featuring: Antonio Sanchez of Santa Barbara Botanic Garden
Herbs and Spices

Salvia spathacea – The Hummingbird Sage is easy to grow and use! A few fresh leaves blended with honey or agave syrup are perfect on your morning waffles. A handful of leaves boiled in water make a light tropical tea. Fry fresh leaves in vegetable oil for 30 seconds for local hummingbird chips!

Salvia clevelandii hybrid – Mild-flavored sage hybrids like “Aromas” are perfect for everyday cooking. Use fresh leaves in recipes like Cleveland sage pesto or sage ice cream. Soak leaves in olive oil for a delicioso fusion, or use leaves to flavor your own beer.

Aloysia wrightii – Sometimes call Wright’s Beebrush or Oreganillo, this is a Desert Oregano with a hint of citrus, perfect for flavoring frijoles, potatoes, and many other dishes.

Sweet Fruits

Vitis californica “Roger’s Red” – This is California’s easiest to grow (and eat) sweet fruit. One plant can produce dozens of clusters of delicious purple grapes for weeks in late summer.

Ribes aureum – The golden currant is one of our earliest fruiting shrubs, with a heavy spring crop of sweet orange to purple currants. Plant multiple specimens for best production and flavor diversity.

Vaccinium ovatum – Huckleberry is easier to grow in most California gardens than its famous relative, the blueberry. Following guidelines for blueberry plant pruning has led to better fruit production in huckleberries as well.

Berberis nevinii – Also known as Nevin’s barberry, it produces thousands of tiny sweet fruits right off the shrub with no supplemental irrigation. And Oregon Grape (Berberis equifolium) produces hundreds of tart purple berries good for jams, pies, and mixing with sweeter fruits.

Sambucus mexicana – The Mexican elderberry is a great small tree that provides pounds and pounds of elderberry clusters good for jams, jellies, or drinks.

Fragaria vesca – The Alpine strawberry is a gorgeous evergreen groundcover for slightly shady areas, producing sweet strawberries for months.

Grains and Flours

Atriplex lentiformis – A quinoa relative, the saltbush has fruits/seeds that are salty and delicious. Try roasting and grinding for a smoky gluten-free flour, or soak and boil as a quinoa replacement. Plant at least one female and one male plant for fruit/seed production!

Prosopis glandulosa – A favorite desert patio tree, the honey mesquite produces pounds of edible seed pods with little care.

Antonio Sanchez is a native plant horticulture expert working at Santa Barbara Botanic Garden.
Bob Byrnes had spent his whole career indoors, working in labs. So when he retired about three years ago from his position as a research programmer at the University of California, San Diego, he looked outside for his leisure.

“I had done a bit of bird-watching but it turns out I was drawn more to native plants.” With that realization, he joined the very active San Diego chapter of CNPS, and got busy with the habitat restoration and invasive plants committees, which he now co-chairs. On the chapter website, the restoration group notes that it generally plans to restore 75 acres a year, but historically “we accomplish more than that.” Byrnes says they have about 1,100 acres under CNPS management.

Thanks to Byrnes, the San Diego chapter recently received $10,000 from Cox Conserves, the national sustainability program of Cox Enterprises. In June, Cox and the Trust for Public Land named Byrnes the 2017 California Cox Conserves Hero for his restoration efforts. In announcing Byrnes’ honor, Cox Conserves noted that “not only does he invest his personal time to the organization’s efforts, he also sets aside time to encourage and train other volunteers on best practices. Byrnes and his team of dedicated volunteers spend countless hours removing invasive plants that could potentially harm wildlife.”

His fellow co-chairman of the two chapter committees is Arne Johanson, active in restoration work about 13 years. He nominated Byrnes for the Cox Conserves Heroes award; Johanson was himself a finalist three years ago.

**The struggle with invasives**

Byrnes says that he learned at chapter meetings and from San Diego’s park rangers about “the really tough work out there in terms of habitat restoration.” Acquiring knowledge while shadowing the rangers, he eventually applied to the state for a qualified applicator’s license.

That might seem counter-intuitive to the CNPS work, but Byrnes says herbicide is sometimes a necessary tool for managing invasive plants. “There are a lot of things you can do to manage weeds or invasive plants that don’t require chemicals, but sometimes you come across really tough plants” with large, deep root systems that can’t be removed any other way.

Byrnes focuses his habitat work on open-space parks and the San Dieguito River Valley, where harmful plants include giant reed (*Arundo donax*), a water-hungry bamboo-like grass that can grow to 20 feet or more, crowd out local plants and wildlife, and feed catastrophic fires. On Labor Day he was at Black Mountain Open Space Park targeting stinkwort (*Dittrichia graveolens*). “I really enjoy getting out there,” he says of all his time spent in the parks.

The San Diego chapter has since decided to use the Cox Conserves windfall to support the salary of the new CNPS Southern California conservation analyst, Byrnes reports. In general, he says in understatement, “We’ve done pretty well during the past year.”
How to make oak nut flour 
*(boiling water method)*:
Acorns must be dried for months, then leached to remove their bitter tannins. Several leaching methods exist, with the boiling water method being the fastest.
Gather acorns in fall, keeping only those without holes, and store in a warm, dry place until spring, shaking basket at least once a month to rotate the acorns.
Crack and remove shells with a hammer. Remove the red skins by heating nuts at 200° for 10 minutes, then scraping skins off with fingers or a knife.
Grind nuts in a food processor. Place finely ground nuts in a pot, cover with water and bring to a boil. Change water and return to a boil. Repeat several times, watching for clarity of water and lack of bitterness in the nuts.
After leaching, dry the flour by baking at 250° F for 30 minutes.
Estimate 2 cups shelled nuts for each 1 cup flour.

**OAK NUT FINANCIERS**

**YOU’LL NEED:**
- 5 tablespoons butter, plus butter for the molds
- 1/3 cup all-purpose flour
- 1/4 teaspoon baking powder
- 1 cup confectioner’s sugar
- 1/3 cup oak nut flour (see recipe at left)
- 4 egg whites
- 1/2 teaspoon vanilla extract
Optional: elderberries, blackcap raspberries, raspberries, walnuts, almonds, hazelnuts
Cheesecloth-lined sieve
Financier molds

**INSTRUCTIONS:**
Prepare the financier molds by brushing with melted butter and placing them in the refrigerator. Preheat oven to 425°.
Sift the flour, baking powder, confectioner’s sugar and oak nut flour into a large bowl and stir to evenly distribute the ingredients.
Melt the 5 tablespoons of butter in a saucepan. Once it has melted, start whisking the butter until it starts to boil. Continue cooking the butter, whisking as necessary to stop the solids from burning, and gradually the butter will change in color to a light brown. Remove from the heat and let cool for a few minutes.
Strain the brown butter (beurre noissette) through the cheesecloth-lined sieve into the dry ingredients. Immediately add half the egg whites and the vanilla extract, and mix until combined.
Stir in the remainder of the egg whites.
If adding fruit, spoon a small amount of batter into each mold and then place fruit in the mold and top with a layer of batter. If adding nuts, spoon batter into molds and then arrange nuts on top.
Place the molds in the oven and reduce the temperature to 350°. Bake petit four financiers for 7-8 minutes, larger ones for about 20 minutes. A skewer inserted into the financier will come out clean when they are done.

*Savor California’s native foods*

Alicia Funk is the founder of the Living Wild Project and co-author of *Living Wild—Gardening, Cooking and Healing with Native Plants of California*. She is the editor of six books, including *Herbal Medicine: Expanded Commission E Monographs, The ABC Clinical Guide to Herbs* and *The Botanical Safety Handbook*. Her Living Wild books and programs support environmental and cultural conservation in California. www.livingwild.org
A growing program to get kids to study plants sprouted in a native species garden at my children’s school.

Before leaving my career to raise a family, I had been a Forest Service botanist and decided to share my passion for native plants by volunteering to establish a garden at the school. Parent Stassia Samuels, a plant ecologist with Redwood National Park, suggested we use the native plant garden to study phenology with the students. Our goal was to create a simple program where each grade would observe one or two native species several times during the school year.

Phenology – observing the life cycles of plants and animals – has been practiced by humans for centuries. The rationale behind these observations ranged from the practical, such as deciding when to plant and harvest, to the seemingly unattainable, such as creating stories to explain phenomena not yet understood by science. A study by Richard Primack, Abraham Miller-Russing, and colleagues used data collected by Henry David Thoreau to measure climate change across centuries. Citizen scientists have contributed similar observations through programs such as Project Budburst, the California Phenology Project, and the National Phenology Network (NPN).

Science plus art
For kids, the study of phenology adds structure to nature observations. It complements nature walks, drawing, and journaling. Our Nature’s Notebook (National Phenology Network)-inspired data sheets get kids to look at the whole plant and answer the same questions each observation: breaking leaf buds? new leaves? flower buds? open flowers? fruits? etc. The data sheets include a space for drawing, where kids can capture leaf shape, venation, petal number, or a close-up. Drawing keeps children occupied during the exercise because there is always something more to draw or another detail to add. Through repetition, students gain mastery over the questions, and the sketches allow them quiet time to record information, merging art and science.

Through observation, students can learn botanical basics such as how fruits come from flowers and have seeds inside. Once they realize how many products in the human world come from human-grown flowers, they can better grasp how native plants provide food and shelter for native animals. The activities in our project were inspired by the work of Susan Mazer (UC Santa Barbara) and her students Brian Haggerty and Alisa Hove. (Some of their exercises can be found at https://www.usanpn.org/natures_notebook.)

For kids, the study of phenology adds structure to nature observations – it complements nature walks, drawing, and journaling.
**The poppy project**

When author and science educator Michael Kauffmann approached me about mainstreaming our program and making it available to other schools, the idea of the poppy project began.

To package the project, we selected an easy-to-grow species that reliably passes through all its phenological stages over one school year. California poppy can be easily obtained and grown in a classroom setting.

Using California poppy to study phenology offers distinct benefits. For one, it can be conveniently grown in pots close to classrooms, which increases time for observation. Also, if each student grows a plant or two, imagine what could be done with all those replicates! Replicates allow for additional measuring, analysis, graphing, and teaching the scientific method at higher grade levels — all important to STEM and the Next Generation Science Standards. Also, selecting the state wildflower increases the likelihood it will be embraced by the average teacher. Poppy power!

Although I keep expecting kids to get bored with these observations as they get older, instead I’ve learned the benefits of repeating an exercise across the years. Granted, we’ve had some challenging days, but those don’t outweigh the highlights, such as when kids say, “I had no idea how well I could draw a plant!”

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**Using California poppy to study phenology offers distinct benefits. For one, it can be conveniently grown in pots close to classrooms, which increases time for observation. Also, if each student grows a plant or two, imagine what could be done with all those replicates!**

**Tips on observing plants with school-age children:**

- Small groups work best (3-5 students)
- Get to the plants quickly to avoid distractions
- Initially, spend time helping kids truly understand the questions on the data sheet
- After they’ve mastered the basics, encourage autonomy with these young phenologists. It is a joy to watch them, clipboard and pencil in hand, once they’re trained up.
- Try to observe plants once per season, then cluster multiple observations during spring when changes occur quickly.
- See Michael Kauffmann’s curriculum (URL listed above) for a list of great botany books for kids.
- Using a projector to read a book to a class is a joyful and easy way to give phenology context.
Making a difference is important to you.

The good news is that you don’t have to be Andrew Carnegie to leave a lasting impact in the world. A gift through your retirement account, life insurance, trust, or estate allows you to leave a legacy that reflects your beliefs and values while having a real impact on the future of California’s unique flora and special places.

It’s easy to create your legacy with CNPS – no matter your age, income, or asset. Contact us today to learn more.

916-447-2677 x204 | legacy@cnps.org

cnps.org/legacy
CNPS Fellow Don Mayall passed away June 28 at age 85. Don was a Santa Clara Valley chapter leader, friend, and mentor to many in CNPS and the chapter. Don quickly became involved in the chapter after becoming a CNPS member in the 1980s, and held many chapter positions over the years, including president, conservation, and rare plant chair.

Although not trained as a botanist, Don became a passionate defender of native plants. Once hooked on the wonders of the serpentine flora, Don worked for years to protect important plant areas in Santa Clara and San Mateo counties, and he was instrumental in the preservation and appreciation of the unique serpentine habitats in Coyote Ridge and Edgewood County Park and Preserve.

Don was also active at the state level, contributing to CNPS publications and lobbying in Sacramento and Washington, D.C. to advocate for rare plants and for funds to manage invasive species. Don contributed many observations to the California Natural Diversity Database and steadily encouraged rare plant monitoring and rare plant treasure hunts. He provided guidance, scientific knowledge, and institutional memory for the Santa Clara Valley chapter and CNPS as a whole. For these reasons, the Santa Clara Valley chapter nominated Don as a CNPS Fellow in 2011.

Those of us in CNPS who worked with Don know that a mere list of his activities doesn’t capture the whole story. Friends and colleagues always appreciated his dry wit, and his even-handedness, realism, and solid values. He inspired and encouraged all of us to advocate fearlessly for the protection of native plants.

Don’s contributions to native plants continue. “Don loved plants” and left a portion of his estate to CNPS, says his wife and fellow CNPS volunteer Carolyn Curtis. Carolyn has asked that in lieu of flowers people donate to CNPS in his name. Through Don and Carolyn’s generosity and forethought, Don’s larger-than-life passion for protecting California’s plants will continue as a legacy we can all appreciate.
Botanical Riches at the Southern End of California’s Great Valley

Nick Jensen, Neal Kramer, C. Ellery Mayence

The uninitiated may know the San Joaquin Valley as nothing more than a vast agricultural region between L.A. and San Francisco. Indeed, we’ll never have the opportunity to marvel in the botanical richness that John Muir memorialized in *The Mountains of California* when he wrote, “The Great Central Plain of California, during the months of March, April, and May, was one smooth, continuous bed of honey-bloom, so marvelously rich that, in walking from one end of it to the other, a distance of more than 400 miles, your foot would press about a hundred flowers at every step.”

Fortunately, Californians can enjoy a small glimpse of Muir’s pastures on the now-conserved lands of Tejon Ranch, at the southern end of the San Joaquin Valley. In years with favorable precipitation, the Tejon Hills and adjacent low-lying areas are cloaked in vast displays of poppies, owl’s clovers, popcorn flowers, lupines, and fiddlenecks as seen in these pictures from the epic seasonal bloom of 2017. These areas were protected in a landmark deal in 2008 that resulted in the conservation of nearly 90 percent of Tejon Ranch’s 270,000 acres. With the support of the Tejon Ranch Conservancy, botanists are documenting the region’s floristic riches, including more than 15 CNPS-ranked rare plant species. These habitats, conserved in perpetuity, have been proposed as a CNPS Important Plant Area (IPA). To learn more about the IPA Project, go to [www.cnps.org/ipa](http://www.cnps.org/ipa).

ABOVE: *Phacelia ciliata* and Eastwood’s fiddleneck (*Amsinckia eastwoodiae*). (Photo: Nick Jensen)

ABOVE: Bakersfield cactus (*Opuntia basilaris* var. *treleasei*), CRPR 1B, was once more common in the San Joaquin Valley, and is now only known from a few locations including the Tejon Hills. (Photo: Neal Kramer)

*Nick Jensen and Neal Kramer are California botanists working with Ellery Mayence, Tejon Conservancy Land Manager, to understand and conserve botanical resources on Tejon Ranch.*
Clockwise, from upper left: Tejon poppy (*Eschscholzia lemmonii* subsp. *kernensis*), CRPR 1B, is nearly endemic to Tejon Ranch. (Photo: Neal Kramer)

- A dense field of sky lupine (*Lupinus nanus*). (Photo: Nick Jensen)

- Lost Hills crownscale (*Atriplex coronata* var. *vallicola*), CRPR 1B, shortly after the first population of it was discovered in a grassland with alkaline soil on Tejon Ranch. (Photo: Sandy Namoff)

- Comanche Point layia (*Layia leucopappa*), CRPR 1B, is known only from the Tejon Hills. (Photo: Neal Kramer)

- An approaching storm creates a dramatic scene over the San Joaquin Valley on Tejon Ranch. (Photo: Nick Jensen)

- Snakeheads (*Malacothrix coulteri*), a beautiful member of the sunflower family. (Photo: Neal Kramer)

- Purple owl’s clover (*Castilleja exserta* subp. *exserta*), sky lupine (*Lupinus nanus*), and rusty popcorn flower (*Plagiobothrys nothofulvus*). (Photo: Nick Jensen)

- Leafy stemmed coreopsis (*Leptosyne calliopsis*) carpets the Tejon Hills. (Photo: Neal Kramer)

- Striped adobe lily (*Fritillaria striata*), CRPR 1B, is found in large numbers on clay soils in the Tejon Hills. (Photo: Neal Kramer)
The 2016 CSU Fullerton Field Botany class enjoys a wonderful show of wildflowers in what’s known as the Milky Way, for its milky flow of flowers. (Photo: Sandy Namoff)

Near the headwaters of Chanac Creek, rusty popcorn flower (*Plagiobothrys nothofulvus*) puts on a show with California poppy (*Eschscholzia californica*) blanketing the adjacent foothills of the Tehachapi Mountains. (Photo: Nick Jensen)
Upcoming Events

Great things are happening in the native plant community. See our highlights and visit cnps.org/events for more details!

Featured Events | Art and Native Plants

**OCT 31, 2017 - JAN 28, 2018**
**Beauty and the Beast: California Wildflowers and Climate Change**
*California Museum, Sacramento*
See the breathtaking images of California photographers Rob Badger and Nita Winter as they explore the effects of changing weather patterns on a universal symbol of beauty: the wildflower. The exhibit will become a new CNPS Press book by the same name, coming out in 2018!

**OCT 12 - DEC 23**
**The Gottlieb Native Garden: A Closer Look featuring Scott Logan and Designed Environment.**
*G2 Gallery, Venice*
Two special exhibits: One offers a close-up view of the Gottlieb Native Garden and its diverse wildlife; the other examines the patterns and resulting beauty in our environment. Proceeds benefit CNPS and the Theodore Payne Foundation.

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

**NOVEMBER**

**NOV 2**
**Central California Invasive Weed Symposium**
*Santa Cruz*

**NOV 4**
**CNPS Chapter Plant Sales**
*San Gabriel Mountains Chapter - Pasadena, Riverside Chapter - Riverside*
The last of the season! Select from a wide variety of plants and wildflower seeds. Knowledgeable chapter members will answer questions and offer recommendations.
NOVEMBER CONT.

NOV 8
The Ferns Among Us
CNPS North Coast Chapter
Arcata
Ferns are a fascinating group of plants with rich and often bizarre ecologies and natural histories. Carl Rothfels, Assistant Professor and Curator of Ferns and Lycophytes at the University Herbarium, UC Berkeley, presents.

NOV 14
Saving California
Channel Islands Chapter
Santa Barbara
CNPS Executive Director Dan Gluesenkamp discusses the power of conservation gardening, citizen scientists, and the fight to save our flowers.

NOV 19
Rancho Santa Ana Acorn Festival
Claremont
Join Native American dancers and tribal leaders in a celebration of California native plants, especially the live oak (Quercus agrifolia). Visitors will also enjoy the artisans’ marketplace.

NOV 21
Kumeyaay Ethnobotany
CNPS San Diego Chapter
San Diego
Anthropologist Michael Wilken-Robertson discusses his book, Kumeyaay Ethnobotany, an exploration of the interdependence between native peoples and native plants in Northern Baja and Southern California.

DECEMBER

DEC 8-10
Mushrooms of the Bay Area
Jepson Herbarium
UC Berkeley
The Bay Area is one of the best places in North America to find fungi. This workshop offers an intro to the biology and identification of California’s mushrooms.

DEC 14-15
Baja California Binational Botany Symposium
Ensenada, Baja California, México
XIV Simposio Binacional de Botánica Baja California y Areas Adyacentes

JANUARY

JAN 18
Vascular Plants and Bryophytes of Kern County
CNPS Kern County Chapter
Bakersfield
Dr. James R. Shevock of the California Academy of Sciences (CAS) presents.

JAN 26-28
Theodore Payne Winter Plant Sale
Sun Valley
Three days of discounts on California native plants plus expert advice from TPF staff and volunteers.
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- Ecologist
  Doug Tallamy, PhD
  Restoring Nature’s Relationships

- Author
  Kim Stanley Robinson

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- Carolyn Malmstrom, PhD
  The Secret Power of Plant Viruses

- Stu Weiss, PhD
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