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MOJAVE DESERT CHAPTER
CALIFORNIA NATIVE PLANT SOCIETY
Winter—2025

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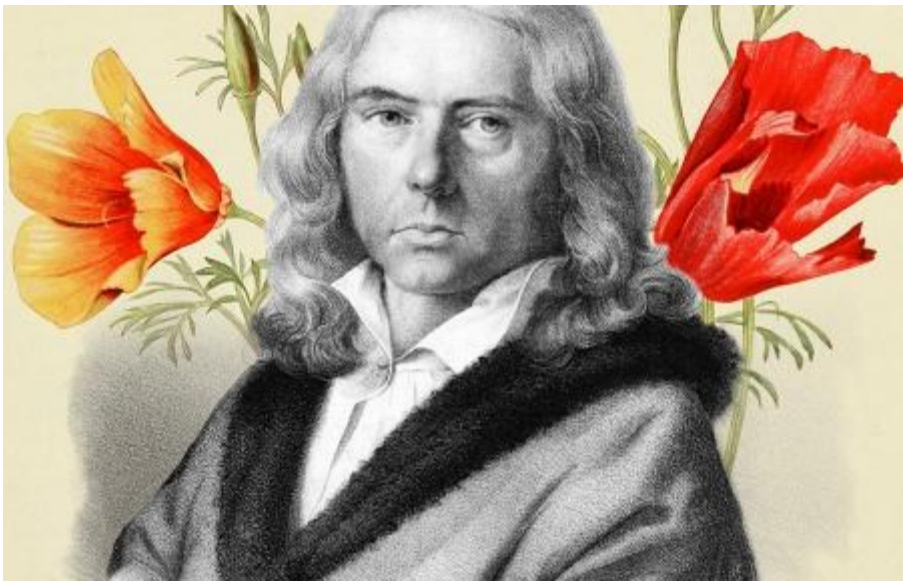
CNPS Mojave Desert Chapter President's Message

Arch McCulloch

Late autumn/early winter is not generally a time I think about plant identification. We're still in the dry season, a long way from spring blooms. Fall plantings are completed, and my wife and I are enjoying (more or less) the sensation of chill breezes. But there are still plants to be seen, if we care to look.



Adelbert von Chamisso Wikimedia Commons/Jonathan Aprea

A Little History

On October 2, 1816, the Russian brig *Rurik* arrived in San Francisco, then a tiny and isolated Spanish outpost. It may have been a *La Niña* year (as 2025 is forecast to be). A naturalist on board, Adelbert von Chamisso, observed,

"The fogs, which the prevailing sea winds blow over the coast, dissolve in summer over a heated and parched soil, and the country exhibits in autumn only the prospect of bare scorched tracts, alternating with poor stunted bushes, and dazzling wastes of drift sand."

CNPS Mojave Desert Board Members

Jim André

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Learn about our board members on our website.
While you're there, check out the Events page for Chapter & CNPS outings and lectures.

Spain and Russia were in the midst of a diplomatic row, so the crew was not allowed far from the ship. *Rurik*'s captain reported that their longest journey was a visit to Mission Dolores, an hour's ride inland, in what is now the heart of the city. Unsurprisingly, the ship did not stay long, departing for Hawaii on October 26th.

Despite these difficulties, von Chamisso and colleague Johann Eschscholtz were able to collect 69 plant species, 30 of them previously unobserved. Among these is *Eschscholzia californica*, the California poppy, now (since 1903) our state flower.

Our state flower, the California Poppy (*Eschscholzia californica*). Photo by Arch McCulloch

CNPS Mission & Vision

Returning to the present, the events of this season have placed us all in a vortex of significant political change in our nation. It's natural to feel disoriented, knowing that some of our efforts will need to be refocused in response to the new reality.

But it's important to remember that CNPS's Mission and Vision Statements have not changed. Our focus is still on protecting California native plants and the natural habitats that support them. We support public access and participation, and our definition of "public" includes everybody.

I'm wondering now if any of the California poppies in "my" canyon are still blooming. I think probably not, but I'm sure to see something interesting if I walk up and open my eyes to what's there.

— Arch

Wildfire, Retardant, and Invasive Annual Grass: A Case Study of the Geology Fire and Effects on Schismus Species

Annika Bjorksten, Nick Graver, Jay Goodwin (Joshua Tree National Park Researchers)
Prepublication: JT Science

Wildfires & Invasive Grasses

Wildfires have become increasingly frequent and severe due to climate change and the introduction of invasive annual grasses like *Bromus* and *Schismus* species. Grasses like these fill the space in between native plants, creating a continuous and very flammable base layer in the desert. If a fire is sparked, it can travel along the ground a much farther distance than it could have before the introduction of invasive grasses, causing much destruction and a centuries-long re-

(Continued on page 5)

Schismus is a tufted annual grass up to 16 inches tall. It flowers in spring. In the Mojave Desert, biomass of alien annual plants is negatively correlated with biomass and species richness of native annuals, even when potential covarying factors such as disturbance and soil nutrient levels are accounted for. Years of competition from these grasses may reduce the seed banks of native annuals, possibly causing fundamental changes in annual plant community structure and food web dynamics. *Schismus* is difficult to control due to its tendency to carpet the ground and produce large amounts of small seeds early in the growing season It is a food source for tortoises in winter, but is a dangerous wildfire fuel. Adapted from: https://www.iucngisd.org/gisd/species.php?sc=552

covery period in non-fire-adapted ecosystems like the Mojave. Additionally, fire itself promotes invasive grasses, which thrive in disturbed, empty ground and the nutrients provided by charred plant material and soil. Over time, all of this could lead to an incendiary feedback loop of grass and fire.

Geology Tour Road Fire

This happened on Geology Tour road in Joshua Tree National Park in June 2023. A fire was sparked by an illegal off-road vehicle, and spread 1,033 acres before being stopped by a combination of mobile (fire engine) attack and fire retardant, a phosphorus-based compound dropped from fixed-wing aircraft.

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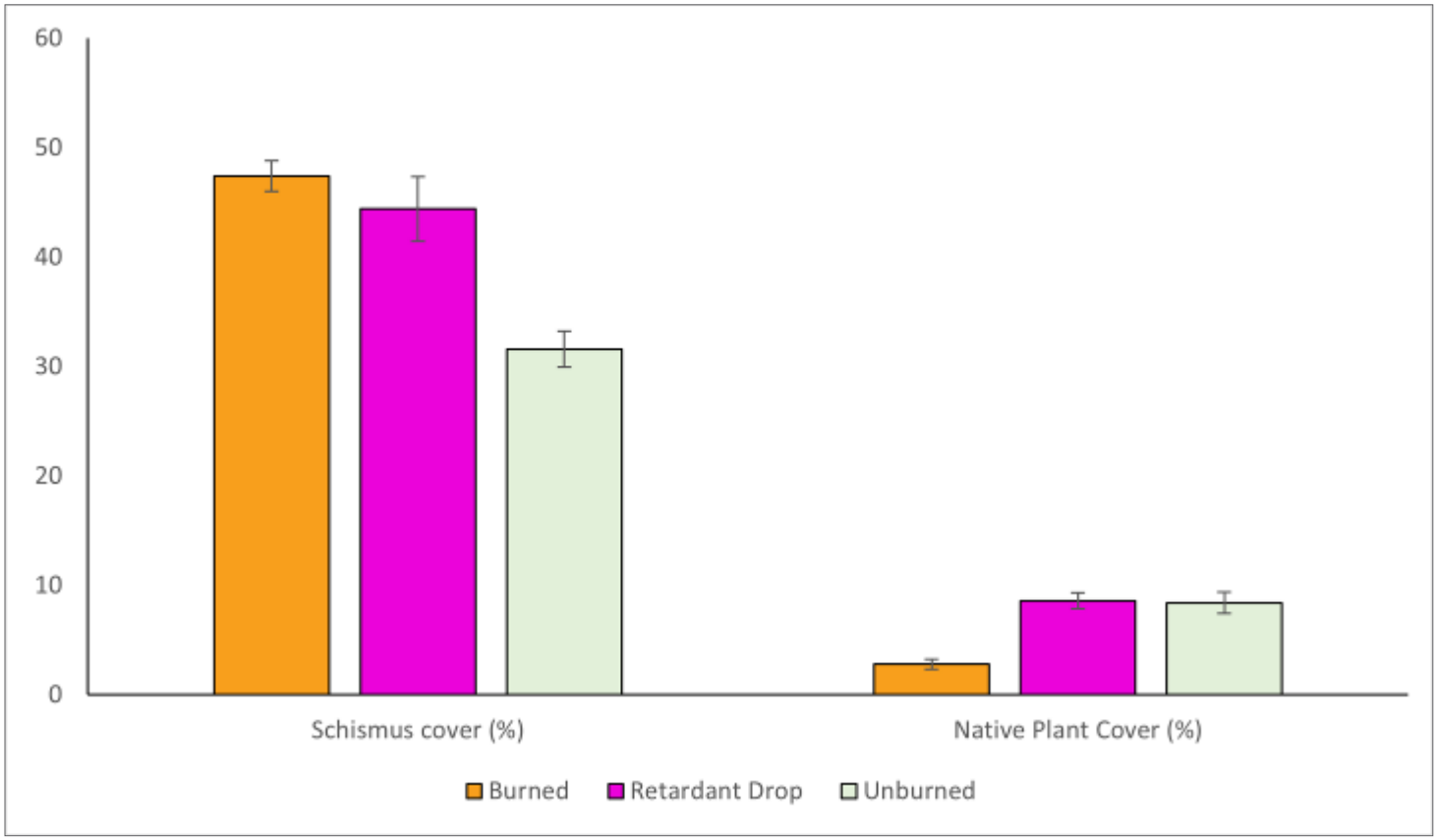
Fire Retardant: A Benefit & A Curse?

The use of fire retardant is a much-debated topic in the land managerial world; on the one hand, fire retardant is very effective at stopping a large fire quickly, however, the phosphorous components can act as a fertilizer once it seeps into the ground. This phosphorus can benefit native plants, but more notably it promotes the spread and density of invasive grasses, which presents an argument against using retardant at all.

Fire Retardant Effects Experiment

The Geology fire presented an opportunity for a natural experiment on the effects of fire retardant, which JOTR vegetation crew members took advantage of. Thirty LPI (Line Point Intercept) transects were set up along the fire retardant drop lines. Native and invasive plant species cover data was recorded, as well as the density of plants. The transects were set in groups of three in parallel: one in the retardant drop, one in the burned area, and a *Schismus* one in the unburned area for comparison.



Schismus made up nearly half of the ground cover, including bare ground and native plants. While there were some satellite occurrences of *Bromus* species, the climate and low elevation of Geology gave preference to *Schismus*. More notably, the unburned areas had significantly less *Schismus* cover, while the burned and retardant drop areas had remarkably similar cover: even though the retardant area was not burned, the fertilizing properties ended up having similar effects as the fire itself.

A similar story was told in the *Schismus* density data: the burned area had the highest densities and were significantly higher than in the unburned area, while densities in the retardant drop lay somewhere in between. In essence, the most important consideration when putting out fires in the Mojave is to keep the burn area as small as possible.

Conclusions

Based on these results, the use of fire retardant has an effect on *Schismus* growth, but these effects are not any more severe than those of the fire itself. Further research is needed for the implications on other grass species and other ecosystems, but for now these results illustrate a need to keep invasive annual grasses in check, and to keep our beloved Mojave desert from going up in flames. ■

Rare Flora of the Mojave Desert: New York Mountains

Jim André, Rare Plants Chair
Mojave Desert Chapter, CNPS

With more than 6,500 native taxa , California is celebrated for its unparalleled vascular plant diversity and high degree of endemism . And while the desert components are generally portrayed as having low numbers of plant species, consider this; if the Mojave Desert (spanning California, Arizona, Nevada and Utah) were a state in the U.S., it would rank 33rd in area, but 7th among states in native vascular plant diversity. The California desert region as represented by the Jepson Desert Manual represents only a quarter of California's land mass, yet with approximately 2,500 native plant taxa, accounts for 38% of our state's floristic diversity.

Most examinations of rarity hotspots in California have focused on areas of high local endemism, such as the northern Channel Islands, serpentine substrates of the Klamath-Siskiyou region, and the Pebble Plains -Cushenbury Canyon carbonate region of the eastern San Bernardino Mountains. The Ash Meadows region bordering California and Nevada (mostly in Nevada) is sometimes included as a desert representative in such discussions.

Approximately 550 of the vascular plant taxa in the California desert flora have been assigned a California Rare Plant Rank (CRPR) in the California Native Plant Society's (CNPS) Rare Plant Inventory . These are plants of limited distribution or abundance that warrant protection by various land and regulatory agencies. Unlike much of the California Floristic Province, the California desert region remains fairly intact as ecosystems go, thus most of the rare desert taxa are intrinsically rare, i.e., very few have been pushed to rarity by anthropogenic influences.

The Mojave Chapter covers the largest area of all CNPS chapters, spanning all of the San Bernardino County desert region (18,000 sq. miles). At last count, 242 CRPR rare plant taxa have been documented in the Mojave chapter across many diverse physiographic regions. Sixty percent of these rare taxa are concentrated in the Mojave National Preserve region. But one physiographic region in particular stands out as having the highest concentration of rare plants: The New York Mountains.

Ranging from 3,500-7,500 ft in elevation, the New York Mountains region encompasses about 70 sq miles (45,000 ac) contains 82 CRPR rare plant taxa. The Clark Mountain Range finished second in this assessment with 57 CRPR taxa, followed by the Providence Mountains, Granite

2015 Keir Morse

MORE INFO

AS USED HERE, **TAXA** IS SYNONYMOUS WITH "SPECIES", EXCEPT IT CAN ALSO INCLUDE SUBSPECIES.

VASCULAR PLANTS ARE THOSE WITH A "CIRCULATORY SYSTEM" FOR TRANSPORTING WATER AND NUTRIENTS. MOST LAND PLANTS OTHER THAN MOSSES ARE VASCULAR.

CALIFORNIA **ENDEMICS** ARE SPECIES FOUND ONLY IN CALIFORNIA.

SCIENTISTS USE THE WORD **ANTHROPOGENIC** IN REFERENCE TO ENVIRONMENTAL CHANGE CAUSED OR INFLUENCED BY PEOPLE.

Mountains, and Kingston Range which had 36, 33 and 32 CRPR taxa, respectively. No other similarly-sized areas in the Mojave Chapter region record more than 30 CRPR taxa. For context, the entire 800,000-acre Joshua Tree National Park lists only 53 CRPR taxa in its flora. And it is quite possible that no other 70 sq. mile region in all of California can rival the New York Mountains in total number of CRPR taxa.

A number of factors can drive rarity, including some combination of geographic isolation, affinity to unique and localized edaphic substrates, intrinsic biological or ecological attributes, or anthropogenic factors including species exploitation, habitat loss or degradation.

Quercus turbinella (Shrub live oak)
southwestdesertflora.com

Many of the attributes of the New York Mountains that make it a rare plant magnet are fairly typical of the other higher ranges of northeast San Bernardino County. Sky-island relictual species from the range include *Quercus turbinella* (Shrub live oak) , *Cirsium arizonicum* var. *tenuisectum* (Desert mountain thistle), *Muhlenbergia pauciflora* , *Sedum niveum* (*Davidson's Stonecrop*) and the locally rare *Abies concolor* ssp. *concolor* (Rocky Mountain white fir).

And like the Providence Mountains, the geology of the New York Mountains is quite complex, comprised of granitic plutons of the Mesozoic and Paleozoic marine deposits (calcareous limestone and dolomite). Rhyolite of the Tertiary age is found in the northeastern side of the range and harbors many plant taxa that are edaphic specialists. The iconic and endemic Thorne's buckwheat (*Eriogonum thornei*) is globally restricted to an area just 1 acre in size on a small pocket of copper-rich metamorphic gravels atop an isolated ridge.

Examples of New York Mountains rare plants that are well-adapted to the chemically toxic (to most plants) limestone substrates include *Lithospermum incisum* , *Frasera albomarginata* , *Penstemon thompsoniae* , *Aloysia wrightii* and *Abronia nana* ssp. *covillei* . Several rare taxa specific to clayey soils derived from rhyolite include *Acmispon argyraeus* var. *multicaulis* , *Aliciella triodon* and *Munroa squarrosa* .

But the New York Mountains region has one unique driver of rarity that separates it from most other ranges, and that is the prominence and constancy of summer precipitation. The North American Monsoon is active in southeastern Arizona every summer, and precipitation from the monsoon rides northwestward along the Mogollon Rim towards Kingman, Arizona.

With its geographic proximity to the monsoon pattern, the New York Mountains (and the adjacent Castle Mountains) receives roughly 35% of its average annual rainfall during the hot season. By comparison, the Granite Mountains located 40 miles to the southwest, receives just 20% of its annual rainfall in summer. Further west, the central and western Mojave Desert received less than 10% of their precipitation in summer 2022.

The resultant vegetation, particularly in the eastern half of the New York Mountains region, is one that resembles the mid-elevations of Mohave County Arizona more than any other parts of California. Here we have a predominance of a perennial grassland savannah with scattered juniper, pinyon and Joshua tree. Many of the rare species associated with the perennial grasslands are restricted in California only to this region. These include *Bouteloua eriopoda* , *Scleropogon brevifolius* and a large suite of herbaceous perennials and summer annuals that respond only to summer precipitation. In

► RARE FLORA CONTINUED NEXT PAGE

Corral at Howe Spring, 4th of July Canyon, New York Mountains | mojavetrails.com

fact, of the 82 CRPR rare taxa known to the New York Mountains, 17 are obligate summer annuals that can only been observed during the July-October months.

More than half of the rare taxa in the New York Mountains carry a CRPR rank of 2B. These are "plants rare, threatened, or endangered in California but more common elsewhere". Nearly all of these CRPR 2B taxa occur in Arizona or southern Nevada, reflecting the unique affiliation with the floras of the summer precipitation regime of the Mogollon Rim counties of Arizona.
In addition to the 82 CRPR taxa in the New York Mountains, there are an additional 11 that will likely meet criteria for listing, and are under review or backlogged under the CRPR review process at CNPS. And several new taxa from the New York Mountains are currently submitted for publication, including *Cryptantha* sp. nov. *"acrimuricata"* (André & Simpson), and *Cryptantha* sp. nov. *"kelleyi"* (André). These will very likely attain CRPR status.

In other words, the hottest of the rare plant hotspots will only get hotter. . ■

Jim André, director of the Sweeney Desert Mountains Granite Research Center, has been involved with floristic studies throughout the desert southwest. He is the author of Floras of the Mojave National Preserve and Owens Valley.

Gardening

Why Plant Native?

Miriam Seger
Masterful Gardener & Designer
Joshua Tree

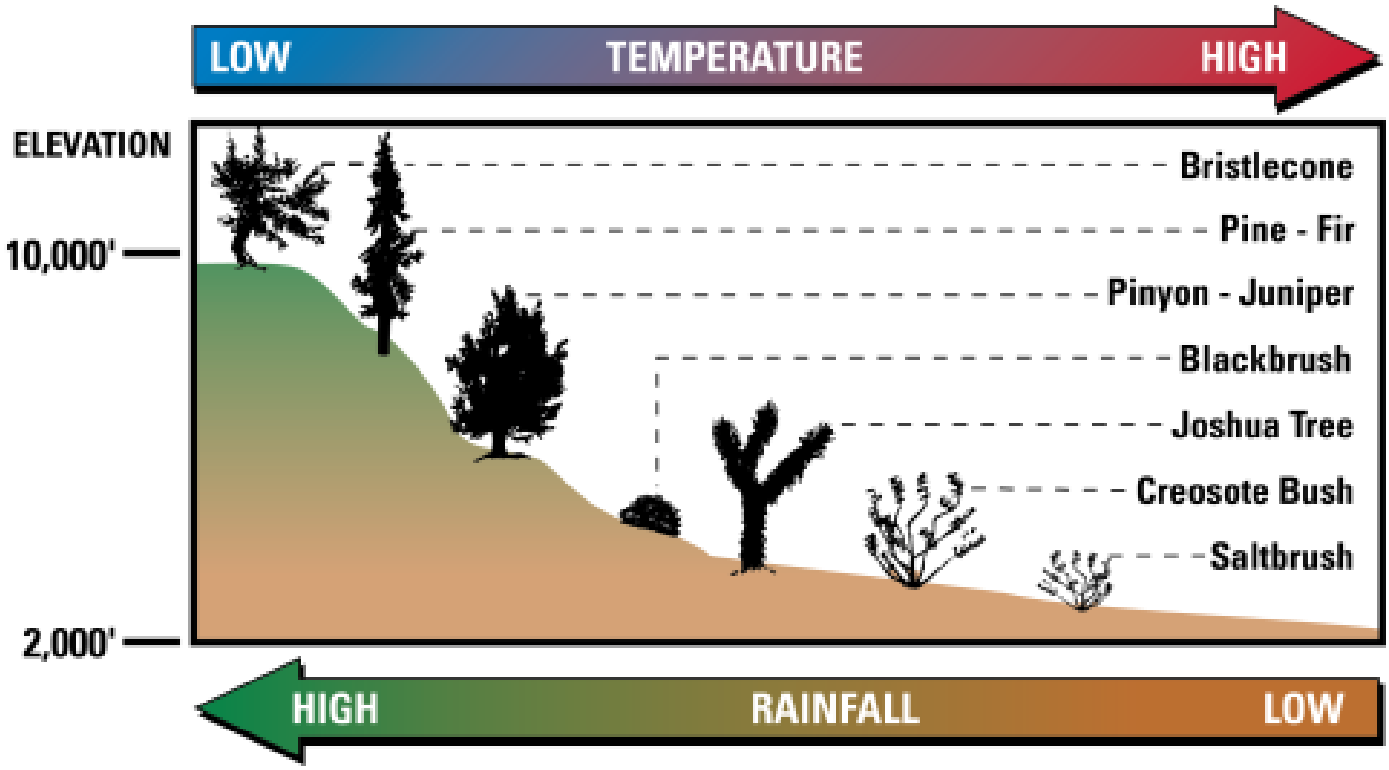
Bladderpod (*Cleomella arborea*) | MDCNPS Archives

Defining Natives

What exactly is a native plant?

Strictly speaking, according to the California Native Plant Society, "Native plants in California are those that grew here prior to European contact."

This gets a little fuzzy for gardeners since California's crazy quilt of mountain, coastal, and desert ecosystems makes us a global hotspot for biodiversity. Just within the Mojave Desert we run the gamut from Bristlecone pine forests to Joshua tree woodlands. With that in mind, it's easy to see that not every Mojave native will grow where



you live.. Breaking that down even further, we have for example multiple plant communities in the Morongo Basin

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A 10 year long flora project has been ongoing in the Last Chance Range of northern Death Valley. The goal of this project is to document a complete list of the vascular and non-vascular plants of this remote 40 mile long range.

Flora of the Last Chance Range in Death Valley National Park

Steve Schoenig
Yolo Colusa Chapter, CNPS

The Last Chance Range (LCR) is the northern-most mountain range of the Mojave Desert in California. It occurs at the interface of the Mojave, Great Basin and the White Mountains. The geology of the area features two main formations: 220 million years of sea floor carbonate deposits from the early-Cambrian to Mississippian periods (540 mya-320 mya) and Tertiary volcanics from ~5 mya. Most of the rare and near-endemic plants in the range are found on the carbonate bedrock and derived alluvial gravels.

Core botanists participating in the project are Dr. Hester Bell, Dr. Sarah de Groot, Dana York and Steve Schoenig. The current project has also greatly benefitted from the participation of local and visiting botanists such as Steve Matson, Owen Smith, Bob Huttar, Alison Colwell and Stephen Ingraham

Historic collections from the LCR, previous to our project, were extremely varied by region. Collections in the north LCR (north of Dedeckera Canyon) were approximately 400. One small canyon, Dedeckera Canyon, which occurs in between the southern and northern halves of the range had over 1100 vouchers collected by 2015. In contrast, the southern half of the LCR (south of Dedeckera Canyon) only had approximately 20 vouchers collected on or near bedrock. Between 2015 and 2022 our collecting initially focused on the north LCR and a scientific paper* was recently published that combined a list of plants from the north LCR, Dedeckera Canyon, adjacent Eureka Valley and northern Death Valley proper (above Ubehebe Crater).

Vegetation Types across the LCR Creosote-Burrobush Shrubland, Desert Scrub, Calcareous Rock Outcrops, Pinon Juniper Woodland, Blackbrush shrubland, Riparian habitats associated with Last Chance Spring, Alkaline seep with *Salix lasiolepis.*

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Some interesting and noteworthy botanical facts of the LCR and adjacent Eureka Dunes:

- 200 million years of marine sedimentary layers.
- There is one plant endemic to the LCR -*Boucera yorkii*. It was discovered by Dana York near Last Chance Peak and an additional population was found 10 miles south.
- An endemic grass genus *Swallenia* (*S. alexandrae*) occurs only in southern Eureka Valley on dunes. (See image at left)
- ~25 CRPR list 1 and 2 plants. ~20 CRPR list 4 plants.
- The LCR has some of the northernmost stands of Joshua trees in California.
- The initially thought-to-be endemic buckwheat-family shrub *Dedeckera eurekensis* was discovered in the canyon named after Mary DeDecker, the pioneering Mojave and east-side botanist who discovered it.

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Future of the project: Depending on abundance of rainfall, 2 to 4 expeditions per year are planned in the next few years for exploration and collecting **(volunteers welcomed).** We hope to utilize iNaturalist more to document common plants in addition to collecting vouchers for significant occurrences. Better surveying of CRPR listed plants will help establish their rarity and status.

How to visit this area, and what you can see. The LCR is easily visited by taking one of 3 scenic routes: 1) the Death Valley – Big Pine Rd road out of Big Pine, driving east 40 miles to Eureka Valley (not quite to the dunes) and up into the northern LCR. 2) driving north from Stovepipe Wells to Ubehebe Crater and then back south to the Racetrack or up the north Death Valley Road to Crankshaft Junction. 3) accessing Saline Valley from the north or south roads and going north from the hot springs toward Steele Pass. ■

Steve Schoenig is a Research Associate at the Center for Plant Diversity, UC Davis.

*Bell, Hester, Sarah De Groot and Steve Schoenig. 2021. VASCULAR PLANTS OF NORTHERN DEATH VALLEY NATIONAL PARK (DEATH VALLEY, LAST CHANCE RANGE,AND EUREKA VALLEY), INYO COUNTY, CALIFORNIA *Aliso,* 39(1–2), pp. 1–38

VISIT OUR WEBSITE FOR MORE ABOUT MOJAVE DESERT NATIVE PLANTS

A Conversation on Indigenous Conservation and the Land with Elizabeth Paige of the Native American Land Conservancy

Elizabeth Paige is a member of the Torres Martinez Band of Desert Cahuilla Indians and the education and stewardship program manager for the Native American Land Conservancy.

Melanie Davis
Mojave Desert Chapter, CNPS

Melanie Davis: *Thank you for sitting down with me to do an interview for our newsletter. Could you please introduce yourself and tell us a little bit about yourself and what you do?*

Elizabeth Paige: My name is Elizabeth Paige. I am the Education and Stewardship Program Manager for the Native American Land Conservancy. I've been working in and around conservation for the past seven years. I made a career change in order to promote Indigenous peoples' access to outdoor spaces that they're directly related to. I also wanted to make the

community at large aware of our connection and our skillful management of the environment. It was a challenge to feel comfortable in the outdoor recreation space. In some ways, it was about not feeling like I had the 'right' equipment, or the right body for that matter. But the main reason was the erasure language that remained prevalent. The genius of Native people of these lands was never being talked about, or was dismissed outright. That is another form of our removal from these landscapes .I recognized the need for Indigenous people to be at the table when making decisions about what's going on *on the land.*

M: *I really liked that you spoke about how, about seven years ago, you didn't see what you were doing today exist. And sure, it could have existed elsewhere in other communities, but it wasn't here, and this is where you're from.*

E: Yep.

M: *And you stepped up to fill that gap, not only for your people and for your community, but also for yourself.*

E: Yes.

M: *What barriers to Indigenous stewardship do you face in your work? And how has that changed?*

E: When I first came into it, you really did [see] the ownership, or entitlement [to the] land. There's that feeling that bleeds into academics, too. Our traditional ways are resistance to it, but [in] the field, traditional science, just weren't recognized. Now I think it is beginning to be recognized, but we still encounter people who need to be 'updated' because we still hear these tropes about hunter-gatherers – that was all 'they' [indigenous people] did. 'They' were very nomadic. 'They' this, 'they' that. You don't need to speculate when you have us right in front of you.

That has been a barrier and a source of some harm, even in current days.

It's surprising to me sometimes that people are very, very resistant to letting history in, but I think that might just be indicative of what's going on in the country as a whole. People don't want to really acknowledge history, but we live within the consequences of it every day.

We are historical beings.

Native people hold these experiences that are passed down to us throughout generations. And, as my colleague Cassaundra [Pino] has said, this is thousands and thousands of years of hypotheses being tested on this land, in these areas. Our medicines have been proven to be beneficial.Our food is the most nutritional out of anything you find here, I mean, those are all facts that are being proven now. But we've always known them.

We've always been here.

M: *It seems like there's almost a dichotomy here. There are the people who were taught that Indigenous presence on the land is a thing of the past, and then there's the people who feel entitled to Indigenous knowledge now without bringing Indigenous people into*

the conversation. And so, one of the barriers you're speaking to is a lack of indigenous control over to Indigenous stewardship.

E: Yes. Because it's always just been this one way for [a long time], of publicly managed lands and of land theft that happened.

M: *Right. So what does land restoration and land stewardship mean to you? From your perspective?*

E: Well, I have a fraught relationship with the word 'stewardship'. How we act as people of the earth, as Native people in any given area – we function as we are supposed to, not because we're being a good steward.

It's just how we are 'Stewardship' is inherent in us. It's a function of who we are as human beings of this particular land that we're sitting on right now. So what does it mean to me, or why is it so important to see the environment in balance again? I mean, that's ultimately what saves the world, it's people recognizing that we do need to go back to trying to balance everything. And that is not only beneficial to my people, but to all people.

So, that's what it means to me. That's our survival. That's everybody's survival for everybody's kids and all the animals and plants that exist on the lands that that are supposed to be enriched by humans. We're all supposed to be giving to each other.
And that just hasn't been happening. It's always been more about extraction or seeing things as resources.

M: *Absolutely.*

E: It's about seeing where we're supposed to be as a people. And that's not only Indigenous people, that's all people.

M: *Stewardship is not separate and it's not something you do as a hobby on the side.*

E: Yeah - haha.

Blessings aren't bought, they're given.

M: *What does land back mean in this context and to you?*

E: It varies throughout my community, and I recognize that there are relatives who [have different interpretations]. To me, [land back] means that we have a voice at the table, and at all levels. That we have a voice; we have a say-so in what happens on the land, as well as an active role.

Traditional roles that Native Nations have are essential to the ecosystems that they're based in. Access to our food, access to our medicines, and access to our materials is essential. Because all of that is access to our own culture. That's access to our own history as a people. That's what needs to be restored in all areas, especially in public lands where, historically, our type of access has been cut off. It's only in the last few years that that has been changing.

M: *Here in Joshua Tree, we have land owned and/or managed by different agencies, whether it's local non-profits, federal, state, or private. But ultimately all land is Indigenous land. So, my question is: what basic guidelines should locals and visitors follow on Indigenous land?*

E: I think with recreational use, even just hiking, it's best to bear in mind that no place is untouched by Indigenous hands.

Trails are remnants of our ancient paths. And with this presence, the possibility of artifacts and remains being trampled by misuse, or collected for personal gain will always be an issue. Reverence of cultural landscapes should be on the same level as reverence of the Arlington National Cemetery. We have so many sites with an abundance of artifacts, and just because they don't look a certain way or there aren't signs pointing at them, they shouldn't be disturbed.

So, manipulating the land, poaching plants and animals, and not paying attention to your impact on the environment is disrespectful. Looting is very much a challenge that we face every day in this job because people don't relate the items that they're finding out in the desert to living people.

That is the attitude that needs to change, that the land has relatives, and when you take something, you're stealing something that is much bigger and older than you. We field calls [from] people who want to sell things back and they really don't understand that that in and of itself is really crass.

M: *So, for those that may not know, do you mind telling our readers what the most respectful thing to do is if they find indigenous artifacts?*

E: Admire it. Know that it was in whatever way you were meant to see it. You can take *that with you, but not the [artifact] itself.*

What I would do is - (and it does vary depending on the Indigenous person who's answering this question.) - take out my phone [and] take coordinates of the area. I would email the THPO (Tribal Historic Protection Office) for the local tribe, and say, 'Hey, I found this here'. Likely, they know where concentrations of different artifacts are found.

But that's pretty much the extent of it. If it's within sight, I would maybe put some sand over it. You can always talk about finding something, about that experience with a focus on educating yourself or others. I would also suggest not geotagging or even posting about it on social media.

M: *And that goes for arrowheads, pottery shards and it goes for mortar and pestles…*

E: Any kind of lithic [pertaining to stone] sites you might see, because if you do have arrowheads, you probably have a lithic site where you'll see a bunch of flakes.

M: *Anything else that you would want our readers to know or keep in mind or any resource you'd like to share?*

E: I definitely would say that you should seek out tribal people that are available to teach and lift up their voices. When you don't hear, see, or feel the knowledge from our mouths, then you should question whether you're being an ally - are you really doing what's best for the environment to remove our voice?

We are sought out largely for what people want to appropriate, either our medicine, ceremonies, or materials. Especially when it comes to trends, or 'experiences' being sold to folks who may not know any better.

And just because a lot of us don't answer the first time, doesn't mean anybody should give up. Also, there's information out there. You can educate yourself about Indigenous people in the area, just keep in mind it's never going to be the same as having an actual person putting things in context for you. Just seek out actual Indigenous people, not just approval or for checking a box. Actively seek our expertise.

M: *You spoke a little bit earlier about appropriating Indigenous knowledge and I think that something people really look to indigenous knowledge to understand medicinal properties of native plants. Can you speak a little bit more about the harm that does to your community?*

E: Our access to our traditional medicines and our traditional foods has been fractured. And yet there are so-called experts who actively make their living teaching everybody about them. But why should we be learning about Indigenous medicine from people who have benefited from our removal? Anybody crafting those medicines without recognizing that struggle is not doing it in a good way.

Blessings aren't bought, they're given.

There's nothing wrong with people seeking out plant medicine, the environment is a beautiful place and people want to understand it and that's a wonderful thing – It is very important to know the ins and outs of your environment and all the benefits that native plants can give you. But at the same time this all came at a cost – our removal from the land, of forced assimilation, of being shut away from it.

So when you ask me about people who sell these kinds of experiences, especially in this appropriative spirit, my reaction is not great. I would just ask and encourage people to seek out historical information and also seek out native people doing these teachings. Go to Malki Museum, go to Agua Caliente Cultural Museum, go to the source.

M: *And go to classes that Elizabeth Paige teaches…*

E: Ah there you go – Haha! You can.

M: *Wonderful. And because this is for California Plant Society, what is your favorite plant?*

E: Desert Globe Mallow!

M: *That's a great one - one of my favorites too! Thank you so much for your time.* ■

Recorded on October 30, 2024 in Joshua Tree, California. This interview has been lightly edited for formatting and clarity.

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Why Plant Native?

alone, which are called Joshua Tree Woodland, Pinyon-Juniper Woodland, and Creosote Scrub.

Plant communities refer to the wide array of plants that grow in association with the defining species and some native plant nurseries denote communities to help buyers make wise purchases. To simplify all of this, we'll use the term native as shorthand for regional natives, or plants that evolved in our corner of the Mojave and naturally occur in the three plant communities named above.

Why plant them? At times sourcing regional natives feels like a treasure hunt but finding them is like striking gold. The effort is worthwhile because they're great candidates for success. They require minimal care as they're already hardwired to our temperature, soil, and rainfall patterns. By planting natives we're empowered to take positive action against climate change and habitat loss, one garden at a time. It's a simple way to make a difference.

Wildlife Desert tortoises and Monarch butterflies offer two examples of the critical relationships between wildlife and native plants. Foraging on native grass helps tortoises retain water through droughts, while non-native grasses and plants can cause nutrient and water loss. Monarch butterfly larvae only feed on milkweeds. Each milkweed species has compounds that make caterpillars unappealing to predators in that locale. When a truly local milkweed goes dormant, Monarch butterflies know it's time to migrate or stop laying eggs. Milkweeds from other areas have different dormancy patterns and can affect chances for survival by prompting them to move on early or stay on too long. Check out ways to help Monarchs.

Maintaining plant populations Planting native gardens insures that plants experiencing declines in the wild are safeguarded for future cultivation. Unlike many nursery plants, most natives are grown from seed. Every seed is unique and holds the potential to pass on its own adaptive traits. This helps entire species to develop resilience to factors like new pests and climate change. By planting native, we help keep gene pools strong.

To make finding native and desert adapted plants a little easier, we've provided a list of tried-and-true nursery sources with notes on how to buy. Have fun shopping! ■

This article appears on the Morongo Basin Conservation Association's website. Go to the page and scroll down for shopping, buying, planting and maintaining new native plants in your garden. Be sure to view their Planting Hacks video for more insights!

MBCA

Using Calflora's "What Grows Here?" Tool for a Localized Plant List

Have you ever wanted to know what plants are native to a particular location? Maybe you want to restore a parcel that's been scraped or burned over, or perhaps you're curious if there are any rare or endangered plants on a plot of land slated for development or preservation.

Calflora is a wonderful and free online tool to help you. Learn more with these step-by-step instructions.

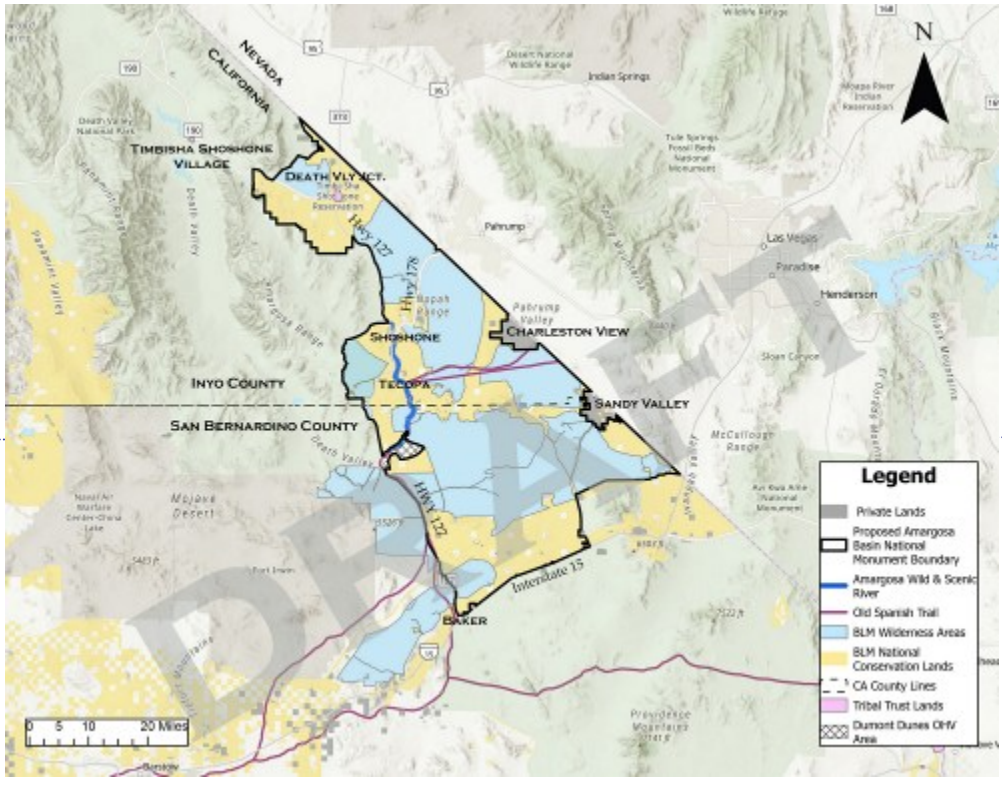
Arch McCulloch, President
Mojave Desert Chapter, CNPS

Calflora (https://calflora.org/) maintains a database that contains observations of plants in California and an interactive software tool that allows you to list plant species observed within a region that you "draw" on a map of the state. (Naturally, there are limitations to this list, which will be discussed below.)

First, a word about Calflora. They are an independent nonprofit and not affiliated with CNPS or with any other organization. They rely on donations, and users who find their database and tools useful should consider contributing to their efforts. The website has other tools, including ones that allow access to individual plant observations. For this article, we're just looking at "What Grows Here?"

Determine Area You Want to Search & Identify Boundaries

For this example, we're searching for rare plants within the boundary of the proposed Amargosa Basin National Monument. We need a good map of the boundaries to transfer to Calflora's map. I downloaded a map from the Friends of Amargosa Basin website. I find it easiest to display this map on a separate screen while drawing the boundary on the *What Grows Here* tool's map. Alternatively, you can have a paper map next to your screen, or even in a separate window on the same screen.



(Continued from page 20)

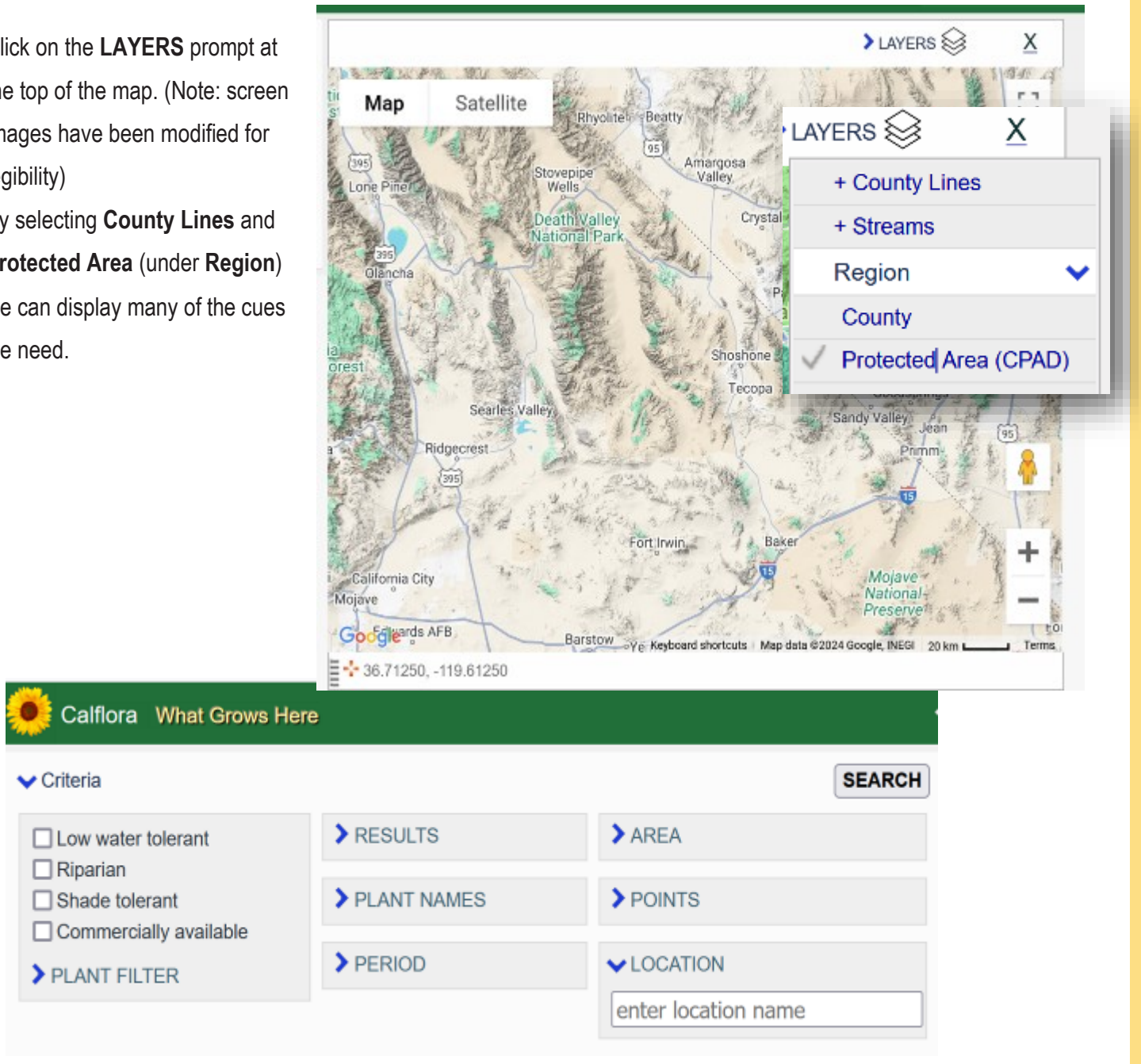
Notice that our chosen area is bounded by a National Park, a state boundary, and a major highway. We want to display some of these features on the Calflora map, to provide cues for drawing the boundary.

Go to the Calflora website (www.calflora.org) and select **What Grows Here?** from the left sidebar menu. Click and drag map to center the area of interest.

Figure 2 What Grows Here Start Screen

Click on the **LAYERS** prompt at the top of the map. (Note: screen images have been modified for legibility)

By selecting **County Lines** and **Protected Area** (under **Region**) we can display many of the cues we need.



▶ CALFLORA CONTINUED NEXT PAGE

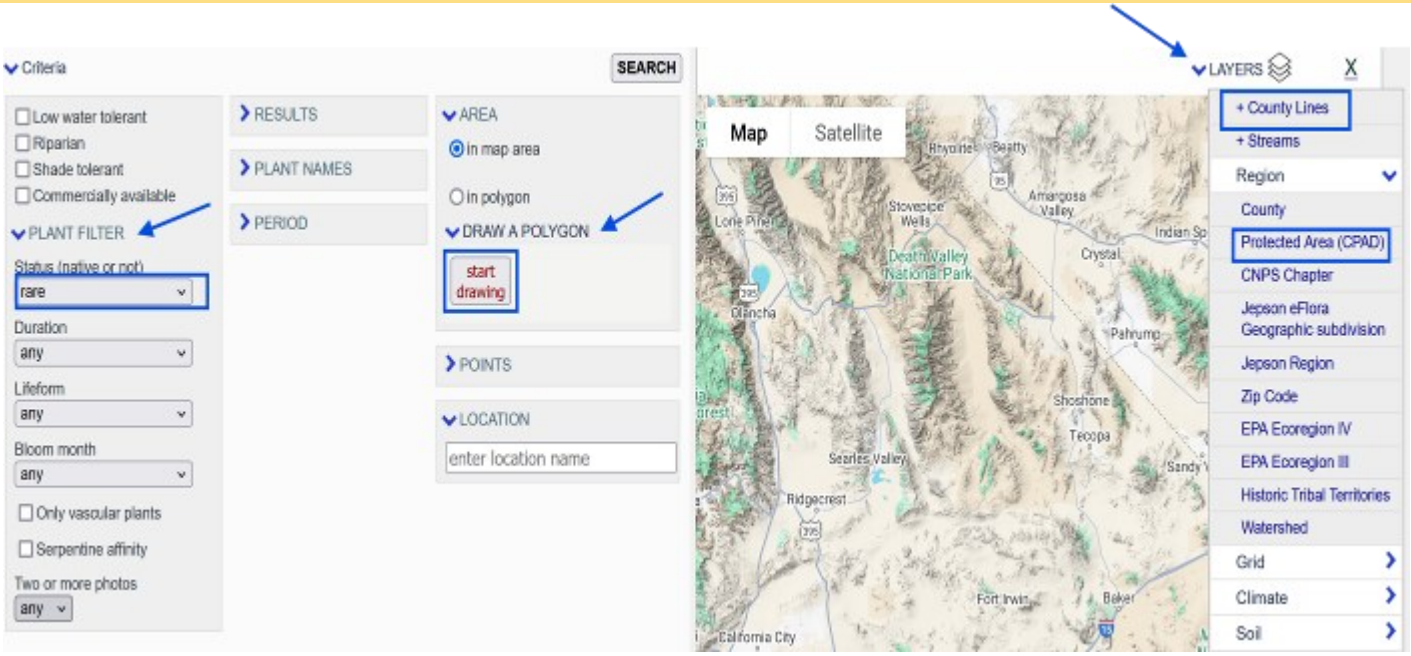


Figure 3 Selecting options (above)

Since we're only interested in rare plants, expand the **PLANT FILTER** tab on the left, and choose **rare** in the **Status** box. Now expand the **AREA** prompt, choose **in polygon**, and expand the **DRAW A POLYGON** tab to display the **start drawing** button. Hit the **start drawing** button. Being careful to NOT click on the map itself, deselect **LAYERS**, select the full screen button (top right of map) and use the **+** and **-** buttons (bottom right) to carefully drag to size the image. The entire area you're going to outline must be visible on the map.

You're now ready to start tracing the outline. Referring to your boundary map (*page 12*), pick a point on the boundary in the Calflora map and click it. (I started with the northernmost point and proceeded clockwise.) Click as often as needed around the boundary to follow its curves and corners. For our purposes, it is not necessary to replicate every tiny variation in the boundary.

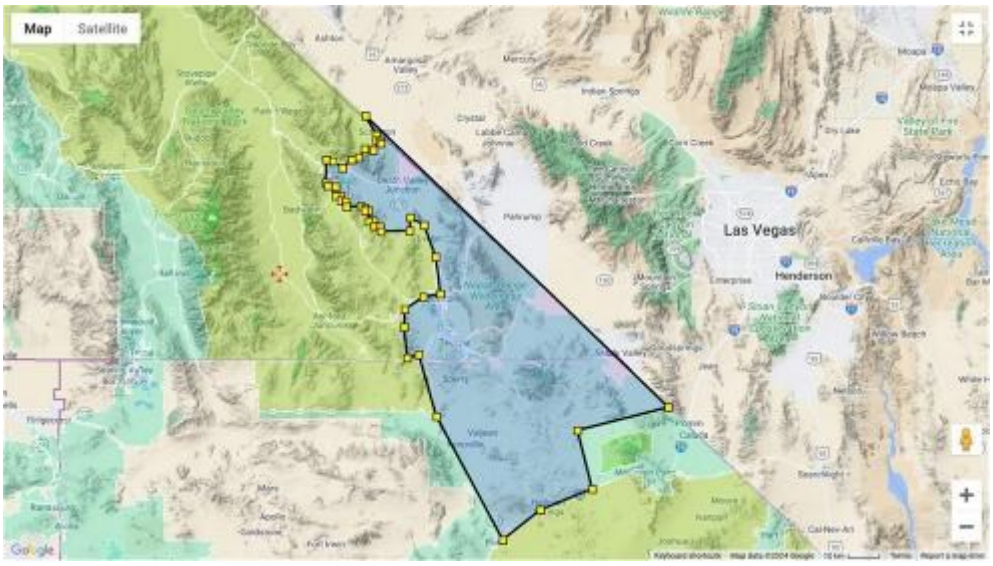


Figure 5 Boundary drawn

Take the map out of full screen (button in upper right) and click the **stop drawing** box. If you're satisfied with your boundary polygon, it's a good idea to save it using the **SAVED SEARCH POLYGONS** tab. Now choose an output **Format** (under the **RESULTS** tab) (I chose **text**), and push the **SEARCH** button (*Figure 3*). The results will appear. I copied and pasted these into a Word document. My search indicated 109 rare species within the boundary. (By choosing the **simple** output Format (rather than text), you gain access to individual observations within your search area. Try it!)

The strength of this tool is that it is based on actual observations of plants within the search area. However, there are some limitations, as mentioned above. Several factors can lead to inaccuracies or uncertainty in the data.

First, the observations in the database are neither complete nor a random sample within the boundary. The observations were made over many years (Calflora data go back to the 1860s), by many different observers. Much of the sampling is along roads and other easily accessible places. You can confirm this in the tool by drawing a simple polygon within a roadless area and searching for plants there. One area of several square miles that I searched yielded zero observations – obviously short of reality.

This example search also includes observations included from iNaturalist. Observations from this platform include those submitted by the general public and advanced to "Research Grade" by experts based only on photographs and other observations recorded by the observer. It's reasonable to question the accuracy of these observations, though iNaturalist periodically performs analysis and a recent conclusion was that these observations were 95 percent correct.

Another problem arises with the older observations. Some species observed 50 or 100 years ago may no longer be present in the area. Less obviously, records for many of these older observations were completed after the plants were collected, so there is uncertainty in many reported locations. Also, advances in taxonomy have led to new species being described and others being lumped together. Without examining the herbarium specimens, it is difficult to know if the historic identification would be considered correct by current standards. ■

While a plant list generated via this tool is by no means complete, and the errors in accuracy of older points should be

Calflora