

CALIFORNIA NATIVE PLANT SOCIETY San Diego Chapter Newsletter

CHAPTER MEETING

August 15, 2023
In-person meeting
Casa del Prado Rm 101, Balboa Park

7:00 Socializing and visiting tables

7:30 Announcements

7:45 Presentation

Chapter meetings are free and open to the public.

Presentation

The Central Deserts of Baja California by Gerald C. Green

Gerald C. Green says, "Let me take you on a trip through unique and endemic plants, see unusual and often hidden animals, and "meet" people both past and present who make the desert a special and challenging landscape.

The central deserts of Baja California cover approximately 12,000 square miles, generally 250 miles long by 50 miles wide. My military buddies and I started exploring in 1970 when the road south of El Rosario was just dirt and followed El Camino Real. The next real stop was Guerrero Negro, some, 200 treacherous 'road' miles to the south.

What always struck me was the seemingly instantaneous change from coastal scrub to desert as we wound through the hills from El Rosario to Mission San Fernando. You can still walk the original trail. It's hard to describe the feeling of seeing your first towering cardón or hearing the sound of the gigantic, vertical columns singing in the wind. As a photographer, it was impossible to take enough rolls of film.

I will review about 40 endemic or unusual plants and about 12 unusual animals and their interactions with each other and with people past and present. I will also present photos of the grand cave paintings and the Mission San Maria, aka Mission Impossible.

I will conclude with sights of the starry, starry night that may be new to you."



Mr. Green holds a Master's Degree in Physics, was a Computer/Radar/Simulator Tech with the US Air Force, and is an Electronic Design Engineer with one patent. More recently, he is a docent at the Kumeyaay-Ipai Interpretive Center in Poway and is a Para-Botanist with the San Diego Natural History Museum, having collected over 750 specimens. He also is an avid iNaturalist user with 1,000 plus entries, world-wide. He is also author of the book *Baja California*, *Desert Plants* some copies of which will be available at the meeting.

Native Gardening Committee

Potluck Meeting August 8; 5:00 - 7:30 pm Moosa Creek Nursery

The dog days of summer are upon us, but now is a great time to start thinking about plant lists and planting natives this fall.

Join us for our August 8th meeting for a behind the scenes tour of Moosa Creek Nursery with Karen Park starting at 5:00 pm. Our potluck meeting begins at 5:30 pm with a presentation by Debby Dunn from the San Diego County Water Authority.

Debby will provide an educational and entertaining talk about the Water Authority's various WaterSmart programs. She will focus on turf rebates and how you can save water and money planting a beautiful water wise garden.

Bring a potluck dish to share and meet up with old and new friends! This meeting is open to everyone interested in gardening with native plants and carpooling is encouraged. Moosa Creek Nursery is located at 27201 Cool Water Ranch Rd, Valley Center, CA 92082.

Please RSVP at this link: <u>August GC</u> <u>Meeting</u>



Desert Mallow (Sphaeralcea ambigua) Photo: Christine Hoey.

Bird Park

The July 8th Bird Park meeting/brunch included a native plant maintenance class by **Leo Hernandez** from Cal Own Native Landscaping. Over 45 people attended to learn the basics of tools, techniques with pruning demonstrations by Leo. The garden was buzzing with bees, Monarch butterflies, fence lizards and birds. In case you missed this meeting, there will be more planned for this fall. Interested in hands-on learning with California native plants? Be a part of the Bird Park Workgroup!

Sign up at: Bird Park Workgroup







Photos of the Bird Park meeting/brunch by **Debby Dunn** and **Silke Gathmann**.

We have a new Garden Committee Co-Chair!



You may have seen Silke Gathmann at our meetings, volunteer events and spring garden tour. She has graciously accepted co-chairing the garden committee and we welcome her expertise. Silke is a horticulturist from Germany and played an important part in the German Native Plant Society. She will also be on the garden tour planning team for the 2024 native garden tour. Please give her a warm welcome when you see her at our meetings.

Native West Summer Fest! August 19; 9 am to 2 pm

Native West Nursery is now open to the public! Stop by and visit our booth at their upcoming Native West Nursery Summer Fest & Little Barn on August 19 from 9 am to 2 pm. The CNPS San Diego book and seed store will be there along with the garden committee. The Summer Fest will feature workshops, design consultations, local artisans and live music!



We can't wait to See <u>Your Garden</u> on the 2024 Native Garden Tour!



Photo by Mylene Merlo.

More and more people are recognizing the benefits of planting native gardens and your garden could be their inspiration to make that leap. Experienced native gardeners also come to our garden tours to discover new native plants and explore new ideas to add to their own gardens.

The garden tour is a great way to showcase your garden's glory to the community by demonstrating the beauty of water wise plants and habitat friendly landscaping. Why not join us on the 2024 Native Garden Tour? Together, we can create a movement that promotes sustainability and supports wildlife.

Applications are being accepted now through September 30. Apply today! 2024 Native Garden Tour

If you love gardening with California native plants and would like to join the Native Garden Committee (NGC), sign up here: Join NGC. A separate monthly email is sent out to members with meeting announcements, volunteer activities, workshops and early bird sign-ups that don't always make it into the Chapter newsletter. We would love to see you!

Keep Calm and Garden On, Christine Hoey & Silke Gathmann

CNPS-SD BOARD NEWS

August Board Meeting

Wednesday, August 9, 6:30 – 9:00ish pm via Zoom. To add an item to the agenda, or to get the link to the meeting, please email president@cnpssd.org.

OAKS OF SAN DIEGO COUNTY

Part 3 The Challenging Scrub Oaks: California Scrub Oak & Torrey's Oak by Fred Roberts

Part 1 – February 2022 Newsletter Part 2 – April 2022 Newsletter

Oak identification can be a challenge, especially when it comes to the white oak group scrub oaks. The white oaks are notorious for hybridization and introgression (back-crossing) making the dividing line between species a bit fuzzy. San Diego County has the highest diversity of oak species in California and presents some of the more challenging oak identifications in the state. Much of the challenge is the result of two superficially similar taxa: California scrub oak (*Quercus berberidifolia*) and Torrey's oak (*Quercus x acutidens*). Part 3 of my series is devoted just to these two taxa.

When it comes to oaks, especially the oaks I am focusing on today, it is important to always keep hybridization possibilities in mind. Oaks are promiscuous. If two oaks are in the same group (in this case, white oaks), they will hybridize. The hybrids can sometimes manifest far beyond the range of one parent. The pollen is wind-blown and can be carried a significant distance. It is also possible for the genetics of a taxon to persist long after the pure parents are no longer present. Regardless, the highest potential for two oaks to hybridize occurs where the

two species are in contact or overlap. The simple law of chances indicates that if there is more opportunity for contact, hybridization is going to be more frequent.

When I was first learning about oaks in California, most of our scrub oaks were lumped under the name Quercus dumosa. If you didn't look too closely, this was a satisfactory arrangement. This was the name you most likely would tag to a scrub oak in San Diego County if you were working with the red (1963) or blue (1974) Munz floras, or Beauchamp's Flora of San Diego County (1986). Today, we follow the treatment John Tucker introduced to most of us in the 1993 Jepson Manual and forwarded with very little change into the 2012 edition. As a result, there are four important white oak scrub oak taxa in San Diego County: California scrub oak, Torrey's oak, Nuttall's scrub oak (the real Quercus dumosa), and Muller's oak (Q. corneliusmulleri). In the Jepson Manual, the name Q. berberidifolia represents the widespread scrub oak of California previously known as Q. dumosa. The name Q. xacutidens is described as a hybrid involving Engelmann oak (Q. engelmannii) and Muller's oak.

Of these, Nuttall's scrub oak and Muller's oak were largely discussed in Part 2 (April 2022) but still have a part to play.

In San Diego County, there is general agreement that Nuttall's scrub oak and Muller's oak are clear-cut species. It is also helpful that their general distributions are restricted, Nuttall's scrub oak more or less to within a few kilometers of the coast, except for in the vicinity of Otay Lake, where the oak is found as much as 24 km (15 miles) inland. On the flip side of the county, Muller's oak is found chiefly in chaparrals and transitional habitats along the desert edge with little overlap of other scrub oaks in the white oak group.

This has generally not been the case for California scrub oak and Torrey's oak. These two oaks have confounded the San Diego botanical community to one degree or another for years. Twenty years ago, it was more likely a scrub oak would be labeled as California scrub oak. Today, if you talk to one of the more knowledgeable botanists in the chapter, when they point to a scrub oak, they will, mostly likely, tell you confidently, it is *Q. xacutidens*. For visiting botanists, this can be a little confounding as the oak probably looks a good deal like what they would call California scrub oak at home.

A little historical context is in order. About a dozen years after Thomas Nuttall described *Q. dumosa*, in 1854, Fredrick Liebmann coined the name *Quercus berberidifolia* based on a specimen obtained by Thomas Coulter (Coulter 661) during his visit to California in the 1830s. Unfortunately, Coulter's collection notes were lost at sea. We don't know where Coulter's collection was made. We can only narrow it down to somewhere between Napa County and the Santa Monica Mountains based on other species he obtained specimens of during his visit to California.

In 1859, John Torrey threw his hat into the ring. Working in San Diego County, he gave the name *Quercus acutidens* to a scrub oak specimen collected by Charles Christopher Parry (C.C. Parry

s.n.). Perry was working out of San Luis Rey while assisting with the Mexican Boundary survey in 1850.





Neither of these names garnered much friction in the next decades and largely disappear from general botanical knowledge in the decades that followed. Edward Greene, in his Illustration of West American Oaks published in 1899, makes no mention of *Quercus berberidifolia*. and only briefly mentions the name *Q. acutidens* as a form of arborescent oak. William Trelease, in his landmark monograph The American Oaks, published in 1924, mentions both names under *Q. dumosa* in his paragraph following the sentence "Nominal if scarcely separable California forms are:" with forma (f.) berberidifolia

ranking a line in his key to the group. The original Jepson Manual (1925) also makes no mention of the two names. It isn't until the 1st edition of the Jepson Manual is published in 1993 that most people become aware of these names, and then another decade passes before the concepts really take root.

California scrub oak is found throughout much of California west of the deserts, from Tehema and Butte Counties south to the vicinity of Ensenada, Baja California, Mexico. In San Diego County, I have seen it in Encinitas and Inaja Memorial Park. It is generally an evergreen shrub, typically 2-3 meters (6-10 feet) tall, though old and sheltered individuals can be arborescent (tree-like) and taller. Generally, the branches are relatively open and originate from a multi-trunk base. The leaves are 1.5-3.5 cm (0.6-1.4 in) long, are oblong (longer than wide), elliptic (broadest in the middle), or somewhat round in outline, generally flat but occasionally wavy. The margins of the leaf are either smooth (entire) or more frequently spine-toothed, and the tip generally rounded. The upper leaf surface is typically shiny, green, and glabrous (without hairs) or with few hairs. The lower leaf surface is often duller, and pubescent (hairy) with minute trichomes (stellate hairs). The trichomes are very small (<0.25 mm), and require some magnification, a hand-held microscope or dissecting scope to see clearly. The trichomes are typically 6-9 branched. The cotyledons (the first leaves to emerge after germination, according to Kevin Nixon, best seen by splitting open an acorn) are free.



California scrub oak is generally easy to separate from Nuttall's and Muller's oaks. Nuttall's scrub oak is generally found only within a few kilometers of the coast, though it can be found as far inland as Otay Lake in south county. Nuttall's scrub oak can be separated from California scrub oak by usually being more compact, even mounded in appearance in some individuals, and having sharply angled deep red branches. The leaves are often very dark green, shorter, more rounded, typically wavy and spine-toothed, with cob-web-like trichomes, especially on the lower leaf, that are often a millimeter across, and visible to the unaided eye (at least younger eyes!).

It can be separated from Muller's oak partially based on distribution; Muller's oak is a desert edge species, generally found on the crest and eastern slopes of the Peninsular Ranges.

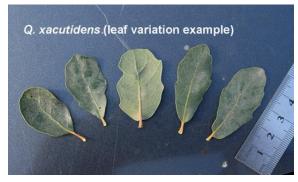


It can have a similarly shaped leaf when compared with California scrub oak but the leaves usually have a yellowish-gray green cast and are very dull on either leaf surface. The trichomes are moderately dense on the upper leaf surface and very dense to overlapping on the lower leaf surface to the point that the actual leaf surface is obscured. The trichomes are quite small, mostly <0.2 mm and have mostly 12-16 arms as compared to 9 or fewer on California scrub oak. With a dissecting scope, it is just possible to make out that the trichome arms are fused in Muller's scrub oak, but while California scrub oak never has fused trichome arms, the feature is best seen with a scanning electron microscope!

Torrey's oak is found in the Peninsular Ranges south into northwestern Baja California, Mexico. While the Jepson Manual/e-flora treats it as a hybrid, some botanists believe it qualifies as a full species (in which case, we drop the "x" before acutidens).

Torrey's oak is described as an evergreen shrub or small tree, 5-6 (rarely 10) meters tall (16-19.5, rarely 33 feet tall). Like California scrub oak, the structure of the branching is fairly open and generally arched. Most individuals originate from multiple trunks but occasionally, individuals originate from a single trunk, especially in individuals that are closer to Engelmann oak in genetic makeup. The leaves are 1.5-3.5 cm (0.6-1.4 in) long, and a petiole 4 mm (0.16 inches) long, as compared to Torrey's oak with leaves, 2-6 cm (0.8-2.4 in), although occasionally, the leaves are generally oblong (longer than broad) to obovate (egg-shaped, broader toward the tip), and leathery. The leaf upper surface is shiny green to dull blue-green, generally with trichomes of moderate density. The underside of the leaf is paler, often with moderate to dense trichomes, these frequently with 10-14 arms, occasionally with some arms fused (as seen under high magnification). Torrey's oak will have partly fused cotyledons (more on that below).

Torrey's oak can be separated from Nuttall's scrub oak along the same general lines as it would from California scrub oak, by the habit of Nuttall's scrub oak, the angled, often red branches, and by the small, wavy margined dark green leaves. It should separate out from Muller's oak in being more frequently arborescent or a small tree, longer leaves with are green versus yellow-gray green, and by having trichomes a bit less dense, often not obscuring the leaf surface on the lower surface.





After the name was resurrected, the name was generally applied to larger leaved oaks, often small trees, but occasionally shrubs that had trichomes on both leaf surfaces, especially those with moderate hair density below. More recently, it has been expanded to take in a broader set of shrubs extending nearly to the coast.

We can get a glimpse of what Kevin Nixon and Cornelius Muller envisioned for this taxon from the paper: New names in California oaks (Novon 4: 391-393, 1994). In this paper in regard to channel island oak (*Q. pacifica*) "It is not known from the mainland but bears superficial similarity to some of the tree forms that are putative hybrids between *Q. engelmannii* E. Greene and *Q. cornelius-mulleri* Nixon & K.P. Steele in San Diego County. The latter populations, which have been described as *Q. xacutidens* Torrey (pro. sp.) [=proto species], differ in having much variability levels in leaf shape, thicker, more coriaceous leaves, denser abaxial [underside] leaf vestiture, much smaller hairs typically having more than 10 rays, and variable levels of connation of the cotyledons..."

On paper, it does not seem like separating California scrub oak from Torrey's oak should be too difficult. The former would have smaller leaves, is glabrous or has few trichomes on the upper leaf surface, and the leaves will probably be broadest toward the middle. The latter will more often be treelike, has longer leaves, these sometimes a dull-blue gray color, probably broadest toward the tip, and there will be trichomes on both leaf surfaces, especially below, where they will be fairly dense

but probably not obscuring the leaf surface. In California scrub oak the trichomes will generally have 6-9 arms and Torrey's oak will have 10-12 arms. In practice, the oaks are not as cooperative as they could be, where trichome densities are not as clearly demarcated it can be wicked difficult to count trichome arms (usually, you can get a more reliable arm count on trichomes of the upper leaf surface but since California scrub oak often doesn't have these, that works better for Torrey's oak).

One thing that has become clear to me is that trichome density can be quite variable on California scrub oak and, contrary to expectations, can overlap Torrey's oak at the lower density end. For example, the specimen, Evertt & Balls 10476 (RSA), California scrub oak specimen from Butte County at the north end of the oak's range, has a moderate trichome density (about 80 trichomes per 4 mm square). The leaf shape can overlap as well. For example, it has been pointed out that the leaves on branch of the Type Specimen of California scrub oak at Coulter 661 (KEW [London]), has very rounded leaves. Few of our scrub oaks in San Diego County have such rounded leaves but even specimens that otherwise would be considered Torrey's oak, such as my collection 8872 (UCR) from Noble Canyon, can have rounded leaves. This oak has trichomes on both leaf surfaces and the trichomes arms number 9-14, clearly more in line with Torrey's oak than California scrub oak. It should be noted that the KEW specimen has three separate branches on the sheet. At least one, the one in the upper left looks more typical of what we see in California scrub oak in San Diego County. With something like oaks, it would be very difficult for any Type Specimen to capture the full spectrum of leaf shape, so as long as the Type form falls within the expected variation, that should be enough.

One critical morphological character of Torrey's oak is almost totally overlooked, in part because it is a seasonally available characteristic and not a character many of us ever consider. Torrey's oak will have partially fused or variable cotyledons while California scrub oak would not. The cotyledons are the first leaves to arise as the seed in a Eudicot germinates. Engelmann oak is the only California oak with fused cotyledons. Thus, it is a good bet that any scrub oak with partly fused cotyledons is hybridizing with Engelmann oak. This was a critical factor in assigning Q. acutidens as a hybrid. We don't actually have acorns on the Lectotype (a specimen later selected to serve as the single type specimen for species originally described from a set of syntypes) but other features, including a longer leaf, high density of trichomes, and over 10 arms on the trichomes, which has been seen in similar oaks, suggest the Lectotype probably did.

According to Kevin Nixon, whom I spoke with a couple of years ago (or was it a few years before that, alas the pandemic did seem to stretch time), the cotyledons are best seen by cutting open an acorn. Of course, acorns are only available for a few months of the year, so the feature is only readily considered in the fall. If we are truly going to understand the status and distribution of Torrey's oak in San Diego County, we are going to need to pay more attention to acorns.





If you are driving along Highway 78 heading east, at the bottom of the Banner Grade, it might surprise you to see an extended stand of Engelmann oaks growing along the drainage immediately north of the highway. A few kilometers beyond this and you come to Scissors Crossing. Muller's oak is common on either side of the highway. Indeed, this stretch of road is the Type locality for Muller's oak. Not far west of Scissors Crossing, there is a small stand of "treeish" oaks. These are clear hybrids between Muller's oak and Engelmann oak in every way, from the larger, more rounded leaves, high trichome counts, high trichome branch counts, and even having a yellowish cast typical of Muller's oak. The interesting thing is that this oak looks different than other oaks that have been considered *Q. acutidens* elsewhere in the county.

This reminds us that white oak hybridization is messy. Oaks cross and back-cross and render the lines between species fuzzy. My prediction soon is that someone is going to open up an acorn on an oak that seems to fit Torrey's oak and discover that the cotyledons are free. In their 1981 paper, Nixon and Steele mention a combination "Some hybridization between

Q. [berberidifolia] and Q. cornelius-mulleri occurs where coastal elements mix with desert elements in areas of relatively low mountain passes." If California scrub oak and Torrey's oak are both present in San Diego County, it is hard to imagine these are not present and possibly even common. However, the combination is virtually absent in the southern California herbariums. I suspect the California scrub oak/Muller's oak combination is already well represented in herbaria but since many of these don't have acorns it could be difficult to confirm that. I imagine one indicator would be leaf size. Torrey's oak has larger leaves so a smaller leaved oak (<3.5 cm [1.5 inch]) with denser trichomes might signal that it could be a California scrub oak/Muller's oak hybrid.

While Torrey's oak is the favored Engelmann oak cross in San Diego County, elsewhere, in Riverside and Orange County, similar oaks would more likely be labeled Engelmann oak/California scrub oak crosses. Undoubtedly, the Muller's oak cross is the more abundant of the two in San Diego County but almost certainly the other cross is present as well. The two crosses may not be all that easy to separate. Just like Torrey's oak, an Engelmann oak/California scrub oak cross would have variable cotyledons. A larger-leaved shrub or arborescent.

Regardless, when it comes to these two oaks, we should always consider the following possibilities:

Torrey's oak - Q. engelmannii x Q. berberidfolia California scrub oak - Q. cornelius-mulleri x Q. berberidifolia

Nothing is ever simple with oaks.

~ Fred Roberts

IN THE FIELD

Seacoast Drive to the Tijuana River By Jürgen Schrenk

(Photos by the author)

Like many other San Diegans we took a break from the inland heat wave and spent part of a day on the coast. During an overcast walk from the end of Seacoast Drive to the Tijuana River mouth we actually needed a light jacket, and the restaurant where we stopped for lunch had the patio heaters on. That is one of the blessings of our various microclimates — you can pick the one you like best at the time.

When we left, the Tijuana Slough was still in the morning mist,



but it was clear enough to see the distant salt marsh bird's beak (*Chloropyron maritimum* [below]).



The Red Sand Verbenas covering most of the dunes bore flowers as well as fruit (Abronia maritima),





and even a few of the beach burs (*Ambrosia chamissonis*) had added more flowers (below).





The common birds like Heermann's Gull (left) were obvious, but amongst the flotsam of eelgrass (*Phyllospadix torreyi* [below]) we also discovered an endangered Snowy Plover.



Further inland the Tijuana River had dense groups of Brown Pelicans;



more fun to watch, however, were the Snowy Egrets rushing back and forth to avoid getting soaked by the surf.



RECENT RELEVANT PUBLICATIONS

Honey bees more faithful to their flower patches than bumble bees, new study shows

Honey bees are more faithful to their flower patches than bumble bees when it comes to returning to collect more pollen and nectar. Overall, 76% of honey bees in the study revisited the same plot of alfalfa flowers in contrast to just 47% of eastern bumble bees. This study was published in Ecosphere.

Link: https://phys.org/news/2023-06-honey-bees-faithful-patches-bumble.html

Honeybees found to be less effective pollinators than native species

Ecologists with the University of California have found that honeybees are not as good at pollinating flowers as native pollinators. In their study, the ecologists obtained samples of pollinated flowers in the wild and compared them to see how well they fared when pollinated by different types of pollinators.

Link: https://phys.org/news/2023-06-honeybees-effective-pollinators-native-species.html

RELATED ACTIVITIES

Theodore Payne Foundation

Visit the Theodore Payne Foundation website for a list of classes:

https://www.eventbrite.com/o/theodore-payne-foundation-6606817237

The CNPS-SD Newsletter is generally published 12 times a year. The newsletter is not peer reviewed and any opinions expressed are those of the author identified at the end of each notice or article. The newsletter editor may edit the submittal to improve accuracy, improve readability, shorten articles to fit the space, and reduce the potential for legal challenges against CNPS. If an article, as edited, is not satisfactory to the author, the author can appeal to the board. The author has the final say on whether the article, as edited, is printed in the newsletter. Submissions are due by the 10th of the month preceding the newsletter; that is August 10 for the September newsletter, etc. Please submit items to newsletter@cnpssd.org

CNPS-SD Activities Calendar August 2023

8/8: Native Garden Committee Mtg, p.18/9: Board Meeting, via Zoom, p.38/15: Chapter Meeting, in person, p.1

 $\begin{tabular}{ll} $($https://www.meetup.com/San-Diego-County-Native-Plant-\\ \hline $Discoverers-Meetup/\)$ \end{tabular}$

Please check <u>www.cnpssd.org</u> for activities that may have been scheduled after this newsletter was prepared.

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	https://www.c	nps.org/membership		
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CALIFORNIA NATIVE PLANT SOCIETY

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August 2023 Newsletter

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