

CALIFORNIA NATIVE PLANT SOCIETY
San Diego Chapter Newsletter

CHAPTER MEETING

**Casa del Prado Room 101
Balboa Park**

May 15, 2018

Schedule

6:30 pm – Natives for Novices: Native Trees as Street Trees by Greg Rubin.

7:00 pm – Refreshments, browsing, & socializing.

7:30 pm - Announcements

7:45 pm – Presentation.

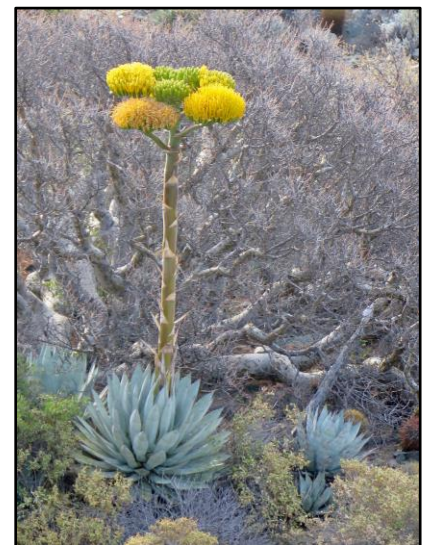
Chapter meetings are free and open to the public.

**Presentation:
Dudleyas and a Few of
Our Other California/Baja
Succulents
by Jeff Moore**

Jeff will present a showcase of photographs and descriptions of many *Dudleya* species (liveforevers) from Southern California and Baja California. His talk will include some other succulents and also cacti species from the region. Of special interest will be highlights from a *Dudleya* excursion last year to Cedros Island off the west coast of Baja. *Dudleya* is a genus of succulent perennials in the Crassulaceae (Stone-crop Family).



Giant chalk dudleya (*Dudleya brittonii*) photographed near Ensenada, Baja California.



Cedros Island agave (*Agave sebastiana*), a Cedros Island endemic, in bloom in front of an elephant tree (*Pachycormus discolor*); Cedros Island.



Golden spined barrel cactus (*Ferocactus chrysacanthus*), also a Cedros Island endemic.



Jeff Moore is owner and operator of Solana Succulents, a retail succulent nursery that has been in Solana Beach for 25 years. He has published three books on succulents: *Soft Succulents* (about Aeoniums, Echeverias, Dudleyas, Crassulas, Sedums, Kalanchoes and other species in cultivation); *Aloes & Agaves in Cultivation*; and *Under the Spell of Succulents*. His books will be available at the meeting for

perusal and sale. Some plants will also be for sale.

BOARD MEETING

Wednesday, May 2, 6:30 – 9:00 p.m. 4010 Morena Blvd, Suite 100, San Diego (Thomas Guide 1248 C4). CNPS-SD Executive Board meetings are always the first Wednesday of the month, except when the 1st Wednesday falls on a holiday. Members are welcome to attend as observers. To add an issue to the agenda, please email president@cnpsd.org.

FIELD TRIPS

Del Mar Mesa Tunnels Access North May 6, Sunday; 8:00 am to 1:00 pm.

DIFFICULTY: Moderate. **LENGTH:** +/- 4 miles.

PLANT KNOWLEDGE: All levels.

Del Mar Mesa is a 900-acre Preserve east of Carmel Valley adjunct to Rancho Peñasquitos Canyon Creek. The Preserve was established through tough negotiations with landowners and government agencies and has dozens of threatened and endangered animal and plant species. The edges of the Preserve are still sought for development - an issue that threatens the integrity of the habitats therein and the wildlife movement of mammals, reptiles, amphibians, insects, and birds. We'll get a look at a very special area from vernal pools atop the mesa to riparian creeks, coastal sage scrub, and tunnels through the coastal chaparral.

Assisting us in this venture will be botanist **Frank Landis**, PhD, of CNPS who, as CNPSSD Conservation Chair, works tirelessly to defend our wildlands and suggest smarter development patterns in the cities and county.

Early May will be a great time to find rare species like Weed's mariposa (*Calochortus weedii*), Del Mar manzanita (*Arctostaphylos glandulosa* ssp. *crassifolia*), Orcutt's brodiaea (*Brodiaea orcuttii*), summer holly (*Comarostaphylis diversifolia*), and Nuttall's scrub oak (*Quercus dumosa*). While the year has had a near record lack of rainfall so far, there will still be a lot to see and talk about.

BRING: Bring your cameras, notebooks, lenses, plant list, etc., along with the usual hiking gear like water, good boots/ shoes, hats, sunscreen, insect repellent, GPS, walking sticks, etc. Bring a full lunch or at least snacks as we will stop briefly before noon in a shady location. We'll be able to upload observations to the SD Plant Atlas, iNaturalist, and CalFlora if you are so inclined.

NOTE: You will be asked to sign a waiver/attendee list at the meetup. Minors must be accompanied by a responsible guardian. There will very likely be rattlesnakes on the trail as well as poison oak (*Toxicodendron diversilobum*), so keep an eye out.

CARPOOLING: Park / arrive at Fashion Valley Mall Transit Station at the west side of the mall near Fashion Valley Rd between 7:20 to 7:35 am. At least one truck will be available, but be prepared to drive, please! Estimated 40-mile roundtrip. Donations for gas do help. The transit center at the bus / trolley station is free to park for 24 hours and has roaming security. Keep in mind parking here has the same risks as street parking.

DIRECTIONS: 7499 Arroyo Grande Rd, San Diego, CA. From Hwy 56, Exit Camino Del Sur and head south. Turn West at the gas station onto Torrey Santa Fe. After the 2nd signal light, turn South onto Cooper Canyon Rd and then left on Arroyo Grande. Access at corner of Serra Mesa Ct.

Oakoasis County Preserve - Bio Walk for Educators

Sunday, May 20; 8:00 am to noon

DIFFICULTY: Easy to moderate. **LENGTH:** 2.5-3 mi.

PLANT KNOWLEDGE: All levels.

This venture is tailored for an outing with the Teach for America Program and East County Educators. Oakoasis County Park is a little gem in East County that has scrub oak and manzanita chaparral, inland scrub and grassland, and a long stretch of oak woodland. The trail is a fairly easy loop that overlooks San Vicente Reservoir about halfway into the loop. The Preserve is a quiet

place that supports multiple habitat types and hundreds of wildlife species.

This trip is focused on bringing educators out into the wild to cover a wide variety of contemporary topics like climate change, regional planning, natural resource management, biological diversity, and fire science. Also, we will have an open discussion and short lectures of natural history, genetic drift, and annual to geological changes. If you are an educator in Southern California, join us for a pleasant walk in an area that is perfect for potential field trips. Tailor your questions to how to relate to your students or audience, or just come along to spectate in fresh air.

From the trailhead at Oak Oasis Rd where there is a large parking lot with restrooms, we'll be heading through the chaparral and discussing drought specialization and fire adaptations. The chaparral has rare plants, with Oak Oasis being the central core for CNPS 1B.2 Lakeside ceanothus (*Ceanothus cyaneus*). Hopefully we'll come across blooming mariposa lilies and other flowers. We'll go over the ranking system for rare plants and animals briefly and reference our wildlife agencies and the laws they must abide by.

CARPOOL: Carpooling will be not available on this trip unless specifically requested.

DIRECTIONS: Oakoasis County Preserve, 12620 Wildcat Canyon Road, Lakeside. Oak Oasis Trailhead on Oak Oasis Road. From I-8, take SR 67 north, go east onto Mapleview St. Turn north on Ashwood St. Ashwood becomes Wildcat Canyon Rd, keep going into the hills about 4 miles. Turn left on Oak Oasis Rd.

Mt. Laguna Calochortus Quest with Fred Roberts

May 27, Sunday; 9:00 am – 2 pm.

May is the time to check out Mt. Laguna and its many trails covered in pine forest and high elevation chaparral. This year, we're looking for resilient treasures in bloom like mariposas, cinquefoil, monardellas, meadowfoam, ceanothus, and on and on. For those of you who made it along the Sunrise Hwy with us in June of 2017, we welcome you back to examine a few of the same locations again and another short hike in Filaree Flat that has not been very well documented botanically. With the great knowledge and assistance of **Fred Roberts**, we'll find any Calochortus species in bloom and check out all the others that might catch our eye.

Mt. Laguna is a lovely mixture of open pine woodlands, grasslands & meadows, sub-montane lakes and marsh, Ceanothus chaparral, and transitional scrub that captures aspects of nearly every part of San Diego County. We'll see the meadows around the Sunset Trailhead, then caravan to a few locations around the mountain depending on what our scouting uncovers. While it has been a very dry year, we still hope for bloom on hundreds of perennial herbs and shrubs, with a handful of annuals to boot. If you haven't been to Mt. Laguna, this is a great introduction trip. We'll also get an on-the-ground look at the semi-naturally recovering Mt. Laguna burn areas still scarred from the Chariot Fire (2013) and even the Laguna fire (1970). Fire following plants still bloom every year, including golden eardrops (*Ehrendorferia crysantha*), the notorious poodle-dog bush (*Eriodictyon parryi*), snapdragons (*Antirrhinum* spp.), and lupines (*Lupinus* spp.).

BRING: Be sure to bring your camera, plant lists, and notebooks along with your regular hiking gear (sunscreen, hats, good boots/shoes, water, GPS, lens, etc). For those experienced with the SD Plant Atlas, iNaturalist, and CalFlora, we'll be able to upload observations. Bring snacks and perhaps a full lunch as we'll break in the shade before heading to Filaree Flat.

NOTE: The map on Meetup is an ongoing problem. You will be asked to sign a waiver / attendee list. Minors must be accompanied by a responsible guardian.

CARPOOL: Meet at the Fashion Valley Mall Transit Station at the west side of the mall near Fashion Valley Rd between 7:50 to 8:05 am. At least one truck will be available, but be prepared to drive, please! Estimated 140-mile roundtrip, so donations for gas are greatly appreciated. The transit center at the bus/trolley station is free to park for 24 hours and has roaming security. Keep in mind parking here has the same risks as street parking.

DIRECTIONS: Meet at the Sunset Trail, Sunrise Highway, Mt. Laguna, CA. The map on the Meetup website is not accurate! Sunset Trailhead is at 32.860228°, -116.462445°. To get there, take I-8 east to Sunrise Hwy exit after Pine Valley. Go north for 5.5 miles. Arrive at the Sunset Trailhead parking area (both sides of S-1 Sunrise Hwy) at or before 9 am and walk towards the kiosk. Look for a group of people wearing large hats and staring at plants.

~ **Justin Daniel**, Field Trip Chair

WELCOME NEW MEMBERS

Christina Congedo
Marilyn Dickson
Durward Graham
Hunter Hartmann

Donna Hays
Gary Moring
Dee Roe

RARE PLANT SURVEYS

Rare Plant Surveys Ride Again

After many years' hiatus, we'll be out doing rare plant surveys in County Parks. If you want to be involved, contact me at raresurvey@cnpsd.org. No experience is required, we will train you.

The TENTATIVE schedule:

- Qualitative vernal pool at Ramona Grasslands Preserve: **May 2.**
- San Miguel savory at Boulder Oaks Preserve: **May 9.**
- Variegated dudleya at Lusardi Creek Preserve: **May 10.**
- Willowy monardella at Sycamore/Goodan Ranch Preserve: **July 9.**

This fall I hope to resume, or more properly, restart, scrub oak surveys. Unfortunately, the effort in 2017 stalled on currently ongoing talks between the City of San Diego and state CNPS about what kind of insurance is necessary for me to collect a twig and a few acorns from scrub oaks on City park land. I'm hoping that I will have right of entry in City parks at some point, and then I may have opportunities for one or two people to go with me and do scrub oak morphometrics. Let me know if you're interested.

~ Frank Landis, Rare Plant Surveys Chair

CONSERVATION

Conservation Committee

May 1. Usually the first Tuesday evening of each month. Contact **Frank Landis** at conservation@cnpsd.org for details.

Why Container Gardening Matters for Conservation

It was good to see so many people at the garden tour and at the April general meeting. Being the contrarian that I am, I wanted to flag something we don't do enough of,

and argue that it's important. What we don't do is to help people set up container gardens for native plants. Most of our work focuses on in-the-ground gardening, and for good reason. But there's this problem. It's typically a few years out of college, happy to finally at least have a balcony on the apartment or a yard bigger than a surfboard. This problem thinks that native gardening might be cool, buys a white sage at a garden sale, puts it in a pot, watches it die, decides they can't grow native plants, and goes onto some other hobby.

Does this story seem familiar? I've not only heard it, I've lived it, and while I never grew white sage in a pot (mostly because it grows in my mom's yard), I've heard quite a few variations on it over the years.

There are numerous reasons why this is a conservation problem. First and foremost, CNPS members tend to be older, wealthier, and whiter than the population of California as a whole. What we think of as "normal"—having a garden to landscape, being able to take long vacations, comfortably hiking in the back country, are privileges that many people simply don't have. Some things we can do, like leading more field trips and targeting our advertisements where people outside our normal demographics look for fun. Others, like giving everybody a big back yard to garden in, are less possible every passing year. This isn't just about the housing crisis, it's about the sprawl crisis, and it's something I have to deal with in conservation all the time.

There are multiple reasons why both urban planners and conservationists are trying to get cities to densify. Food, water, energy, pollution, and transit are all easier to do when people live in smaller spaces. Conversely, even back in 2011 when the County passed its last General Plan, it was obvious that sprawl was unaffordable. We simply don't have the tax base to pay for roads, water, fire safety, or sheriffs if everybody has their own acre out in the back of beyond.

That hasn't stopped developers from trying to build, for instance by promoting a mythical I-15 development corridor that they promise will be absolutely full of affordable housing, for instance. That part about affordable housing is conspicuously under-represented from EIRs on real projects proposed for this corridor: Newland Sierra, Lilac Hills Ranch, and Safari Highlands. Worse perhaps is the Otay Ranch Village 14 in the south County. Those developers want to install a bunch of houses at less than one house per acre, right in the footprint of the 2007 Harris Fire. That's the kind of spread-out, low-density housing that is very hard for firefighters to protect and (in Otay Ranch) apparently

hard to evacuate from, if you believe the EIR analysis. It's also kind of expensive, and I didn't see affordable housing mentioned in the Otay Ranch Village 14 EIR. I'm stressing this, because if you vote in San Diego, you're about to get deluged with advertising claiming that developers in the north county are building massive numbers of affordable homes. The EIRs I've read (and I'm happy to share them) say otherwise, unfortunately.

Then there's the central CNPS conservation issue: conserving rare native plants against sprawl developments. While we don't have any species extinctions recorded in San Diego County yet, we have a long roster of plants whose populations have declined by >90% over the last century. It's not clear how much it will take for some of these to die out, but if we keep building, we'll find out. We could, very easily, go from a conservation success story to a hot zone of extinction, if we are careless about sprawl. If the price for the privilege of a big native plant garden is the extinction of a native plant species, do you want to pay that price? I certainly do not.

So here I am, arguing on conservation grounds that we need people to live in smaller homes closer together, while our garden culture celebrates exactly the opposite.

Does this mean I'm arguing against garden tours? Absolutely not. We all need to see what's possible. But we in CNPSSD simply need to acknowledge that a lot of people, especially the next generation, can't afford those beautiful gardens. We need to have something for them too.

It would be great if we had something to tell the people beyond "don't put white sage in a container on a shady balcony," when it came to gardening advice for apartment dwellers. So many CNPSers are into gardening, wouldn't it be great if we could tell people what to grow on their balconies, in their little postage stamp backyards, in the shade of buildings, all that? I think we've got the knowledge, but, as with finding out what caterpillars eat so you can garden to feed bird chicks, that knowledge isn't gathered in one spot, let alone a brochure or a website. Hopefully we can change that.

And it's not just container gardening. The big threat, especially in urban conservation areas, is human activity, specifically mountain bikers and homeless people. The homeless are a symptom of our crisis in affordable housing, but as with the mountain bikers, they can trash conservation areas simply by being there and rearranging stuff in what they see as "vacant land"

to meet their needs. In some ways, I think the mountain bikers are a bigger problem, because they have more wealth, more privilege, and a well-financed group of activists fighting for their access, something the homeless do not have.

How do we reach out to them? I'm not sure we do right now. But if we're going to try and get more and younger CNPSers, we're going to need to reach out to them where they live, especially in cities around here. We're going to need to get them out of their apartments and off their bikes, and get them hiking, weeding, and gardening where they can, so they can fall in love with the place we love too. We'll all have to do our part, especially if we don't want this place to be sprawl-developed into potholes and traffic jams.

~ Frank Landis, Conservation Chair

GARDENING WITH NATIVES

Garden Tour Report

Our 6th Annual Garden Tour was a great success! Weather was great, gardens were smiling and showing off their exquisite native blooms, and people got to see some exceptionally beautiful designed and natural spaces. Our attendance was about 25% higher than last year and we had about 650-700 people out and about viewing gardens. The Garden Owners very much enjoyed the experience and raved about the quality of the docents. A special 'Shout-Out' to our docents who make this tour possible and add their great energy into the mix.

Thanks to those of you who were able to attend the tour – we know there was a lot of trekking involved! We are blessed with an EXPANSIVE county that boasts the most biological diversity in the nation. There was a lot to cover. If you missed it, we hope you will join us for next year's tour – many people commented that they get better all the time. We received great feedback from Attendees, Garden Owners and Docents and I will let some of the quotes speak for themselves!

ATTENDEES

- The docents were charming and fun. The gardens magnificent. The route was really, really well done. We had a fantastic day!
- Love the tours. Been doing them for last 4 years and am always wildly inspired.
- It was wonderful. Loved the booklet with all of the useful information about the gardens. Gardens

lovely, docents helpful. Registration easy! Another fabulous tour, maybe best yet.

- Always such an inspiring tour with enthusiastic hosts and docents.
- Although I haven't been to every tour, I have been to several over the years and I think this year's tour was the best ever! Appreciated all the info provided in the booklet, and found the Sky Mountain Permaculture tour to be especially informative.
- We thoroughly enjoyed the event. We are inspired to shape up our current natural landscape. The people on the tour were informative, kind and inspiring.
- Talking with the homeowners was a real plus.
- I really enjoyed the combination of residential and institutional sites. The visit to the Native American site was fascinating.

DOCENTS

- I enjoyed being a docent and enjoyed going to the gardens. I am likely to do it again in the future.
- My 1st docent experience--very rewarding. Learned a lot from both owners and visitors.

GARDEN OWNERS

- Thank you for all making a successful tour. There were plenty of garden visitors that said they were inspired by our garden and that made it worthwhile.
- Had a blast!

~ Judie Lincer, Garden Tour Director

Native Gardening Committee Meeting

May 9. The Native Gardening Committee meets the 2nd Wednesday of each month at various locations. Contact gardening@cnpsd.org for location and time.

Native Plant Landscape in Old Town State Historic Park

The Old Town Native Plant Landscape Needs YOU!

May 12, Saturday; 9:30 a.m. to noon. It is seen by more visitors than any other native plant landscape in San Diego. A few die-hard members have tended it for ten years. We hope more CNPS members will come help us and bond with it.

Please come help us grub out unwanted non-native pest plants. Bring your own gloves and hand tools or share

ours. Bring water and sun protection.

After we hit the noon hour, some of us will go for a no-host lunch.

The landscape is at the corner of Congress and Taylor Streets. Park for free in the lot off Calhoun Street, past the green dumpsters.

Questions? Contact Kay or Peter at OldTownLandscape@cnpsd.org.

~ Kay Stewart

BOTANY

Field Visit to Mira Mesa, Late March 2018

By Jürgen Schrenk

We decided to look for spring flowers close to home in the Mira Mesa area. We started out by visiting the remnants of the Maddox vernal pool complex, then proceeded to the Challenger School neighborhood – and were pleasantly surprised by what we saw.



Felt leaved yerba santa (*Eriodictyon crassifolium*) was numerous and in full bloom - a very hairy affair.



Cneoridium dumosum (Bushrue) had already begun to set fruit, in fact lots, but some flowers were still open.



Allium praecox (early onion).



Less common were owl clover (*Castilleja densiflora*), here from the perspective of a flying pollinator.



And finally, *Muilla maritima* (sea muilla) was just beginning to flower.

Shooting Stars (*Dodecatheon clevelandii*), one of our favorite spring flowers.



Not bad for a couple of city lots.

Prehistoric SD County, Part 2

Coast

The cool west wind blew across the broad mesa several miles west of the dark pine covered ridge of what is now Point Loma. The vegetation was a mix of *Artemisia californica* (California sagebrush), *Eriogonum fasciculatum* (California buckwheat) and *Eriogonum giganteum* (Island buckwheat) and *Ceanothus* (wild lilac) shrubs, and prairie habitat. The grass was dominated by *Stipa* species but was blended with a lot of wildflowers, including butter yellow *Layia platyglossa* (Tidy tips), purple *Castilleja* spp. (Owl's clover), blue and white *Lupinus* spp. (lupines) and the bright orange *Eschscholzia californica* (California poppy). The color of the flowers was brilliant under the hazy sun. A herd of North American Stilt-legged llama grazed in the midst of the color, bending their long necks to feed on the grasses. They were more slender than modern Llamas



The Challenger School site had many woolly marbles (*Psilocarphus brevissimus*), a good vernal pool indicator.

in South America and built for speed. The afternoon breeze fluffed the fur of these animals as a couple of them stood holding their heads high, watching for predators. Down the bluff below, the ocean swell created a dull roar and foamy spray.

On a dark, gravelly beach section, masses of Elephant seals that grow up to 4,500 pounds and 13 feet long lay flipping coarse sand on their backs and rolling in the surf. They were in the midst of Guadalupe fur seals, California sea lions and Steller sea lions, large, dark animals at 2,200 pounds (males) and 11 feet long that may be nearly three times the size of the California sea lion. Large numbers of these massive animals were lounging on the beach below, barking and growling. Sea otters floated and bobbed on their backs in the near shore water past the surf line. The offshore rocks were covered with roosting Cormorants, Brown pelicans, and Guillemots. The rocks were white with guano, and the odor of bird colonies and pinnipeds drifted up the slopes that above were covered with brilliant yellow flowered *Leptosyne gigantea* (Giant coreopsis), its thick, succulent trunk providing its own prehistoric aura. Shaded canyons above the ocean supported *Lyonothamnus floribundus* (Ironwood tree) with their scallop-edged dissected leaves and the dark needled *Pinus muricata* (Bishop pine).

During the late Pleistocene, coastal San Diego County would have received roughly 20 inches of rain, much like modern day Monterey to the north. The coastal ridges and many terraces would have been vegetated with *Pinus radiata* (Monterey pine), *Pinus torreyana* (Torrey pine), *Pinus muricata*, and probably patches of *Hesperocyparis forbesii* (Tecate cypress) and *Hesperocyparis macrocarpa* (Monterey cypress). Chaparral would have grown in openings between the trees, on south facing slopes, and where the soil was not good enough for the trees, though these trees seem to thrive on poor soils. Most of Point Loma would have been covered with pines that extended northward through La Jolla and Mount Soledad and of course, Torrey Pines State Park and on past Carlsbad. In addition to the north slope areas covered with trees, canyons off the side of the hills and the area around the intersection between SR-52 and I-5 would have also supported a mix of pines and chaparral, and oaks would have grown in the areas of San Clemente Canyon like they do today. Inland, pines and cypress trees also grew on many of the coastal mesas. Vernal pools would have formed on the clay soils and hard sandstone. The lower slopes and valleys such as the flats around San Diego, in what is now San Diego Bay and Coronado Island, would

have had chaparral with various species of *Arctostaphylos* (manzanita) and *Ceanothus* (wild lilac) and a mix of scrub vegetation dominated by *Artemisia* spp. (sagebrush) and *Eriogonum* spp. (buckwheat), though at that time, only in the driest locations in contrast to the more widespread distribution in modern times. San Diego Bay itself would have existed as a shallow valley that supported *Artemisia* and *Eriogonum* in the low dry area that is in the rain shadow of Point Loma. The area around Chula Vista would have also supported mostly chaparral, but in especially favored locations conifers may have existed down the canyons much like a few *Hesperocyparis forbesii* do today, with riparian forest in the riverine portion of the valley. *Ceanothus pappillosus* (Wartleaf Ceanothus) and *Ceanothus thyrsoiflorus* (Buckbrush), both more common in Central California today, would have been growing on chaparral slopes.

Mira Mesa, Kearny Mesa, Rancho Santa Fe and on up to the mountains west of Escondido (Mount Whitney, San Marcos Mountains, Merriam Mountains) would have all supported mosaics of pines, *Pinus muricata*, *Pinus attenuata* (Knobcone pine), which would have been in areas of chaparral that burn, *Pinus torreyana* and *Pinus radiata* (Monterey Pine), *Hesperocyparis forbesii* and *Hesperocyparis macrocarpa* and chaparral. With more rain and clay soils, grasslands would also have occurred in patches and in valley bottoms. With the high diversity of closed cone species and chaparral, periodic fires would have occurred following dry periods as they do in Northern California today.

The wildlife diversity and variations based on fossils from La Brea and Anza-Borrego and other San Diego County locations would have been beyond imagination. There is little reason that any of the La Brea and Anza-Borrego fossils would not have occurred in San Diego County. Some of the animals are familiar to those of us interested in fossils, but the numbers of different large animals would have been extreme. There were two kinds of bison, a camel, llamas (as mentioned), and two kinds of horses (since camels and horses originally evolved in North America), a Shrub ox that was a bit like a large Musk ox and is thought to have been a browser on chaparral plants, Tapirs, two types of Pronghorns with one only 22 pounds, Elk, Mule deer, Bighorn sheep, Peccaries, a Mastodon and Columbia mammoth, and three species of large Sloths. These were just the herbivores. The carnivores included the Dire wolf, Timber wolf, Coyote, lion sized Saber tooth cat, Scimitar cat (with saber shaped teeth that was larger than the average lion and had heavy fore legs for grasping prey),

American lion, Jaguar, Puma, Lynx, and American cheetah. The bears included the Giant short-faced bear, Black bear, and Grizzly bear. To scavenge and feed on the carnage resulting from the interaction of all of these animals, there were 6 types of eagles, 6 vultures including the giant Teratorn with a 12-foot wing span, and Caracaras. Other birds of note are Whooping crane, Turkey vulture, Clark's nutcracker, Stellar's jay, Pine siskin, Roseate spoonbill, and Pileated woodpecker.

All these animals that have been found in various locations of southern California provide an indication of the vegetation and its productivity. The growth of shrubs and trees and grasses must have been extensive and rapid when considering the level of mammalian browsers and grazers. Considering the numbers of fossils that have been found, the types of predators and the level of prey that would be needed to support them, the numbers of wildlife would have been on the level of Ngorongoro Crater in Tanzania, Africa. They would have had an effect on the formation of the vegetation. While there are species that give the impression that the landscape supported open habitat, the presence of Pileated woodpeckers, Stellar's Jays, Clark's nutcrackers and Passenger pigeons indicate extensive forests of conifers, and oaks. Clark's nutcrackers are now found in pine forests in the highest mountains, feeding primarily on pine seeds, and Pileated woodpeckers are inhabitants of large coniferous forests. Pine siskins are also indicators of forests; however, they are also migratory and during winter can sometimes be found in lowlands even today. But if they were only migratory, it would be very rare that they would be randomly stuck in the tar at La Brea. The Passenger pigeons that were so famous for flocks of millions of birds in hardwood forests in the eastern US, must have found large areas of favorable hardwood forests in the lowlands of Southern California, most likely dense oak forests. While turkeys may have existed here in the Pleistocene, they do not naturally occur here because they completely died out after the Pleistocene just as Mammoths and Horses did. The natural environment evolved after they were extinct here so that now their presence, since they have been introduced, is a threat to endangered butterflies and even oaks since they eat acorns necessary for reproduction in a modern environment of drought and oak killing Gold-spotted oak borer beetle.

The presence of five-foot tall Whooping cranes is another indication of the habitat in the area since they both breed and winter in wetland areas with large expanses of standing water. They would have occurred

in moist valley bottoms and in the broad edges of the major stream courses.

It is not clear if Redwoods extended into San Diego County but the precipitation here during the period of the La Brea tarpit fossils would have been very close to that of the Los Angeles Basin. The vegetation would have been familiar at some level to Californians, though not for the San Diego area in modern times. However, the animals were like a combination of our normal North American mammals combined with a number from Africa, with the Giant ground sloth representing an animal seeming to be from a Star Wars planet.

Imagine traveling up I-15 route from Mira Mesa through groves of pines, watching for Dire wolves that were very common and larger than the Gray wolf, and keeping an eye out for Saber-toothed cats. In the open valley where I-15 crosses the San Luis Rey River, herds of giant Bison that weighed nearly two and a half tons and had huge horns moved with the two types of horses and camels that were 7 feet tall at the shoulder. Mammoths, Mastodons and Mule deer kept to the edge of the forests and woodlands, passing across openings in the trees, chaparral and scrub. Columbian mammoths grew more than three feet taller than African elephants and grew tusks that could be 16 feet long, five feet longer than an Elephant's tusks. Mastodons were a bit smaller than the African elephant though their tusks were formidable and in some cases longer than African elephants' tusks. As mentioned, mammals that are still bewildering are the Giant ground sloth and its two relatives. The largest was a slow moving, massive animal with ossified skin that may have served as armor against the massive predators that existed at that time.

In Pleistocene El Cajon Valley on a warm summer day, dawn broke as a herd of zebra horses grazed in a grassland on the dryer northwest side of the valley, toward where Santee is currently located. The area was rimmed with oaks, pines and cypress. A pride of lions eyed the herd, not far away but close enough to reach when the opportunity arose. The massive America lion could be 900 pounds, twice the size of an African lion. One Zebra in the herd seemed just a bit slower, leaning a bit to one side when it walked, suffering from an injured leg that broke through a Badger hole in an open grazing area. This was noted by the lions as they slowly spread out, working to isolate the weakened animal. Then suddenly, they made a trigger fast motion and charged the horses, dust flew and hooves thundered as the lions moved directly toward the weaker animal that

was clearly not as fast. One female lion leapt onto the horse's neck and dragged it down. Condors and the larger predatory Teratorn vulture-like raptor joined in with other vultures that directed their flight to the scene of the attack.

Down in the southern part of the valley near where Chase Avenue in El Cajon is currently located, a similar set of events were occurring only that time, the American cheetah chased down a Pronghorn. It is thought that the cat and Pronghorn co-evolved, each getting faster as natural selection limited the slower individuals.

A Short-faced bear emerged from the shadows and moved slowly along the riparian woodland near the San Diego River, stopping to tear open a slope with pitch fork claws to devour *Dichelostemma* (Wild hyacinth) corms, digging up a gopher and grabbing a streamside estivating Arroyo toad that it unearthed. Short-faced bears, which were larger than the largest Grizzly, averaged 1,800 pounds but a maximum much heavier stood 12 feet tall and that could move much faster than a man were common.

A small family of Columbia mammoths continued to feed, pulling branches off the *Populus fremontii* (Cottonwood) and *Salix lasiolepis* (Arroyo willow) with their trunks and placing them into their mouths to grind them with their teeth. When darkness came, Dire and Timber wolves produced their mournful howl and Coyotes provided their yip-yip cries. Some Elk or Mule deer nearby were to be the target of the wolves in the waning light.

At a settlement along the San Diego River, a group of huts made of bark, branches and tules¹ housed families of human inhabitants. These people had been here for many thousands of years (Deméré et al. 2017). Men with dogs, the dogs domesticated from wolves long before, stand watch on the outside to call alarm if a Short-faced bear came to the camp. The main stream courses, the San Diego, Sweetwater, Otay, San Dieguito, and San Luis Rey, flowed long during the dry season with forests of willows, cottonwoods, White alder, and Box elders. Steelhead trout that grew to nearly 40 inches in length inhabited the river water, returning to the sea after spawning. Short-faced bears would have waded into the water to catch these silvery fish.

¹Tules are grasslike perennial herbs which grow abundantly along the marshy areas of California. The term tule was derived from the Aztec tullin or tollin, which designated a grouping of plants including the common cattail, bulrushes, and similar plants. The term was used similarly by the Spanish to designate any such marshland plant.

The north slopes around Mission Valley and the San Diego River Valley would also have supported conifers mixed with chaparral in the areas with *Ceanothus verrucosus* (Wart-stemmed ceanothus) and *Quercus agrifolia* (Coast live oak) in modern times.

In what is now Camp Pendleton, a herd of hump-shouldered Ancient bison moved from their seasonal landscape, the ground rumbling beneath their hooves. They were followed by a pack of Dire wolves, waiting for a bison to stumble or show some indication of weakness before they charge. Along the San Luis Rey River, a heavy muscled Smilodon (Saber-toothed cat) with powerful forelimbs has waited in the riparian vegetation for a mobile food source, which in this case was an Elk. Separate from its herd, it meandered along the edge of the open canopy following a Mammoth trail through the willows and cottonwoods. The Elk was unaware that a Saber-toothed cat, colored with spots and marks that blend with the shadows, was lying in wait for it to take just a few more steps before the cat leapt on the Elk's back to deliver a fatal bite.

To support the massive predators like the American lion, Saber-toothed cats, American cheetah and both Dire and Timber Wolves, herd animals, Camels, Horses, Pronghorns, Llamas, Elk and Bison were necessary at high concentrations. As mentioned, browsing and grazing herd animals in those numbers would have affected the vegetation especially in valleys where grazing and browsing might have stimulated more grassland. Those grasses would have been dominated by *Stipa* and increased rainfall would have saturated wide areas of the soil to support herbaceous plants like *Muhlenbergia rigens* (Deergrass) rather than the woody shrubs. Even many of the forests and woodlands would have been open due to the heavy feeding by the Mammoths, Mastodons and Sloths. All of these animals would have needed continuous supplies of fresh water as an indication of the amount of moisture that must have been present all year. The rainfall would have been predominantly during winter with a Mediterranean climate, but there must have been enough for permanent sources and wetlands to provide for large herds of herbivores and the associated carnivores. There would have been a dynamic balance between the level of heavy natural browsing and grazing and the productivity of the vegetation. The high level of animal grazing and browsing may have created an environment where components of moist conditions such as coniferous forests are in close proximity in a mosaic pattern with chaparral and sage scrub components and low, marshy wetlands. The grazing

may have created a false impression of aridity where the vegetation seems drier than it is due to the consumption by numerous large animals.

~ **Tom Oberbauer**, Chapter President

(This article will be continued in the June 2018 newsletter.)

RELATED ACTIVITIES

Nature Talk at OB Library San Diego's Native Plants

May 1, Tuesday, 6-7 p.m. San Diego residents are invited to free nature talks at the Ocean Beach Library, starting with "San Diego's Wonderful Native Plants". San Diegans will see a lovely slide show about San Diego's native plants developed by naturalist/photographer **Phil Roullard**. Phil will present the slides and will be followed by landscape architect **Kay Stewart**. Kay will have an exhibit that illustrates many activities that the California Native Plant Society hosts to encourage people to enjoy San Diego's native plants, in the wild as well as in gardens and landscapes. Librarian **Destiny Rivera** will enable residents to learn more, by sharing a list of books about California native plants that are in the City Library system. Q&A will follow.

The Library is at 4801 Santa Monica Avenue, just off Sunset Cliffs Drive. Future nature talks are being planned for Tuesday afternoons at the Library.

Julian Wildflower Show

May 4 - 6, 2018

The show will be open from 10:00 am to 4:00 p.m.; held in the Julian Town Hall, lower level, at Highway 78/79 and Main Street. The show is free to the public. The Julian Wildflower Show has been an historical event for over 91 years. Because of Julian's mountain valley location, bordering a national forest and close to the Anza-Borrego State Park, we have 855 species of plants within 25 miles of town, many of which were used for health and healing by Native Americans. The Show is meant to educate club members, local residents, out-of-town visitors and children about the botanical wealth of Julian and its vicinity.

With permission from landowners, club members spend two days gathering wildflowers from five plant zones. The wildflowers are displayed in the Julian Town Hall for four days. The flowers are arranged on tables representing the different geographical areas and plant zones in which they are picked. Display cards provided

the name of the plant and described uses of the various plants by Native Americans.

SD Weed Management Area Annual Seminar

June 4, 2018; 9 am to ~ 3 pm.

Come to this free seminar to learn about weeds, pests and land management. Use the link below to register for the event:

<https://ucanr.edu/survey/survey.cfm?surveynumber=21106>

The seminar will be in the Board of Supervisors room at the San Diego County Operations Center (5520 Overland Ave. San Diego CA, 92123). The agenda will be posted on the registration page once it is finished. We will be applying for at least 4 hours of CA Department of Pesticide Regulation CE hours, including 1 hour of laws and regulations. This seminar is jointly produced by the University of California Cooperative Extension, the San Diego County Agriculture Weights and Measures Department, and the San Diego County Weed Management Area.

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, July 10 for the August newsletter, etc. Please submit items to newsletter@cnpsd.org

CNPS-SD Activities Calendar May 2018

- 5/1: Conservation Committee Mtg, p.4
- 5/1: Nature Talk at OB Library, p.11
- 5/2: Board Meeting, p.2
- 5/2: Tentative Rare Plant Surveys, p.4
- 5/6: Field Trip to Del Mar Mesa Tunnels, p.2
- 5/9: Garden Committee Mtg, p. 6
- 5/9: Tentative Rare Plant Surveys, p.4
- 5/10: Tentative Rare Plant Surveys, p.4
- 5/12: Old Town Garden Workday, p.6
- 5/15: Chapter Meeting, p.1
- 5/20: Field Trip to Oakoasis, p. 2
- 5/27: Field Trip to Mt. Laguna, p.3

MEMBERSHIP APPLICATION

___ Student or Limited Income \$25; ___ Individual \$45; ___ Family \$75
___ Plant Lover \$100; ___ Patron \$300; ___ Benefactor \$600; ___ Mariposa Lily \$1,500
Name(s): _____
Address: _____
Phone: _____ e-mail: _____

Mail check payable to "CNPS" and send to: CNPS, 2707 K Street, Ste 1, Sacramento, CA 95816-5113.

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May 2018 Newsletter

Dedicated to the preservation of the California native flora
CALIFORNIA NATIVE PLANT SOCIETY – SAN DIEGO

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