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CALIFORNIA NATIVE PLANT SOCIETY  
*San Diego Chapter Newsletter*

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## CHAPTER MEETING

Tuesday, June 21  
7-8 p.m.

### At the Old Town State Historic Park Native Plant Garden in Old Town

(NOTE: This meeting is NOT at the Casa Del Prado for June only)

### Native Plant Gardens for the Public to Enjoy

June's program is dedicated to people who have helped establish public native plant gardens around the County and to let them share their experiences. Exhibits will be set up around the Old Town Native Plant Garden, so attendees can visit with these "public gardeners" who will explain and illustrate their projects from around the County. Several volunteers will also lead groups of 4-6 people on ten minute walks around the Old Town Native Plant Garden, with handouts explaining what this particular garden has achieved so far and what it is hoping to become in time.

Our monthly meeting happens to fall on the Summer Solstice, the longest day of the year, so the sun won't set until 7:58 PM! Refreshments will be available (donations accepted!) and popular native plant horticulture books and general interest books about native plant identification will be sold.

**Meeting Location:** The Native Plant Garden is at the west end of Old Town State Park, at the corner of Taylor and Congress Streets. It is across the street from the Old Town bus/trolley/train MTS station, so if you use public transportation you will be right there. If you drive, free parking is located beside the garden, off Taylor and Calhoun Streets, and a second

free lot is a short walk away in the State Park on the north side of Congress Street a bit west of Pizza Bella. From that parking lot, walk uphill, turn left at the restrooms, and go past the white two-story white McCoy House until you get to the main part of the Native Plant Garden, where the exhibits and walking tours will be held.

Chapter meetings are free and open to the public. They are held the 3<sup>rd</sup> Tuesday of each month (except August).

### Native Gardening Tips

#### If You Have a Native Gardening Tip, We've Got the Soapbox for You!

There was a guy who figured out how to use stones to shelter baby native plant roots and add beauty, a couple of hobby gardeners who found the wonders of salvias and tips for growing them, and a mom who invites birds safely to a little fountain through a bridge of native shrubs.

For over a year now, from 6:30 to 7 p.m., before each monthly chapter meeting in the Casa del Prado, members with their personal stories and know-how have shared them with other gardeners. Dozens of members have expanded their knowledge base with face-to-face conversations between San Diegans who love native plant gardening at this low-key forum we call "Natives for Novices."

If you have a native plant success, even a little one, that you are happy to share, please contact Sue Marchetti. Sue can find you a date, give you some tips on organizing your talk, and help more people enjoy one more garden success story. Email your story to [info@cnpsd.org](mailto:info@cnpsd.org); write "attention Sue Marchetti" in subject line.

## VEEP SPEEKS!

We have all joined the California Native Plant Society for some reason, and with the variety of activities that our group promotes, it may vary for each of us. I joined in the mid 1970s to learn more about unique species and rare and endangered plants. I am fascinated by the species that only occur in limited locations, restricted to unusual soils or climatic conditions. I have always been proud of the fact that San Diego County has so many unusual species of plants, though I am also interested in birds, reptiles, mammals, insects and everything that is part of our unique diversity. Being a member of CNPS provides anyone with an interest to do so an opportunity to write about our area and activities. That has been another attractant for me.

However, a number of our members are interested in horticulture and the application of native plants for landscaping. With the limited rainfall in the areas of our County where most people live, drought tolerant native species provide an interesting way to decorate one's yard and at the same time limit the use of scarce imported water. The key is finding native species that are aesthetically pleasing during the entire year. There are a number of landscapers and nurseries who have been working on this situation to identify candidate horticultural species for quite a while and the use of native plants is becoming more prevalent.

There are others who like individual groups of plants. I know of a number of people who enjoy succulents, particularly Dudleyas and cacti. There is a separate group who has their own society for some of these species, but our concentration is on native species in this region. We have a wide variety of both of these within a short distance from San Diego as well as other interesting groups such as ferns, Mariposa lilies, Clarkias and *Linanthus* or *Leptosiphon*.

Some have joined the California Native Plant Society to work on conservation causes. In this rapidly developing area, constant vigilance is needed to insure that our incredible biological diversity is conserved. There are even a number of people who have joined because they are interested in vegetation mapping. The California Native Plant Society has always been on the forefront of vegetation mapping with the Holland process from the 1970s and 1980s and now the Sawyer, Keeler-Wolf mapping code. Finally, there are others who enjoy nature and observing parts of this special county through field trips and programs. Field trips provide some of the most interesting aspects of our chapter.

We greatly appreciate all who are members of the San Diego Chapter of CNPS no matter what reason caused you to join.

~**Tom Oberbauer**, Vice President

## BOARD MEETING

The next Board will meet on Wednesday, **June 8** at 6:30 at the San Diego Audubon office at **4010 Morena Boulevard, Suite 100**. From the I-5, exit Balboa east and turn north on Morena. Board meetings are always held on the first Wednesday of the month.

~ **Tom Beltran**, Secretary

## NEW VERSION OF THE CNPS LOGO

The original CNPS Logo that depicts the rare Panamint Daisy is now updated, with additional color, so it will be more visible in the various electronic, wearable, and print media where CNPS members are proud to exhibit it.



CALIFORNIA  
NATIVE PLANT SOCIETY

The original CNPS logotype, featuring a Panamint daisy (*Enceliopsis covillei*) enclosed in a circle with the CNPS name arching around it, was designed in the late 1960s by Joyce Burr, shortly after CNPS came into existence in 1965. You can read more about the history of CNPS, written by famed California botanist, G. Ledyard Stebbins, at [http://www.cnps-verbabuena.org/about/cnps\\_history.html](http://www.cnps-verbabuena.org/about/cnps_history.html).

Endemic to the west side of the Panamint Range, on hillsides and canyons with gypsum soils, the Panamint daisy has giant showy flowers that are 3.5 to 5 inches in diameter in April-June. They are probably blooming right now!



Panamint daisy (*Enceliopsis covillei*)

The Panamint Range is a short rugged fault-block mountain range on the northern edge of the Mojave Desert, in Death Valley National Park, Inyo County.

~ **Bobbie Stephenson**, Newsletter Editor

## NATIVE PLANT WEEK RECAP

We had an exciting Native Plant Week April 17th to the 23rd. There were events throughout the state and many were right here in San Diego County. Blogs from “The Coastal Gardener” to “Lost in the Landscape” to “Native Gardens...Green Living” talked up the event.

News sources picked up on it as well. And we had some local events: Moosa Creek had a special sale going on, with a portion of proceeds earmarked for donation to CNPS SD. They also had speakers at several local nurseries. Las Pilitas hosted several speakers and the Lake Hodges Native Plant Club meeting. Over 1200 Native Plant Week fliers were handed out at events like Earth Day and the San Diego Horticultural Society Meeting, as well as being offered at Mission Trails Regional Park and other sites.

For our inaugural effort, we were pleased with the results and look forward to even more success next year. Native Plant Week will be April 15th till April 22, 2012.

~ **Susan Krzywicki**, Gardening Co-chair

## HELP NEEDED FOR PLANT HIKES

We need volunteers to lead our Public Outreach Plant Hikes. Any amount of knowledge or enthusiasm for our native flora, or just plain old moxie is all you need to be a hike leader. We will give you training for leading hikes, and you will be paired with an experienced hike leader on the hikes. You just need to have one Saturday a month available this fall, when the hikes resume. Contact **Paul Hormick** at [phbb@pacbell.net](mailto:phbb@pacbell.net).



**Paul Hormick** at the CNPS booth.

## CNPS Conservation Conference UPDATE

January 12-14, 2012

Town and Country Resort and Conference  
Center, San Diego

The Call for Artwork and Photographs will open in June, early registration will open in July, and the Call for Abstracts is open until August 4. To find out more about the conference please go to [www.cnps.org/2012](http://www.cnps.org/2012)

**Public Day:** Help is needed to coordinate Public Day, which is when San Diegans are invited to attend the Conference for free. This is our opportunity to exhibit CNPS to the rest of our community! We would like to offer youth and adult education opportunities, ethnobotanical workshops, and more. But we can only do it with your help! Please get in touch with **David Varner** for info about how to help at [confluence.dv@gmail.com](mailto:confluence.dv@gmail.com) or 619-630-4591.

**Outreach:** If you have a connection with a Native American nation or band, **Josie Crawford**, the CNPS state Conservation Conference staff director, has ideas for engaging individuals or groups who share our CNPS mission of native plant conservation. Contact her at <mailto:jcrawford@cnps.org>.

**Fund Raising:** The Steering Committee announced it had received sponsorship commitments of \$50,000 (25% of the goal) by May 10. Committee members hope to reach the goal of \$200,000 in July. Any person, company, or organization that would like to sponsor, exhibit, or donate to the conference please email Josie at <mailto:jcrawford@cnps.org>.

## Call for Abstracts

“Conserving and restoring the roots of California’s richness” is the theme of the 2012 conference. The Conference Program Committee will be accepting abstracts for oral and poster presentations until **August 4, 2011**. The program will focus on plant conservation and restoration and will include a keynote address, plenary sessions, concurrent sessions that include of a mix of invited and contributed oral presentations, a special student paper session, and a poster session. A special session dedicated to posters will allow in-depth discussion between authors and conference attendees. Submit all abstracts for Contributed Talks and Posters to: <http://ice.ucdavis.edu/conferences/cnps/2012> The webpage includes guidelines and instructions for submission.



## MEMBERS' FIELD TRIPS

If you are not a CNPS member or a guest attending with a member, you can join CNPS at the trailhead and enjoy the outing with us.

**June 18. Otay Mountain Hike.** CNPS members and their guests are invited to join botanist **Jonathan Snapp-Cook** and member **Cindy Burrascano** for a hike up the northwest side of Otay Mountain in BLM's Otay Mountain Wilderness. Otay Mountain provides habitat for many rare plants and animals. We expect to see Mexican flannelbush (*Fremontodendron mexicanum*), Tecate cypress (*Hesperocyparis forbesii* [= *Cupressus forbesii*]), and many late season wildflowers.

The hike is strenuous and the terrain uneven. Jonathan will lead a fast-paced hike so that more time can be spent at the upper elevations where the Mexican flannelbush grows. Cindy will lead a more leisurely walk to enjoy the botanical wonders that are found even as the hike starts. Jonathan's hike will be a 7-mile round trip and Cindy's route will be a 3- to 5-mile round trip.

Space is limited to 20 participants. Please RSVP to Jonathan at [snappcook@gmail.com](mailto:snappcook@gmail.com) to reserve a space and for directions to the meeting location, and copy to [fieldtrips@cnpsd.org](mailto:fieldtrips@cnpsd.org). Please leave your cell-phone number. If you have 4-wheel drive vehicle please offer to rideshare from the meeting place to the trailhead when you RSVP. **Have hiking boots, sun protection, long pants, water, snacks, and a lunch.** This field trip is co-sponsored with the Southern California Botanists.

### Lovely Rattlesnake Canyon in Poway

Rattlesnake Canyon is the big arroyo at the southwest toe of Mt. Woodson. It has thriving chaparral and riparian areas. Being one of the headwaters of the Penasquitos watershed, it is also one of the few natural passages remaining between the western Ramona hills and the coast, through Poway's other open spaces. The creekside trail connects to a spur that climbs steeply through chaparral up to Tooth Rock. It was work, but on our April fieldtrip (led by **Kirsten Winter**) CNPS members were rewarded at the top with species not found in the valley. The City of Poway has purchased several hundred acres of the canyon, and the Friends of Rattlesnake Canyon are working hard to buy several other key private properties, so Rattlesnake Canyon will endure as a natural connector. Contact them if you want to help.

~ **Kay Stewart**, Field Trip Chair



Coulter's snapdragon (*Antirrhinum coulterianum*) with deerweed (*Acmispon glaber* [= *Lotus scoparius*]) in the background observed during the CNPS-SD field trip to Rattlesnake Canyon on April 17, 2011. (Photo by **Jim Roberts**)



Caterpillar phacelia (*Phacelia cicutaria*) observed during the CNPS-SD field trip to Rattlesnake Canyon on April 17, 2011. (Photo by **Jim Roberts**)

## CONSERVATION

You know, we're missing the boat again. As I understand it, the great trend in 21st Century Development is REdevelopment—you know, rebuilding, restoring, repurposing, all those great ideas other cities are using?

San Diego seems stuck in the 1940s, where development expands into nature, or whatever fragments of it we have left.

I wish we were trendier.

Case in point: vernal pools. No, wake up, it's back again. Yes, you've heard this before. As I said, San Diego is very retro when it comes to development, and they want to take more vernal pools, under the guise of the Vernal Pool Habitat Conservation Plan (HCP). Back in 2000 (that was a decade ago), the City got in trouble over allowing grading of vernal pools along what is now Mira Mesa Boulevard (see <http://www.thomaslarsen.com/publications/san-diego-reader/132-fairy-shrimp.html>). They lost in court, and CNPS was part of that process.

Back in 2000, the vernal pool experts said that over 97% of vernal pools were already gone. Only 3% are left. In 2011, that's still true.

The proposed HCP wants to go back and figure out which of the remaining vernal pools can be developed. Let's try this again: 3% are left. They are all valuable. Leave them alone. Again.

Why does the city need to take vernal pools? Because it still supports the 19th Century ethic of building on wild land. They've already lost in court on this very issue, and rather than fight it again, the city would do much better to improve the existing urban areas we do have. There are potholes everywhere, old houses falling apart, and people are looking for affordable housing. If the City tried a more 21st Century approach, we might actually get something done, instead of fighting the same old battle again.

~ **Frank Landis**, Conservation Committee



Barrel cactus (*Ferocactus cylindraceus*) seen at Members' Field Trip to Plum Canyon on March 13, 2011. (Photo by **Bobbie Stephenson**)

## San Diego Multiple Species Conservation Program

**MSCP 2010 Annual Report Public Workshop**  
**June 29, 2011; 9 a.m. - noon**  
**Balboa Park Club Ballroom**

The County of San Diego, City of San Diego, City of Chula Vista, U.S. Fish and Wildlife Service, California Department of Fish and Game and others involved in the MSCP will give updates and presentations. The focus of the workshop will be monitoring and management. Posters will be available for review. Balboa Park Club Ballroom is located at 2150 Pan American Road West, which is located on the north side of the parking lot of the Aerospace Museum and Starlight Theater. (Note: the date in the May newsletter was incorrect. The meeting is on June 29, not June 30.)

## BOTANY

### Rare Plant Surveys Finishing a Successful Season

Our rare plant survey is winding down for the spring. The little annual coast woolly-heads (*Nemacaulis denudata* var. *denudata*), have bloomed, as has the Nuttall's lotus (*Lotus nuttallianus*, List 1B), and they have formed the bulk of our survey. We are finishing up with surveys at Torrey Pines, and looking for late-blooming plants at Fiesta Island and elsewhere.

Did you know there are rare plants at Black's Beach? The area has the largest population of the showy red sand verbena (*Abronia maritima*, List 4) we've seen to date. It would be great if we could convince the habitues of Black's Beach to weed out the ice plant (*Carpobrotus edulis*) to give the natives more space.

So far in our survey, weeds seem to be the biggest threat to dune species. There are very few spaces left where dune plants are not threatened by invasives such as iceplant, the weedy chrysanthemum (*Glebionis coronatum*), or veldt grass (*Ehrharta erecta*). Many dune plants like open areas near trails, and the weeds are choking them out.

If you are interested in participating, email [franklandis@cnpsd.org](mailto:franklandis@cnpsd.org). Anyone can participate. All it requires is sharp eyes to spot tiny plants, and careful feet to avoid stepping on them.

~ **Frank Landis**, Rare Plant Survey Chair



## Pleistocene San Diego County

While it has been demonstrated that global warming is occurring at a rapid rate, there was another period just a short 10,000 years ago during which it was cooler. Everyone is familiar with the Ice Age and the concepts of woolly mammoths, cave bears and ground sloths and the enormous ice fields and glaciers across North America. However, it is interesting to think about the effect that the glacial periods, also known as Pluvial Maximums for the areas that did not have glaciers, would have had on San Diego County.

There are a number of different pieces of information that can assist us in understanding what San Diego County must have looked like during those periods. There are trees and plants and an endemic form of squirrel in northern Baja California that are far disjunct from their relatives in the central and southern California mountains. There are woodrat middens that support interesting plant parts indicative of more moist situations over the past few tens of thousands of years, and there are indicators in the soils of higher rainfall and possibly greater cover of conifers in coastal San Diego County, and there are fossils from the Pliocene in Chula Vista.

The forests in the Sierra de San Pedro Mártir of Baja California are similar in many ways to the higher elevation forests in the San Bernardino, San Jacinto and Sierra Nevada Mountains of California. They (cont'd p. 8)

## Upcoming CNPS Workshops

**For more info regarding these workshops or to register, please visit:**

<http://cnps.org/cnps/education/workshops/index.php>  
Questions? Call Josie Crawford at (916) 447-2677 ext. 205, or email to [jcrawford@cnps.org](mailto:jcrawford@cnps.org) or call (916) 447-2677 ext. 205.

**June 7-9, 2011. Vegetation Rapid Assessment/Relevé Workshop.** Ocean Song, Sonoma County. Instructors: Julie Evens and Deborah Stout. CNPS Members \$310; Non-members \$335. Additional \$15 for two nights on-site overnight camping or other sleeping accommodations. Reduced or waived fees may be available for students and under-employed people.

**Sept 22-24, 2011. Legends of the Fall: Exploring the Clandestine Flora of Early Fall in the Eastern Mojave Desert,** U.C. Granite Mountains Desert Research Station. Instructors: Jim Andre and Tasha La Doux. One evening lecture and two field days Fees: CNPS members \$435, Non-members \$460. Price includes lodging and all meals at the research station.

## INVASIVE PLANT CONTROL

**June 25, 9 a.m. to noon.** We focus on tools for controlling invasive weeds for the purpose of habitat restoration and fire prevention. We try to touch on all aspects from evaluation and planning, laws and regulations, various control techniques, through to ongoing maintenance. We meet once a month but our daily program allows for other times to fit your schedule. Boots, long pants and long sleeves are required; eye protection is optional but recommended. Contact me for meeting place, directions, gate code & further info at [invasiveplants@cnpsd.org](mailto:invasiveplants@cnpsd.org).

~ **Arne Johanson**, Invasive Plant Chair

## GARDENING/RESTORATION

### Fall Plant Sale

Our fall plant sale, the largest selection of California native plants for sale in San Diego along with free expert advice, will be held on **Saturday, October 15.**

**The plant sale committee is looking for volunteers to help organize this year's sale.** No plant experience is necessary, but we need organized individuals with good communication and basic computer skills. **Specific tasks are needed for our fall plant sale.** The time commitment depends on your schedule.

**Sign Storage/Transportation:** We need a few volunteers with some extra garage space to store and transport our signs to the sale. There are 8 boxes total, each box is 4'x 2.5' x 2.5'.

**Seed Team:** Help clean and package seeds.

**Publicity:** Write a press release, contact news outlets about the sale, help get flyers out to groups.

**Plant Growers:** Perhaps you have some plants on your property that you can re-pot up or propagate from cuttings? If you're a novice at plant propagation, we encourage you to join our propagation team.

If you can help, please contact the Fall Plant Sale Committee at [plantsale@cnpsd.org](mailto:plantsale@cnpsd.org).

~ **Carolyn Martus**, Fall Plant Sale Chair

### RENEW ONLINE

Renew your CNPS membership online using a credit card  
It is quick, easy, convenient, and reduces mailing costs.

[www.cnps.org](http://www.cnps.org)

Click on the JOIN button

## Gardening Committee

The next CNPS Gardening Committee Meeting will be held **June 7, 5:45-7:45 p.m.** at the **Mission Valley Library**, 2123 Fenton Parkway, San Diego (to the west of the IKEA store in the Fenton Marketplace, south of Friars Road between I-805 and I-15). We will discuss our successful school gardens, the new Rincon project, Natives for Novices, and other ideas for new projects. We will meet in Seminar Room A. Since the library closes at 7:45, we are beginning our meeting at 5:45, in order to have enough time for all the agenda items. If you would like to join the Gardening Committee, please send an email to [gardening@cnpsd.org](mailto:gardening@cnpsd.org). We would love to have you participate.

~ **Susan Krzywicki**  
Gardening Committee Co-chair

### Rincon Native Plant Garden

We have a very interesting project that is just starting up: a Native Plant Garden at the Rincon Tribe Indian Reservation. The band has created a one-acre site to plant with natives in a way that is compatible with their beliefs - they are using Indian naming conventions and are using the garden to teach their tribe members about the many uses that their ancestors had for these plants. They have also started a propagation program to provide plants for this project and for rehabilitation efforts on other parcels.

The tribe needs help over the coming months to prepare the land, plant, propagate and tend. They also need help to develop life-lessons and skills information for dissemination to the tribe.

This project is on tribal land, so we have limited access in small groups to work alongside tribe members - including youths.

Arne Johanson has already been helping to establish the beginnings of the weed abatement efforts.

If you would like to participate - work will be mostly on weekends, with some week-day efforts. Weed clearance, propagation, planting, educational materials development are the key skills we are looking for. Space is limited, so please let us know quickly in order to get invited into this project. Because this is on tribal land, we must be invited, escorted and always maintain respect for their heritage and culture.

If this interests you, please call or email **Susan Krzywicki**, Gardening Committee Co-chair and let me know what skills you bring and what time

availability works best for you. Phone: 619 318 4590, email: [susankrzywicki@mac.com](mailto:susankrzywicki@mac.com)

## Work Parties

**Old Town State Park Native Garden: June 11 (Saturday), 1:00 to 3:00 p.m.** WHAT NAME DOES NOT BELONG, AND WHY? *Asclepias fascicularis*, *Juncus textilis*, *Muhlenbergia rigens*, *Piptatherum mileaceum*, *Salix exigua*.

Come to the Old Town Native Plant Garden Work Party and give your answer. We'll have a vote, and Best Answer wins a prize!

Old Town Native Plant Garden work parties are always the second Saturday of the month. Come pitch into the care and nurturing of this physical link between San Diego's past, present, and future. Enjoy the company of other people who think it is fun to get at least a little sweaty helping grow a sample of the natural world that exists beyond San Diego's neighborhoods.

Bring sun protection and your favorite gloves and weeding tools, or dig weeds using the gloves and tools that we provide. The garden is located at the corner of Taylor and Congress Streets, across from the train/trolley/bus depot at the very west end of Old Town State Historic Park. Come by public transit, or if you drive, free parking is in the lot next to the garden at Calhoun and Taylor Streets. When you see the trees, you know you are almost there!

After the work party we'll go to La Pinata Restaurant on Juan Street for a no-host refreshment break and to celebrate our six months of heavy work getting ready for the San Diego chapter meeting to be held on the Summer Solstice, June 21st, in the Native Plant Garden. Questions? contact **Kay Stewart** at [president@cnpsd.org](mailto:president@cnpsd.org)

**North Park Community Restoration Garden: Saturday, June 18 at 9 a.m.** The CNPS Gardening Committee invites all who are interesting in helping with our combination native garden and plant restoration on a site bordering Juniper Canyon in North Park. We welcome all volunteers and neighbors who are interested in learning about the local habitat and how to use local native plants in their gardens. Be prepared for work outside and bring water. We will park and meet at the intersection of Petra Place and Petra Drive off of Pentuckett. If you have any questions or you are interested in helping with this project but can't attend, please feel free to contact **Wes Hudson** at 619-846-0585, or [weshudson@cox.net](mailto:weshudson@cox.net).

**Point Loma Native Plant Garden: June 4 and 19, 9:00 – 11:00 a.m.** Rain cancels; bring water; no facilities; tools/supplies provided. Usually the first Saturday & third Sunday of each month. [Richard@sandiegoriver.org](mailto:Richard@sandiegoriver.org) for more info.

## Growing Natives Symposium

**September 17-18, 2011**, in the San Francisco Bay Area. A two-day symposium on native plant gardening with lectures, workshops, plants and books.

### **Saturday, September 17, 2011:**

Lafayette Community Center, Lafayette

Lectures by:

- Carol Bornstein
- Michael Craib
- David Fross
- Luke Hass
- Deva Luna

### **Sunday, September 18, 2011:**

Regional Parks Botanic Garden, Berkeley

Workshops by:

- Jocelyn Cohen
- Stephen Edwards
- Katherine Greenberg
- Don Mahoney
- Pete Veilleux

For info or to register, see: <http://gns.cnps-scv.org/>

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### **(Pleistocene San Diego County - cont'd from p. 5)**

support sugar pine (*Pinus lambertiana*), Jeffrey pine (*Pinus jeffreyi*), white fir (*Abies concolor*), lodgepole pine (*Pinus contorta*) and quaking aspen (*Populus tremuloides*). Not only that, the snow plant (*Sarcodes sanguinea*), Wheeler cinquefoil (*Potentilla wheeleri*), an endemic form of the San Bernardino Mountain monkeyflower (*Mimulus purpureus* var. *pauillus*), and a form of western tree squirrel (*Tamiasciurus mearnsii*) also occur there. The quaking aspen, snow plant, monkeyflower, cinquefoil, lodgepole pine and tree squirrel do not occur in San Diego County at the present. Some may say that their occurrence in those mountains is indicative of long distance dispersal. However, the presence of a series of associated plants and a mammal so far from their relatives, and the long distances of separation from their closest relatives, provide an indication that these

are representatives of an entire subalpine ecosystem that was more widespread in the past. The distances to their closest populations are 200 miles for the *Sarcodes* and *Potentilla*, more than 225 miles for the lodgepole pine and the monkey flower, and about 230 miles to the closest aspen grove, which itself is nearly 150 miles from the closest stand in the Spring Mountains or over 180 miles from the Sierra Nevada. The tree squirrel is nearly 400 miles from its closest relative. Furthermore, the quaking aspen are famous for having seeds that are viable for only a very short time. Seedlings are very rare because aspen need rain in June to germinate, a rare occurrence in the west. Instead, they reproduce by root crown sprouting (USDA Plant Guide). Long distance dispersal would be very problematic for quaking aspen. In order to have moved down the peninsula into the Sierra de San Pedro Mártir, this subalpine group of species would have had to move through San Matias Pass in Northern Baja California at an elevation of only 3,200 feet. If they grew at that low elevation 100 miles south of San Diego County, they would have, geologically speaking, had to pass through the San Diego County mountains.

Woodrat middens are fascinating time capsules of previous ecosystems. They occur where native wood rats (*Neotoma* spp.) have built nests for thousands of years. Woodrats are notorious for collecting interesting bits of plants and rocks and adding them to their nests. Over thousands of years, the woodrats urinate in the same general location, and eventually the bits of plant material become encased in crystallized urine and preserved. Records from central Baja California wood rat middens indicate pinyon pine forest where boojum trees (*Idria columnaris*) and cardon cacti (*Pachycereus pringlei*) now reside. Phil Wells and Tom Van Devender have studied numerous woodrat middens throughout the west to provide a picture of the Pleistocene habitat distribution. They indicate forests extending much lower in elevation that would coincide with roughly doubling the rainfall.

Soils in San Diego County along the coast, particularly the sandstones, have some unique attributes. If one examines the soils, small round concretions or soil nodules are embedded in the soil and on the soil surface. Studies by scientists from UCSD and SDSU indicate that these are basically rust nodules with other metallic minerals as well, and are thought to indicate past higher precipitation levels, bacteria involvement, and possibly the acidity of a vegetative cover of conifers. They can be found in a wide variety of coastal locations in San Diego County and not just in the areas where Torrey pine (*Pinus torreyana*) trees grow. The presence of bishop pines (*Pinus muricata*) in coastal Baja California 260 miles south of their closest location on Santa Cruz Island and of



knobcone pines (*Pinus attenuata*) in the mountains northeast of Ensenada 130 miles south of their closest location in the Santa Ana Mountains provide other indicators that pine forests would have been more widespread in the past in order for these populations in the south to have become established. Of course, there are Monterey pines (*Pinus radiata* varieties) on Guadalupe Island and Cedros Island, with Cedros 600 miles from the nearest northern grove. These islands could have benefited from long distance dispersal since they are located in the California current that flows southward down the coast of California. However, under modern conditions, due to the dryness of the climate, a pine seed that washed up on the shore could not germinate on the lower elevations of those islands. It would be necessary for a bird to carry seed to the upper part of the islands for the trees to become established, a much lower likelihood. The climate would have to be considerably more moist for pines to grow on the lower elevations of these islands and become established there, again indicating a more moist climate in the region in the past.

Another indicator of interesting vegetation in the San Diego region are the avocado, Monterey pine, oak and palm fossils from Chula Vista in San Diego County studied by the late Daniel Axelrod of U.C. Davis and Tom Deméré, the current Curator of Paleontology at the Natural History Museum. These fossils are from 2.5 to 5 million years ago and act as indicators of past climate, though that period was prior to the Pleistocene. Also, from the La Brea Tarpit fossils, there are indications that redwoods existed only 120 miles north of San Diego. There have not been any redwood fossils found in San Diego County other than some that are many millions of years old, but their presence in the Los Angeles area gives an indication of much greater moisture during the Pleistocene.

All of these factors indicate a climate at the end of the Pliocene and through the Pleistocene pluvial periods probably more than twice as wet as it is now. During the periods between the Pluvial Maximums, it would have been drier, but during the wet periods, San Diego would have looked more like Monterey with significant forests on the coast in addition to the Torrey Pines and Tecate cypress we still have. That would also mean a montane forest extending down onto Otay Mountain and into the edges of Alpine and Ramona. Pinyon pine forest would have extended to lower elevations around the Borrego Valley. Chaparral would have been here as well, probably displacing much of the coastal sage scrub that we currently have, though coastal sage scrub would have still existed in patches on some south facing slopes. Vernal pools would also have existed because fossils from the La Brea Tarpits indicate a wet winter, dry summer environment, like we have today. Vernal pools require the summer drying to allow for the

unique plant species to flower.

The area of the Cuyamaca, Laguna, Volcan, Hotsprings and Palomar Mountains would have supported subalpine forest. It is not difficult to envision quaking aspen with its fall colors around Cuyamaca Lake and lodgepole pines growing in a variety of locations. There are remnant glacial traces on the San Jacinto Mountains and actual glacial scars on the San Bernardino Mountains. While there certainly would not have been glaciers in the San Diego County mountains, the upper parts of the Cuyamaca and Hotsprings Mountains would have been exposed to heavy subalpine conditions. Seasonal precipitation double its current amount would indicate roughly 70 inches at Cuyamaca Lake with quite a bit more on the peaks and approaching 80 or as much as 90 inches on Palomar Mountain. That should not be considered too far from reality since parts of Palomar Mountain have received more than 90 inches and Cuyamaca Lake 70 inches of precipitation during some heavy rainfall seasons in the past two decades.

As the climate dried after the last Pluvial Maximum, roughly 8-10,000 years ago, the moisture-requiring vegetation retreated upward and northward, pinching off connections to the south and eliminating subalpine forests in the lower mountain regions. Coastal sage scrub and, to some degree the chaparral, would have expanded, as well. As the chaparral moved upward in elevation to displace the forests, it in turn was displaced by the coastal sage scrub in the lower elevations and on south facing slopes. With the ebb and flow of the wet and dry periods over the last million years, one can envision the vegetation migrating down the Peninsular Ranges into Northern Baja California and retreating to the Sierra de San Pedro Mártir, San Jacinto, San Bernardino and Sierra Nevada Mountains during the interglacial dry periods. As the climate changes, connections and pathways for ecosystem movement are critical.

~ **Tom Oberbauer**, Vice President

### **CNPS-SD CALENDAR**

- 6/4:** Point Loma Native Garden Work Party (p. 8)
- 6/7:** Gardening Committee Meeting (p. 7)
- 6/8: Board Meeting (p. 2)**
- 6/11:** Old Town Work Party (p. 7)
- 6/18:** Field Trip to Otay Mountain (p. 4)
- 6/18:** North Park Garden Work Party (p. 7)
- 6/19:** Point Loma Native Garden Work Party (p. 8)
- 6/21: Chapter Meeting (p. 1)**
- 6/25:** Invasive Plant Control Group (p.6)

## MEMBERSHIP APPLICATION

\_\_\_\_ Student or Limited Income \$25; \_\_\_\_ Individual \$45; \_\_\_\_ Family or Library \$75  
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