



the BULLETIN

Quarterly Publication of the Friends of the Arboretum

Spring 2013 Vol.36, No.3 & 4

The Arboretum Sparrow Research Project Ten Years Old and Going Strong

Along with former UCSC graduate students Alexis Chaine and Dai Shizuka, I have been studying winter patterns of social organization in golden-crowned sparrows in the UCSC Arboretum. We captured and banded our first sparrow over a decade ago—November 17, 2003—and we have been banding and studying the birds ever since. Our main study area is the Australian Garden and we typically have about sixty banded birds spending the winter in the four acres we census.

Bird behavior studies typically focus on individual birds, with a goal of understanding variation of important characteristics. We therefore started capturing birds and banding them for individual recognition—each bird is given a unique combination of colored leg bands, almost like a name. The Arboretum very kindly lets us use the library as a bird-banding laboratory, so if you see bird activity in the library, it is the sparrow team. We use traps we build ourselves out of hardware cloth. The traps are baited with seed and when the bird enters to get the seed they step on a treadle that causes a trap door to shut. The birds do not seem too traumatized by the experience, and we often catch the same individuals repeatedly on different days. Once the birds are banded, we follow the known individuals over time



Alexis Chaine measures the crown color of a golden-crowned sparrow with a spectrophotometer. Note the color bands on the bird's legs.

to see which individuals flock together, where they spend their time, and what they are doing. It's great fun—almost like a bird soap opera. The color bands also allow us to study the survival of individuals across years. The sparrows are migratory and spend their summer breeding seasons somewhere in Alaska or British Columbia (we do not know where), and they then return back to the Arboretum after breeding is done. Our study has revealed a fairly high survival rate across years—40% to 50% of the birds banded in one winter return back to the Arboretum the following year. I recently checked our records and noted that we have now banded close to 600 sparrows over the decade.

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The Relearning Garden: A Collaboration with the Amah Mutsun Tribal Band

**The following is a summary of a presentation given at our last Donor Event on February 15*

In 2009 the Arboretum was introduced to the Amah Mutsun Tribal Band through a mutual friend, Lucio 'Cloud' Ramirez, who was then the Program Director at the American Indian Resource Center on campus. After initial meetings with the Tribe we soon realized we both had a mutual interest in ethnobotany. At one of our meetings, Val Lopez, Chairman of the Tribe, mentioned that because of the Mission Period and subsequent Mexican and American periods of influence, tribal members had lost some of the plant knowledge and needed to relearn – and the name 'Relearning Garden' soon took hold.

The Tribe has given the Arboretum a list of plants that are culturally important to them. This list is derived from interviews of Mutsun elder Ascencion Solorsano de Cervantes (1857-1930) by John Peabody Harrington (1884-1961) of the Smithsonian Institute during the late 1920s. Ascencion was a healer and a doctora who ran a traditional hospital out of her house. Ascencion took meticulous notes on what illnesses people were suffering from and how she cured them and Harrington said, "I have never known a woman with a better memory."

The Relearning Garden incorporates plants of cultural significance to the Tribe into the Central Coast California Native Gardens, a 40-acre parcel of land divided into plant habitats and associations. As a result the plants of the Relearning Garden will be placed in habitat displays throughout the gardens rather than one particular area. Therefore, visitors and researchers will gain an understanding of both ethnobotany and the indigenous uses

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Pop Up Museum

The Arboretum at UCSC and the Santa Cruz Museum of Art and History invite you to a Pop Up Museum on "GROWTH" at the Arboretum on Sunday, June 2, from 1-3 pm. What is a Pop Up Museum? A temporary show created by you. We name the theme. You bring something on-topic to share with others. It's that easy. The theme for this Pop Up is GROWTH. From plants to people, we all grow in different ways. What do you grow? How do you grow? Bring an object or piece of art that relates to your idea of "Growth" and share it with others amongst the Arboretum's beautiful flowers and growing greenery. The Pop Up Museum will take place in the Australian Garden from 1-3 pm. An optional garden tour starts from the event at 2:30. The event is free, and the Arboretum will not charge admission beginning at noon that day. Donations are always welcome.

Planned Giving: Ensuring the Future of the UC Santa Cruz Arboretum

Over a number of years, a cow pasture was changed into the Arboretum. Imagine the satisfaction of your continuing to watch the Arboretum gardens, education programs, and conservation efforts grow. A significant portion of the funding each year and all of the endowment funds that support the conifer, succulent, Australian, South African, Californian, and New Zealand plants have come from individual's planned giving and estates. Additionally, planned giving is a great way to make a charitable contribution and improve your current income stream. By integrating a planned gift to the UC Santa Cruz Arboretum into your overall financial, tax, and estate planning, you can realize significant financial gains in the form of a charitable tax deduction AND an income stream for life. In addition, a planned gift made with appreciated property can save you capital gains taxes.

Structuring a planned gift deserves time and careful thought. As you explore the options for planning a gift, we suggest you consult with your financial advisors, such as an estate planning attorney or accountant. Through estate planning, one can leave a permanent legacy to nurture the Arboretum's gardens and programs. We would be happy to assist you in this process and we have a network of professional advisors that would be happy to serve you. Please also consider allocating a percentage of your gift as unrestricted. These funds enable the Arboretum to take advantage of unanticipated opportunities or respond to emergencies.

Sponsor a Rare Plant

A rare Manzanita

A rare *Dudleya*

A rare conifer

A new Australian plant cultivar introduction

A new succulent plant cultivar introduction

\$50 to sponsor a single plant

\$500 to sponsor a cultivar

\$1000 to sponsor a species

Sponsor a garden bed, amount varies per bed

To become a sponsor, or if a list is not available at arboretum.ucsc.edu, email Stephen McCabe smccabe@ucsc.edu for a current list of opportunities.



Dudleya stolonifera, the Laguna Beach live forever, is listed as a California Rare species and is known from only six localities.

Please call us about planned giving and naming opportunities. You may donate by making checks out to "UCSC Foundation" and send them directly to: attn: Stephen McCabe, Arboretum, 1156 High St., Santa Cruz, CA 95064 (831) 427-2998 (ext. 105 for messages) or visit the University's website about planned giving plannedgifts.ucsc.edu/

Our contact is University's Director of Planned Giving: Virginia Rivera.

The Bulletin of the Friends of the Arboretum

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Ba-Ba-Banksia Song by Melinda Kralj

Ba-Ba-Banksia ©2013
music & lyrics by Melinda Kralj

1. You look like a corn cob, but you're not, no you're not
You look like a bottlebrush but you're not Uh-uh.
You look like a male god, you're givin' me a fever, but you
ain't that neither.

Chorus: F C G
Banksi-a Ba-Ba-Ba-Banksi-a Ba-Ba-Ba Banksi-a
What a plant! (What a plant!)

2. You come from Australia. Yah... "Down Un-der"
Used to be Gondwan-a... Really makes you wonder!
You grew up with fire Fifty million years and I
ain't no li-ar Chorus

Your family name is Prote-a the sea god who could really change, the
plants with-in it are di-verse a little weird, a little strange. You got your
name from Joseph Banks - You know, that guy from Ke-w
Here comes the chorus and you know what to do-o

Chorus: F C G
Banksi-a Ba-Ba-Ba-Banksi-a Ba-Ba-Ba Bank-si-a
What a plant! (What a plant!)



"Melinda and the Outback Howlers" at the Arboretum FUN(d) Raiser

Spring Plant Sale Saturday, April 20th

Arboretum Eucalyptus Grove • 10-12 Arboretum Friends and CNPS members • 12-4 Open to the Public

The spring plant sale will feature two brand new releases from the Koala Blooms Plant Introduction Program. *Banksia ericifolia* 'Fireworks' is a striking evergreen shrub with needle like leaves. The large showy golden cones have red styles. It blooms winter through summer and makes a great cut flower. *Dampiera trigona* 'Purple Wire' is a perennial with nearly 1 inch blue violet flowers on wiry stems. It is best grown in a container, rock garden or as a hanging basket plant.

Dendromecon hardfordii or Island Bush Poppy is native to Santa Cruz and Santa Rosa Islands in California. It is an evergreen shrub with large bright showy yellow saucer shaped flowers. Its not an easily plant to propagate and is not readily available in nurseries. We were fortunate to have been able to grow these plants from seed.



Dendromecon hardfordii — Santa Cruz Island.
Photo by Mike Clark



Fremontodendron californicum 'Butano Ridge'
Photo by Mike Clark

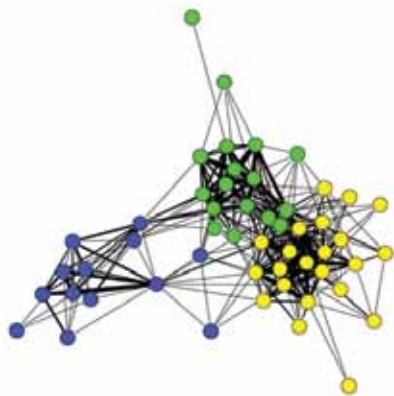
Other featured plants include:

Banksia spinulosa 'Nimble Jack'
Boronia crenulata 'Rosy Splendor'
Carpinteria californica
Coreopsis giganteum
Crowea exalata 'Southern Stars'
Fremontodendron 'Butano Ridge'
Grevillea 'Mason's Hybrid'
Kennedia beckxiana 'Flamboyant'
Leucadendron argenteum
Leucadendron 'Safari Goldstrike'
Leucospermum cordifolium – orange, pink, red flowers, 'Yellow Bird'
Leucospermum 'Spider'
Leucospermum 'Tango'
Pimelea nivea
Prostanthera baxteri 'Lavender Moon'
Protea neriifolia
Protea 'Pink Ice'
Protea repens
Protea susannae
Salvia spathacea 'Avis Keedy'

Look for a more complete plant sale list on our web site after April 10th

Sparrow Research Project (cont'd - p. 1)

When we began the study, one of the first things that caught our attention was the tremendous variation among individual sparrows in the amount of the gold and yellow plumage on their crowns. Observations revealed that birds with bigger yellow or black crown patches were socially dominant at the seed piles we place beside bushes at various locations in the Arboretum. In scientific terms, the black and yellow crown



The social structure of the UCSC Arboretum golden-crowned sparrow population, based on co-memberships in flocks. Each circle represents an individual sparrow, and the lines connect individuals seen in short-term flocks together. Three 'communities' of individuals that are more closely associated with each other were identified and are represented by different colors.

patches function as "badges of status" that help the birds determine dominance relative to each other without having to resort to outright aggression and fighting. And gender doesn't matter—females with naturally studly plumage win contests with wimpy-plumaged males. Two recent experiments, where we temporarily increased the size of the black or the yellow crown plumage patches with paint or markers, confirmed that plumage patch size alone can determine the outcome of competitive contests over food, and thus that the plumage patches serve as badges of status. There is, however, an interesting twist. Increasing the sexiness of the plumage only works if the birds are strangers that have not previously met (we set this situation up by trapping birds from two widely separated locations). When we repeat the plumage manipulations with pairs of birds captured from the same flocks, the birds are not fooled at all by the fake signals! It seems that badges of status are used when unfamiliar birds interact, but individual recognition is used among flock-mates that already know each other.

Another focus of our study is to understand the structure and dynamics of the winter social organization itself, which is surprisingly poorly understood in most migratory birds. A casual visitor to the Arboretum would note that the sparrows spend much of their time each day foraging in small flocks (2-8 birds). However, because the sparrows are all color banded for individual recognition, observing these individuals for several months each year revealed that membership in a given flock often changes dramatically across days, or even hours. This pattern of "fission-fusion" flock dynamics raises the question of larger scale social structure: are the flocks a subset of some larger social group or are they random collections of individuals from the entire population? Social network analysis methods are ideal for understanding the degree and pattern of fission-fusion in societies, and they have already revealed some intriguing patterns in the sparrows. The sparrow flocks are not random subsets of the entire population but form from larger social groups, or "communities". These communities are also spatially

distinct—each of the three communities detected in 2009-2010 used a different part of the Arboretum, with little spatial overlap between communities. The high return rate across consecutive winters also allows us to look at community structure across years. Remarkably, most of the birds that returned in 2010-2011 from the previous year returned to the same communities as the previous year, and associated with the same individuals, on the same tiny part of the Arboretum. These birds are very faithful to the Arboretum.

The sparrow study has revealed surprising levels of social complexity in the lives of these seemingly modest little sparrows—the most basic aspects of their fission-fusion societies we have discovered are similar to those described for some primates, including chimpanzees. We still have lots of work to do to fully understand what these sparrow communities are all about.

Bruce Lyon is a Professor of Ecology & Evolutionary Biology with the Division of Physical and Biological Sciences, UCSC



Botanical Skills Workshop

Come refresh your knowledge of the botanical skills essential for any practicing arborist, urban forester, consultant, nurseryman, city planner, landscape architect, or interested gardener

Topics Include:
Name Changes in Plants
Accurate Scientific Names
Plant Identification
Basic Plant Taxonomy
Online Resources

U.C. Santa Cruz Arboretum
8 AM - 4 PM
Thursday June 27th
or Friday June 28th

\$120 see website for registration
Visit www.baobabbotanical.com for more information

Workshop Presenter
Dr. Matt Ritter



Brett Hall

Point Sur, California State Parks and *The Big Sur Manzanita* — *Getting by with a little help from our friends.*

Big Sur Manzanita, *Arctostaphylos edmundsii* is an extremely restricted species growing in patches along the northern Big Sur coast, right near the beach at Garrapata Creek, south to Pfeiffer Point just above the filming location of the last scene in the movie, *Planet of the Apes* (1968), where actor Charlton Heston is confronted with the Statue of Liberty half buried in the sandstone and Franciscan formation rubble. The assumption and impression conveyed from this sandstone scene is that nuclear war preceded Heston's time travel and crash landing back to earth and provided the closing explanation for why the apes had taken control of the world. Humans had virtually disappeared and yet, through it all... the Big Sur manzanita survived!

A few years ago Jeff Frey, State Park Resource Ecologist, asked the Arboretum to help propagate cuttings from many indi-

viduals of *A. edmundsii* growing on Pt. Sur for replanting in areas where he and volunteers were removing invasive ice plant, *Agave* sp, sweet Alyssum, among other weeds. Point Sur is home to a rare plant community featuring the Big Sur manzanita along with coastal strawberries (*Fragaria chiloensis*), California Aster (*Corethrogyne filaginifolia*), Sea Side Daisy (*Erigeron glaucus*), Sea Pink (*Armeria maritima*), *Piperia* orchids, Polypody ferns, beautiful silver "chamiso lupine" (*Lupinus chamissonnis silver*), *Artemisia pycnocephala*, Dudleyas, prostrate forms of black sage (*Salvia mellifera*) and wonderful dwarfish forms of Carmel Ceanothus (*Ceanothus thyrsiflorus* var. *griseus*). Of course, there's lots of poison oak twining though the coastal rockery vegetation along with showy, yellow flowering lizard tail (*Eriophyllum staechadifolium*) and its close relative, golden yarrow (*E. confertiflorum*), along with the Sea Cliff Buckwheat

(*Eriogonum parvifolium*), which is the host plant for the endangered Smith Blue Butterfly (*Euphilotes enptes smithi*).

In mid December 2012 and again in early March of this year, the Arboretum crew of volunteers, students and staff, planted several hundred Big Sur Manzanita, which we propagated from Pt. Sur. Several folks were roped in for safe anchor to keep them from rolling off into the ocean. It was a wonderful experience and the best part is the high percentage of success. Our first planting was on December 18, a travel agent's dream—beautiful, sunny and calm weather with the sparkling Pacific all around. The very next day was the first of a great series of storms that brought tremendous rain to California. Our early March plantings were also very successful though will need a bit of supplemental irrigation to thrive. This work is part of a much larger Arboretum project focused on the conservation of central coastal rare plant communities. Stay tuned!



Austin Robey and Tim Forsell roped in and planting at Pt. Sur

Relearning Garden (cont'd - p. 1)

of plants, and the plant habitats that exist throughout the central coast of California. We will be incorporating what is known as traditional ecological knowledge (TEK) and traditional resource environmental management (TREM) into the garden to produce the best resources for which to harvest and utilize.

As an educational component of the Relearning Garden we have started the 'Work & Learn Gatherings'. These gatherings happen about once a quarter (3 times a year) and are meant to create a community event and learning activity. On these days, generally a Sunday, tribal members and members of the Arboretum community gather in the morning and work for a few hours in the garden, removing invasive weeds, planting native plants, and participating in nursery work. We then share a lunch together followed by a learning session in the afternoon. The learning sessions are a way to get people's hands back on the plants and show them that they are more than horticultural or botanical specimens, but can be used as resources to create various products from baskets to salves. With the help of our volunteer teachers, Ken Clarkson, Jim Keller, Anna Meredith and tribal member Eleanor Castro, we have taught fire making, pine needle basket weaving, redwood bark baskets, and jewelry and salve making.

Our work with the Amah Mutsun also takes us north to the historic village site of Quiroste, now a 220 acre cultural preserve

within Ano Nuevo State Park (est. 2009), where we are helping to create vegetative maps for the area. There is also fascinating archaeological and cultural work happening at the site to reconstruct how the Quiroste people once lived.

And now we travel south to Pinnacles National Park where we are working with the Tribe and Pinnacles Park staff to reincorporate traditional management techniques back into two native plants, white root sedge (*Carex barbarae*), and deergrass (*Muhlenbergia rigens*) so that these plants create quality resources for California Indian basketweavers. Without these traditional management techniques the sedge and deergrass would not produce as abundant or quality products for the basketweaver. It really calls several questions to my mind: 1. What is ecosystem or plant health? The health of a plant or

ecosystem will differ when it is utilized as a resource; and 2. What is the correlation between modern day restoration practices and the pre-European management of land for productivity of resources? When we start looking at native plants as resources to be utilized it creates a different paradigm of management, not just mere hands off conservation or preservation, but physical management for resource health, abundance, and quality materials.

Indigenous knowledge of environmental management is relevant because much of what was first 'discovered' here in California was not wilderness, it was not untouched by people. California's landscapes were shaped by the California Indian's management of resources and what was first seen here by the Europeans were actually gathering grounds and a tended wilderness, tended in such a way to yield the most productive harvests of resources. Using indigenous traditional ecological knowledge can help us restore the biodiversity of California to healthy and resilient plant populations while also creating a new paradigm in which we have a working relationship with nature.

To learn more about the Amah Mutsun Relearning Garden, or associated projects with the Amah Mutsun, and how you can get involved please contact Rick Flores at rflores@ucsc.edu.

- Rick Flores



Work & Learn Gathering. Photo by Rick Fores, UCSC Arboretum "outback" Native Area, Spring 2012

calendar of events

Spring 2013

april

EVENING LECTURE

Friday, April 12
7:00 pm

SOD BLITZ: Communities Coming Together in the Fight Against Sudden Oak Death, with Dr. Matteo Garbelotto

Dr. Garbelotto's talk will be focused on teaching how to correctly identify symptoms, how to correctly collect plant materials using the designed collection packets, and where to go to maximize chances of finding the disease while providing new information. More information on this and other SOD Blitz activities can be found at the www.sodblitz.org.

CALIFORNIA NATIVE PLANT WEEK

April 14-21

Native Plant Tour. Sunday, April 14 at 10 am. Tour of the native plant garden, with emphasis on plants that may be available at next Saturday's sales. Led by Rick Flores, Curator of Native Plants. Meet at the Gift Shop.

NATIVE PLANT WEEK SPECIAL SYMPOSIUM: GARDENING WITH CALIFORNIA FLORA

Wednesday, April 17
7-9 pm in the Horticulture Building

Speakers include Brett Hall and others. See Arboretum and CNPS websites. Co-sponsored with CNPS.

SPRING PLANT SALE

Saturday, April 20
10-noon Arboretum Friends and CNPS members only
Noon-4:00 everyone welcome.

Memberships available at the Plant Sale Entrance, Arboretum Eucalyptus Grove.

FRIENDS OF THE ARBORETUM BOARD MEETING

Wednesday, April 24
4:30 pm. Hort 2

CALIF. NATURALIST PROGRAM AND RAY COLLETT RARE AND EXTRAORDINARY PLANTS LECTURE SERIES PRESENTATION

Wednesday, April 24, 2013
7:00pm to 9:30pm

"California: An Eco-regional Tour" by Todd Keeler-Wolf (This event is a class lecture we are opening to the public. Please bring healthy snacks to share at intermission.)

5TH ANNUAL SAVE THE FROGS DAY!

Saturday April 27

SCHEDULE:

4:30-5:00 pm: Event opens, come wander the Arboretum grounds and get comfortable.

5:00-7:30 pm: Presentations and Frog Art Exhibit

7:30-8:30 pm: Frogging Expedition to the Arboretum Pond, where we will search for newts and frogs (bring a headlight or flashlight if you have one).

The Mission of Save the Frogs organization is to protect amphibians population and to promote a society that respects and appreciates nature and wildlife. Presentations, discussions and tours will take place. Details will emerge shortly on both the Arboretum website (arboretum.ucsc.edu/calendar) and Save the Frogs website (www.savethefrogs.com/index.html).

may

FIRST SATURDAY TOUR

Saturday, May 4
11 am

1st Saturday of every month, free with admission. Meet at Norrie's at 11:00 am.

COMMUNITY DAY

Tuesday May 7

1st Tuesday of every month. Free admission to the Arboretum.

EVENING LECTURE

Wednesday May 8
6:00 potluck, 7:00 talk

"Stinkbugs are coming! Sociology & sociobiology of an invading species." Jeff Aldrich, Entomologist/ Chemical Ecologist, will describe the history of the discovery of the 'Brown Marmorated Stink Bug' (*Halyomorpha halys* - Heteroptera: Pentatomidae) in Allentown PA in 2000, and its subsequent spread and damage in North America. Also, discovery of the bug's chemical communication system will be detailed, including ongoing commercialization efforts. Finally, results of *H. halys* laboratory experiments bypassing pheromone eavesdropping of native egg parasitoids will be presented. This stink bug species may be coming soon to visit our shore!

EVENING LECTURE

Tuesday, May 14
6:00 potluck, 7:00 talk

"Antarctica Why It Pays to Get Cold to Study Global Warming" by Hugh Powell. This talk is on the Adelie Penguins and their relationship to the food web and to climate. Hugh Powell, Cornell Lab of Ornithology.

FRIENDS OF THE ARBORETUM BOARD MEETING

Thursday, May 23
5 pm

june

FIRST SATURDAY TOUR

Saturday, June 1
11:00 am

1st Saturday of every month, free with admission. Meet at Norrie's at 11:00 am.

POP UP MUSEUM

Sunday, June 2
1:00-3:00 pm

The Arboretum at UCSC and the Santa Cruz Museum of Art and History invite you to a Pop Up Museum on "GROWTH" at the Arboretum..

COMMUNITY DAY

Tuesday, June 4

1st Tuesday of every month. Free admission to the Arboretum.

NATIVE BEES AT HASTINGS

June 7-9

See article on page 7

FRIENDS OF THE ARBORETUM BOARD MEETING

Wednesday, June 26

The succulent group is looking for ornamental pottery pots we can use to make dish gardens ~ all shapes and sizes welcome! They can be dropped off on the right of the driveway towards the back gate where we store our donated plastic pots. Thank you very much!

-Astrid Randall

Native Bees and Pollination Ecology of Spring Wildflowers

Gordon Frankie and Robbin Thorp

Location: UC Hastings Reserve,
Carmel Valley
June 7-9, 2013

During this workshop we will examine selected aspects of the pollination ecology of the Hastings Reserve's spring wildflowers. Field exercises will be used to demonstrate how and when flowers make their pollen and nectar rewards available to pollinators and how pollinators use their adaptations to extract floral resources. Various bee groups will be examined under magnification to observe relevant morphological adaptations. Participants will be instructed on the wide variety of methods that are used to study pollination relationships. Talks will be presented on the topics of pollination syndromes in plants, bee diversity, global pollinator decline, and encouraging pollinators in your backyard environment. Registration fee includes lodging and meals from Friday dinner through Sunday lunch. Most participants will be accommodated in twin or bunk-style beds. Space outside the bunkhouse is also available for camping. Flush toilets and showers are available.

As an added optional bonus, participants may come early Friday, at 1 pm to help Dr. Frankie with the Bee Survey at Hastings. During the Course, we will be using display copies of the Urban Bee Plant Book — Bees



Photo by Dylan Neubauer ©2013. *Eucera* sp. on *Sidalcea malviflora*, Bonny Doon, Ca.

and Their Flowers in Urban California Gardens, by Gordon Frankie, Robbin Thorpe, Rollin Coville and Barbara Ertter, which will be published this year by UC Press.

This course offers a wonderful opportunity to sharpen your naturalist skills! Register with Susie Bower in the main

Arboretum Office (831) 427-2998
For questions and detailed information contact Brett Hall, brett@ucsc.edu
\$300 cost also includes two nights lodging and meals. Limited to 20 participants
Register Now!!

THE ARBORETUM IS STRONGLY ROOTED SUPPORT THE EDUCATIONAL, HORTICULTURAL, CONSERVATION AND RESEARCH GOALS OF THE ARBORETUM!

Yes, I want to give a donation, a gift membership, or renew my Arboretum Associates Membership!

New Member
 Renewal
 Gift Membership*
 Donation Only (no benefits)

Check (payable to **UCSC Foundation**) Check No. _____
 Cash
 Please bill my [] Visa [] MasterCard [] Discover [] American Express
 Card No. _____ Exp. Date _____
 Cardholder's Signature _____
 *Gift from (Name, Complete Address): _____

 Member Name (two names for *Salvia* or above) _____ Phone Number _____
 Street Address _____ E-mail (for occasional reminders) _____
 City, State, Zip _____ Yes, E-Membership*

Membership Levels	
<input type="checkbox"/>	\$45 Calif. Poppy
<input type="checkbox"/>	\$65 <i>Salvia</i>
<input type="checkbox"/>	\$ _____ \$100-\$249 Kauri Circle
<input type="checkbox"/>	\$ _____ \$250-\$499 Erica Circle
<input type="checkbox"/>	\$ _____ \$500-\$999 Banksia Circle
<input type="checkbox"/>	\$ _____ \$1000 or + Protea Circle
<input type="checkbox"/>	\$2500 Life
<input type="checkbox"/>	\$ _____ Donation - without benefits

*E-Membership helps the Arboretum save money by sending the Bulletin to your e-mail address.

The UC Santa Cruz *Arboretum* is a living museum *inspiring* stewardship of the world's biodiversity through research, *education*, and the *conservation* of rare, endangered, and *extraordinary* plants.

Moving? Please let us know the address of your next garden... Thanks

nursery discount program

Arboretum Associates can enjoy 10% discounts on plants (and sometimes on related merchandise) at the following nurseries:

Drought Resistant Nursery

850 Park Ave., Monterey, CA 93940 • (831) 375-2120

Garden Company (plants only)

2218 Mission St., Santa Cruz, CA 95060 • (831) 429-8424

Gold Rush Nursery

3625 N. Main Street, Soquel, CA 95073 • (831) 465-0314

Golden Nursery

1122 Second St., San Mateo, CA 94401 • (650) 348-5525

Hidden Gardens Nursery

7765 Soquel Dr., Aptos, CA 95003 • (831) 688-7011

Ladera Garden Center

380 Alpine Rd., Menlo Park, CA 94028 • (650) 854-3850

NewGarden

2440 Mattison Ln., Santa Cruz, CA 95062 • (831) 462-1610

Pot Stop (pots only)

2360 Highway 1, Moss Landing, CA 95039 • (831) 768-7557

Pottery Planet (pots only)

2600 Soquel Ave., Santa Cruz, CA 95062 • (831) 465-9216

ProBuild Garden Center

235 River St., Santa Cruz, CA 95060 • (831) 423-0223

Sierra Azul Nursery

2660 East Lake Ave., Watsonville, CA 95076 • (831) 763-0939

Succulent Gardens (plants only)

2133 Elkhorn Rd., Castroville, CA 95012 • (831) 632-0482

And, of course,

Norrie's Gift Shop & Nursery
at the Arboretum.

Printed with soy inks on recycled paper

The Arboretum is open daily from 9AM-5PM.

Norrie's Gift Shop & Nursery is open daily 10AM-4PM

The Jean & Bill Lane Library is open Wed-Sun 12PM-3PM.

Visit the Arboretum's website at: arboretum.ucsc.edu

For information, or if you have any disability-related needs, call (831) 427-2998 or fax us at (831) 427-1524.

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Arboretum

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