



Bulletin of the UC Santa Cruz Arboretum & Botanic Garden

NEWSLETTER FOR ARBORETUM MEMBERS & FRIENDS

ARBORETUM.UCSC.EDU / ARBORETUM@UCSC.EDU

VOLUME 43, ISSUE 3 WINTER 2019



South African Garden



Australian Garden



New Zealand Garden



California Native Garden



Aroma / Succulent Gardens



Butterfly Garden



MLK Day of Service January 21 was a gratifying sign of public support for the Arboretum. It was a sunny, warm winter day and everyone seemed to be enjoying the “work.” A huge thank you to the over 50 community members who helped clear and weed pathways and plant seedlings.

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MARK YOUR CALENDAR









*Spring Plant Sale:
Saturday, April 13*



*National Public
Gardens Week:
May 13-19*

Arboretum Projects for 2019

-  Complete renovation of the nursery growing areas and greenhouses.
-  South Africa revitalization: Along with extensive pruning and re-establishment of old specimens, we are working on the installation of a maze, with walls of towering Cape Rushes (*Restios*); a rock garden featuring Aloes, Euphorbias, and other wonderful succulents; a wedding lawn composed of California native grasses; Pelargonium panels, a vertical display of spectacular geraniums; and a grove of Silver Trees in the Erica beds.
-  California Conservation Gardens: Re-opening old paths around the reservoir and in the oldest part of the garden, continued development of paths and beds in the upper garden, with new boulder fields and a lavish display of Dudleyas.
-  More and better signage, both for way-finding and for interpretation.
-  Plant sales area expansion at Norrie's gift shop.
-  And so much more....

~ Martin Quigley
Executive Director




Calling on friends!



Can anyone donate a used pickup truck to the Arboretum staff? No frills needed, just a reliable vehicle for hauling branches and moving rocks. Long bed would be optimal! Call Martin Quigley, 831.502.2314

Volunteer Goals for 2019 & Beyond

-  New opportunities: More volunteers will be brought onboard as the Tour Guide and Garden Docent programs are revived and refreshed to meet the needs of our community—currently, requesting a tour requires filling out a wait list form, with wait times exceeding several weeks. Having more tours is a must.
-  Updated Handbooks: Working with our expert volunteer tour guides, staff, and Board members, we are developing a Volunteer Handbook and a Docent Manual.
-  Expanded Training: A pilot training program for current volunteers interested in becoming a docent will be offered in late March, and pilot training for new tour guides will start this summer.

As volunteer Friday Sweeper and current Board member, Bill Ruskin put it, "*Docents are needed to help demystify the place.*"



With spring around the corner and its inevitable abundance of growth (weedy and desired), the Arboretum is seeking more helping hands. Consider joining one of our many wonderful gardening groups or assisting at spring special events, from the Spring Plant Sale to Hummingbird Day. Visit the Volunteer webpage for detail on all 15 different volunteer opportunities and a link to the application form.

~ Katie Cordes
Volunteer Program Coordinator



Jean H. Langenheim's Extraordinary Career



"I am a plant and evolutionary ecologist and also taught ethnobotany, the relationships between people and plants. You could say I've had an ethnobotanical relationship with the Arboretum since its beginning."

Jean H. Langenheim, UCSC Professor Emerita Ecology and Evolutionary Biology, is nationally and internationally recognized as a trailblazer in the fields of plant sciences and ecology. Though she once revealed that "being a woman" was the greatest obstacle in establishing her career, her exceptional skills, efforts, and preparedness led to many "firsts" as a woman, starting with academics: at the University of Minnesota the only female PhD student chosen to work with W.S. Cooper, a leading plant ecologist and geobotanist; at UCSC, the first woman hired in the natural sciences (1966-72) and first woman promoted to full Professor (1973). Over the next two decades, she was the first woman president of the Association for Tropical Biology (1985-86) and of the International Society of Chemical Ecologists (1986-87) and the second woman elected president of the Ecological Society of America (1986-87) and the Society for Economic Botany (1993-94). A renowned expert in her field and author or co-author of over 130 research articles, she has been offered lectureships around the world, from Brazil to Australia, and awarded prestigious honors, including in 2006, at the age of 81, the Fellow's Medal, the highest research award given by the California Academy of Sciences, and a Centennial Award from the Botanical Society of America.

Interested in natural history since childhood, Langenheim focused her graduate studies on plants and geology, specifically the physiography and plant succession of a large earthflow near the Rocky Mountain Biological Laboratory. Subsequently, she did her Doctoral dissertation on a large area of sub-alpine and alpine vegetation between Crested Butte and Aspen. Both of these studies provide data for current research on the changes during 65 years in the composition of plant communities in the western Colorado Rocky Mountains.

In 1954, she became a Research Associate at UC Berkeley and interacted with botanical groups

in the Bay Area whose ideas contributed to the concept of Population Ecology.

In 1962 she relocated to the east coast and became a Research Fellow at the Biology Department at Harvard and a Scholar at the Radcliffe Institute for Independent Studies. Following her work there with eminent paleontologist E.S. Barghoorn authenticating the plant source of amber, she started looking into why plants began to produce resin about 300 million years ago, coinciding with the evolution of trees in a tropical environment. That question inspired her research for many years to come, including periods spent in the Brazilian Amazonian rainforest basin.



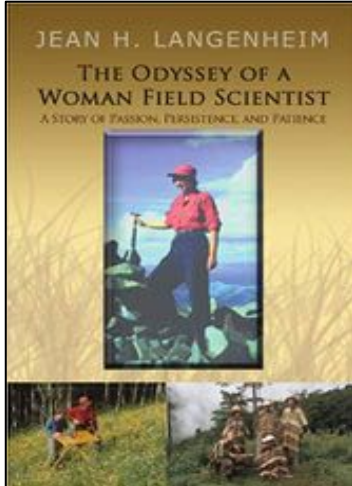
Returning to California in 1966 at age 40, Langenheim was hired at UCSC as an assistant professor in biology, a late bloomer some said but, as she saw it, "always an active one." She was a founding fellow of Adlai E. Stevenson College and co-taught with Kenneth Thimann an extremely popular botany course titled "Plants and Human Affairs," which included coursework at the Arboretum. Langenheim also played an important role in the early establishment of graduate studies and later became Chair of the Biology Department.

Her love of teaching extended to mentoring over 40 graduate students, her "surrogate family," many with whom she remains in close contact and who helped plan both her 75th and 90th birthday celebrations. A fierce supporter of women in science, her advice to those just beginning their careers was "follow the three P's: passion, persistence, and patience."

Though officially retired in 1994, Langenheim continued to supervise graduate students, remain active in research, and serve on UCSC Academic Senate committees. And she continued to add to

Langenheim-- From p. 3

her long list of publications: several major syntheses of research on amber and chemical ecology; the 2003 definitive reference book *Plant Resins: Chemistry, Evolution, Ecology, and Ethnobotany*, which highlights her interdisciplinary perspective; and her 2010 memoir, *The Odyssey of a Woman Field Scientist: A Story of Passion, Persistence, and Patience*,



which integrates the major historical events and changes in the status of women, in both the sciences and in general, that have occurred during her career. Today, she often attends lectures and events on campus and at the Arboretum and makes time to chat with colleagues and friends. Langenheim has generously supported UCSC and the Arboretum in ways too numerous to list, but, along with her time, energy, and enthusiasm, a few of her noteworthy gifts include a graduate fellowship (2004) and an endowed chair position (2006) in Plant Ecology and Evolutionary Biology, and an endowment for a program that strengthens research and teaching between the Arboretum and plant sciences faculty and students. UCSC and the Arboretum can't possibly thank Langenheim enough but will continue to do so: in October 2018, UCSC honored Langenheim for her many contributions to plant sciences by naming the roof greenhouses of the Thimann Labs the *Jean H. Langenheim Greenhouses*.



~ Linda Lane
Bulletin Editor/Writer



When a friend first took me to the Arboretum eight years ago, she referred to it as a hidden gem and her favorite place on campus. Since she first shared her special place with me those several years ago, I have added many other reasons for valuing the Arboretum. As a life-long learner of California native plants and Traditional Ecological Knowledge, I have relied greatly on the knowledge and insight of Rick Flores, Director of Horticulture, and on the resources found in the California Native Plant Garden. The California Naturalist Program helped me to grow as an environmental educator and introduced me to incredible science leaders and stewards. As a Board Member, I get to return to the Arboretum week after week and it feels like entering an oasis each time. For me, the Arboretum is a community square where the most thoughtful advocates of the natural world come together to share their passions and do good work.

~ Marisa Gomez
Friends Board Member
Education Coordinator, SC Museum of Natural History



Board Member Openings

The UC Santa Cruz Friends of the Arboretum Board has several current openings. The Board encourages and values input from members, advocates for the Arboretum, and facilitates committees and groups that focus on fundraising and achieving strategic initiatives. 2019 goals include the following: celebrating National Public Gardens Day with special events, collaborating on a new Santa Cruz Garden Tour fundraiser, reviving a Garden docent program, increasing revenue for Hummingbird Day, and supporting South African Garden renovations. Anyone interested in joining the Board can start the process by completing a short [application](#) on the "Meet the Board" webpage. Contact Amber Burke (aburke1@ucsc.edu) with any questions.

Updates on the Nursery & the Spring Plant Sale

Nursery Improvements

A lot is planned for the Nursery in the coming weeks. Our large mist house, called the North Arch, is getting an overhaul: cooling pads brought back on line, sensor-deployed shade curtains installed, and other repairs to help optimize the propagation environment. Since the cutting mist benches are almost completely full—in fact we have reached capacity on the water pressure for mist—some prioritization and culling will be necessary. The South Arch facelift will come later, allowing us both to expand the plant palette for sales and to better conserve documented exotic collections.

Our outdoor growing area across the road has been largely cleared for numerous improvements: resurfacing, bench repair, additional benching, new shade cloth, etc. The clearing of vegetation from the entire periphery should lessen the annual devastating rodent invasions that destroyed close to 400 1gallon plants after two years in production this fall.

Our stock plant collection is in the process of renewal, pruning, repotting, and area cleanup with new weed cloth installed by Linda McNally and her crack shot crew, a vast improvement for the plants and us.



I am donating my personal seed collections resulting from yearly explorations of the Western Cape over a twenty year period. I have been able to sow about 120 taxa to date with excellent germination in the range of ten years refrigerated storage. Since the optimum burning frequency in Western Cape Fynbos, my focus, is about

seventeen years, I would expect the majority of my collections are still quite viable.

Plant Sales Expanded

We will be gradually changing strategy with respect to plant sales, shifting emphasis from two large annual sales to more plentiful and consistent stocking of Norrie's, perhaps changing the name to "Norrie's Gift Shop and Nursery," just as we changed the name of the Arboretum to "Arboretum and Botanical Garden." We will need volunteer help with this, so I have submitted a position description for a volunteer Norrie's Plant Sale Manager to work with me on the transition. Anyone interested please contact me or Volunteer Program Coordinator, Katie Cordes.

Planned Spring Plant Sale Offerings

After experiencing large losses to herbivory in the nursery, I want to say that crop failures and losses occur and can't be predicted, so the plants I am highlighting below may not all make it to the sale, although we are doing everything we can to bring sale crops to fruition, without neglecting our scientifically documented collections that are in need of extensive renewal.

My predecessor, Helen Englesberg, left us with a large inventory of these remarkable plants: *Leucospermum cordifolium*, straight species, cultivars, and hybrids, *L. glabrum*, and *L. patersonii*. Some cultivars are already opening flowers, so we are stocking small numbers weekly at Norrie's. I suspect we will still have good numbers for the sale, but a warm spring could bring an early peak bloom. There should also be small numbers of *Protea* species, cultivars, and hybrids (see photos p. 6): *P. repens*, *P. neriifolia*, *P. compacta*, and *P.* 'Pink Ice.' We are working hard to maintain the diversity in this genus, bringing you *P. aurea*, *P.* 'Clark's Red,' *P.* 'Red Baron,' *P.* 'Big September,' *P.* 'Cardinal,' and perhaps a few *P.* 'Empress' looking to fall and beyond.

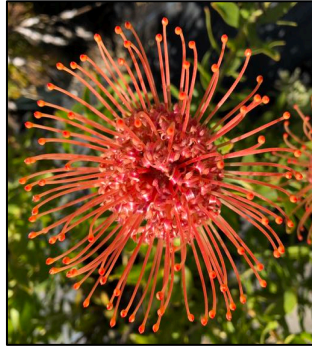
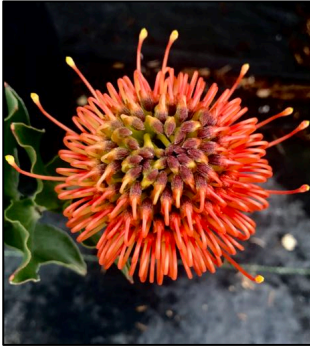
Stay tuned for more plant highlights as our certainty about Spring Plant Sale offerings increases, closer to the April 13 sale.

~ Martin Grantham
Nursery Manager

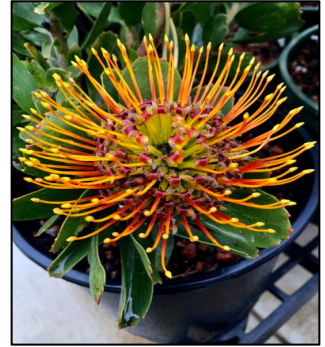


Spring Plant Sale Photos

The following *Leucospermums* and *Proteas* should all be available at the Spring Plant Sale but not all specimens may be in full bloom as shown in the photos below.



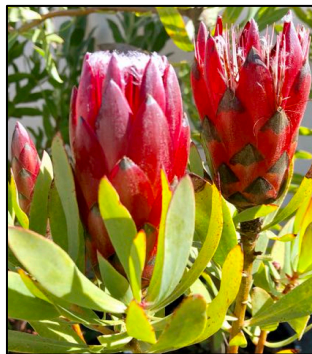
Leucospermum corifolium, Cultivars/Hybrids (bud, bloom)



L. glabrum (bud, bloom)



Protea 'Cardinal'



P. 'Clark's Red'



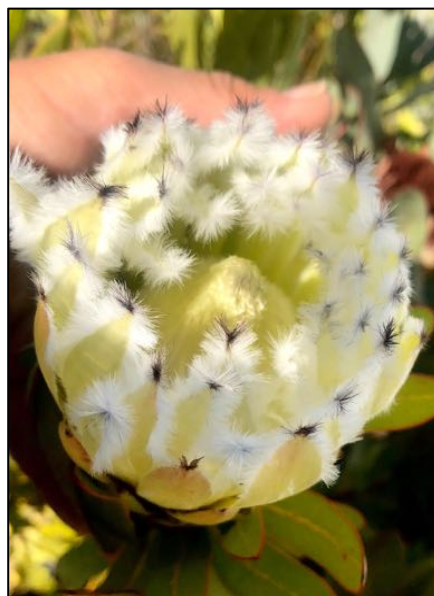
P. 'Red Baron'



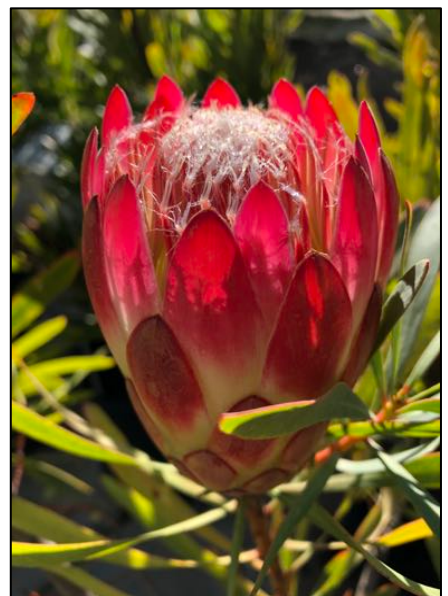
P. 'Empress'



P. nerifolia 'Big September'



P. nerifolia 'White Owl'



P. repens

The Arboretum & The Center for Plant Conservation

After several decades building rare and extraordinary collections with high conservation value and many years developing a conservation focus in our Native Plant Program, the UC Santa Cruz Arboretum and Botanic Garden was inducted into the Center for Plant Conservation (CPC) (<https://saveplants.org>), beginning October 1, 2018. This event accelerates our commitment to conservation initiatives throughout our programs.

CPC includes 56 arboreta, botanic gardens, and conservation organizations as well as a number of research, corporate, and network partners. In California we join the California Native Plant Society, Santa Barbara Botanic Garden, UC Berkeley Botanic Garden, San Diego Botanic Garden, Rancho Santa Ana Botanic Garden, and San Diego Zoo Global, which hosts CPC. Its expert staff continually strengthening the collaboration efforts and capacity of CPC members to perform on-the-ground conservation and research “to save plant diversity for future generations.”

The UCSC Arboretum’s *vision* in conservation is to do our part to enable evolutionary processes to continue with as much biodiversity as possible. This means protecting and conserving species, lineages, genes and genotypes. Protecting ecosystems is essential, including wild and semi wild ecosystems and ecological islands in urban areas. Creating biodiverse gardens that attract wild life (including insects) is also very important.

Our conservation efforts are primarily focused on California and its central coast ecosystems though many of our worldwide collections are also rare or endangered in the wild. We have an active collecting program and seed bank. We obtain collecting permits for rare species, and, after processing, we share them with long-term



Farinosa planting, Monterey County

conservation seed banks in the CPC and CaPR (California Plant Rescue) networks. We maintain our active (usable) seed bank in the Arboretum as well. Our conservation work stretches to participation in plant rescue operations; teaching students botany, horticulture, and fieldwork related to conservation stewardship; and assisting the state and CNPS with mapping and classification of rare natural plant communities. In joining CPC, the Arboretum brings decades of collection building, horticultural experience, and connectivity to the botanical conservation world. We are also fortunate to be associated with UC Santa Cruz research faculty and staff and their field-based programs. The UC Natural Reserve System is a major resource and conservation center throughout California. We are looking forward to being a part of a national effort to practice biodiversity conservation with all the support networks and inherent challenges. Some of the current and planned projects:

- Melinda Kralj, Curator of Collections, is leading the effort to complete the inventory of our plant holdings and incorporate wild collection data into our database. All rare or threatened species that appear on worldwide lists are being specially highlighted.
- Our collections include scores of exceedingly rare species and we are making efforts to share these with other CPC and conservation institutions. Nursery manager Martin Grantham is a phenomenal propagator and is working to safeguard our rare species holdings.



Seed treatments, Pine Hill Reserve rare plants

Continued on p. 8

CPC-- From p. 7

- Many of our new displays will feature conservation themes. These will include succulents, shrub-lands, and forest species.
- We continue to enhance our educational offerings to students and the community through workshops and courses related to conservation, education, and training. California Naturalists is offered in Spring to students and the community, and the Interactive Ecology Internship is offered to UCSC students in the Native Plant Program all three quarters of the academic year. Students learn about California plant diversity, plant collecting, seed banking, and are exposed to several field survey methods and techniques, in addition to working in the California Gardens. We also support graduate and undergraduate research projects and several are

underway.

- Development of the California Conservation Gardens is a continuing major initiative for the Arboretum. We are currently building trails, establishing shrub-lands, creating a large-scale rock garden to display coastal cliff and near coastal rock outcrop species and we are re-establishing the Northern California section within the Conservation Gardens. In the Northern California section, some of our older native conifers will be accessible to visitors.

~ Brett Hall
CNP Program Director



On the Shelf: A Book Review

American Eden: David Hosack, Botany, and Medicine in the Garden of the Early Republic
by Victoria Johnson, Liveright Press, 2018.



David Hosack (b 1769 / d 1835) was a member of the first generation to grow up in the new Republic. His life spanned the Revolutionary War, the formation of the US government, and the rapid rise of the middle classes into the mid-19th century. It was a time of rapid technological change, with inventions from domestic machinery to steam boats to railroads profoundly affecting the way people lived. It was also a time of great advancement in the sciences, and particularly in medicine—not only new treatments for human illnesses, but the rise of internal surgery.

Hosack was educated in the US and went to England and Europe to study surgery. There he saw botanic gardens, both horticultural and utilitarian, and re-kindled his youthful interest in horticulture and plant-based remedies. He recognized that professors of Botany were modern successors to indigenous shamans, midwives, and witches—people whose plant knowledge seemed miraculous to the uninitiated. During his career as a doctor and agent of social change in dynamic New York society, his professional expertise was symbolized by his commitment to building a medical botanical garden that included both imported plants and plants indigenous to North America. His dream was realized in the center of Manhattan Island—and his Elgin garden flourished for several decades (the site is now occupied by Rockefeller Center).

Botany and horticulture—knowing plants, their uses for human benefit, and how to grow them (instead of simply wild gathering)—are cornerstones of human culture and society. This richly layered book places Hosack in the center of a kaleidoscope of political, commercial, educational, cultural, and scientific progress. A fascinating read!

~ Martin Quigley
Executive Director



Notes from A Curator

My first task as Curator of Collections has been to update the inventory and signage of the South African Garden in preparation for Executive Director Martin Quigley's re-imagining and revitalization of that garden. It's going to be amazing!



Thamnochortus cinereous
'Silver Reed' (female)



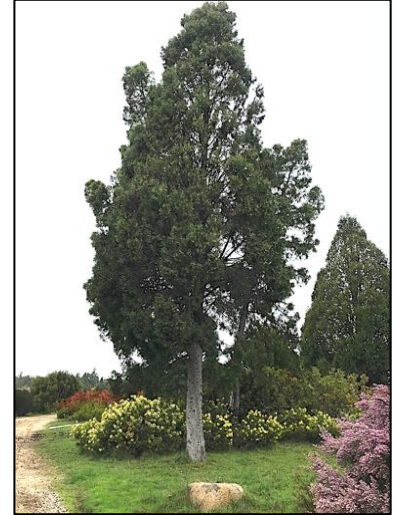
Thamnochortus cinereous
'Silver Reed' (male)

An ongoing challenge is trying to keep up with all the name changes. With DNA sequencing, scientists have been able to dig much deeper, finding how plants have evolved and how different plant species and families are all related. Not just plant names have undergone name changes, but many geographic and country names have changed. I came across an interesting and elucidating article by Nna O. Uluocha about place names in the *African Journal of History and Culture*. Honoring indigenous names for plants and places is desirable where possible. It's a learning process...

A very intriguing discovery was a conifer I have walked by hundreds of times without paying it

I have benefitted from the knowledge of Martin Grantham, our new nursery manager, in exploring this part of the garden. I was able not only to verify the identity of many of our *Restios* with lost tags but also to recognize male and female plants of the same species, and doing that is not possible for every species. The female plants generally have flowers held upright, and form larger structures around the seeds while the male flowers are often pendant. It was nice to be able to sort that out with someone who knows them so well—thanks Martin G.!

much attention. *Cupressus dupreziana* (pictured below) is an extremely rare tree from the Tassili n'Ajjer mountains in the Sahara Desert, a World Heritage Site, African but not part of the South African Collections—a number of conifers were planted in this area of the garden before it was given its geographical designation. There are only 233 specimens of this tree in its native habitat and no new seedlings younger than 100 years old. The ground water where these trees have found refuge is drying up, preventing establishment of new seedlings. Most of the remnant trees are over 2000 years old. Furthermore, according to The Gymnosperm Database, this is the only known plant to reproduce by cloning its male genetic material through a process called male apomixis, in which pollen enters the ovules, but instead of combining with the female cells, divides internally to become a viable seed identical to itself.



Martin Grantham has planted a number of seeds from South Africa, many of which he has personally collected. A fascinating one is *Roridula dentata*, a semi-parasitic plant. Its sundew-like leaves trap and kill insects, but it doesn't have the digestive enzymes to benefit directly from their demise. Instead, it has a close beneficial relationship with assassin bugs that eat the trapped victims. The assassin bug's excrement is then useful fertilizer for the *Roridula*.

So much to learn! I look forward to sharing other tidbits in upcoming *Bulletins*.

~ Melinda Kralj
Curator of Collections



Gallery of Photos



Linda McNally, a certified Master Gardener, began volunteering at the Arboretum ten years ago. In 2015, she was hired as an independent contractor to work in the succulent nursery and gardens and to manage sales of succulents. At the Monterey Bay and San Jose

Succulent Societies' plant sales, she volunteers to help out and, via her company, Home Oasis, sells plants. Her love of cacti and succulents is clearly shown in her own beautiful garden (all photos below) and in the impact she has made at the Arboretum. With the help of her student workers and volunteers, she has transformed the south face of the historic earthen dam above the Aroma Garden and the plantings around the Jean & Bill Lane Library.

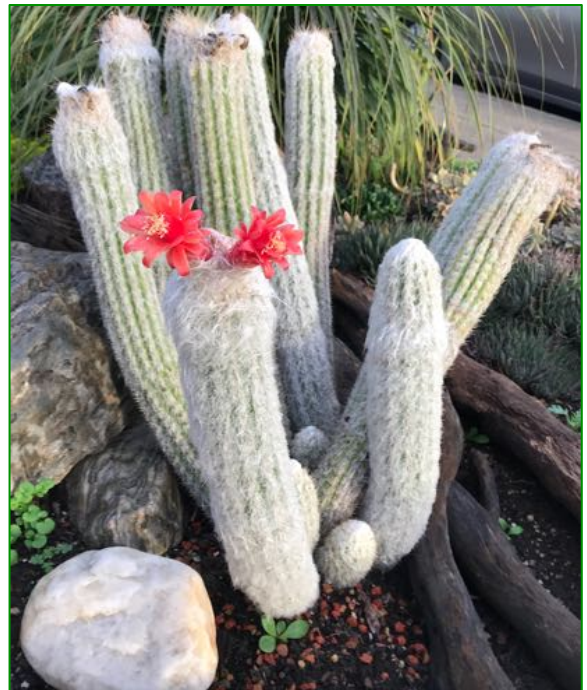
Agave victoria reginae



Sempervivum arachnoides



Oreocereus doelzianus



Neoregalia marmorata / *Dyckia 'Jim's Red'*



Echeveria 'Mauna Loa'



Buy Local: Finding the Perfect Plant



Open everyday and located at 2218 Mission Street, Santa Cruz, the Garden Company is a local, independent, family owned business that celebrated its 30th anniversary in 2016. It's a welcome respite and a world away from busy Mission St. Though it might be small in acreage, it's big on service and knowledgeable staff. Meandering the rows of artfully placed plants, you're likely to spot unusual and hard to find plants that you can't resist taking home. The gift shop contains an array of nature-themed items, ranging from teas and spices to brightly colored ceramics. The Garden Company's website (www.thegardenco.com) includes a link to subscribe to a newsletter, which features gardening tips, local events, coupons, and recipes.



Nurseries with discounts for Arboretum members:

All items

- Gold Rush Nursery, Soquel
- Ladera Garden Center, Portola Valley
- Norrie's Gift & Garden Shop, Santa Cruz
- Pottery Planet, Santa Cruz
- Sierra Azul Nursery, Watsonville

Plants only

- DIG Gardens, Santa Cruz
- Drought Resistant Nursery, Monterey
- The Garden Company, Santa Cruz
- Golden Nursery, San Mateo
- Hidden Gardens Nursery, Aptos
- San Lorenzo Garden Center, Santa Cruz

Arboretum Winter-Spring 2019 Calendar

Check the *News&Events* webpage for any schedule changes and additional Winter/Spring events.

FEB 20 **Board Meeting**—5:00 pm Horticulture II
Wednesday

Ray Collett Lecture Series—7:00 pm
Horticulture II; Jeff Bisbee "California Dreaming: Ceanothus"

FEB 27 **Giving Day 2019**—all day; **South African Garden Party**—5:00 pm Horticulture II
Wednesday

MAR 02 **First Saturday Garden Tour**—11:00 am at Norrie's (with paid admission)
Saturday

MAR 05 **Community Day**— Free admission to Arboretum 1st Tuesday each month
Tuesday

MAR 08-10 **Birding at Dawn**—6:00-9:00 am: an early access opportunity for birders & photographers

MAR 11 **CNPS Meeting**—7:30 pm Horticulture II; Cynthia Powell, Riverside CNPS "New Calflora Tools for CNPS Users"
Monday

APR 02 **Community Day**— Free admission to Arboretum 1st Tuesday each month
Tuesday

APR 06 **First Saturday Garden Tour**—11:00 am at Norrie's (with paid admission)
Saturday

APR 13 **Spring Plant Sale** (Details will be posted under *News&Events*)
Saturday

APR 24 **Board Meeting**—5:00 pm Horticulture II
Wednesday

APR 27 **Home Garden Tour**—10:00 am-4:00 pm; purchase tickets online or at Norrie's
Saturday

MAY 04 **First Saturday Garden Tour**—11:00 am at Norrie's (with paid admission)
Saturday

MAY 07 **Community Day**—Free admission to Arboretum 1st Tuesday each month
Tuesday

MAY 11
Saturday



Hummingbird Day
(Details will be posted under *News&Events*)

MAY 13-19 **National Public Garden Week** (Activities will be posted under *News&Events*)

MAY 13 **Living Trusts Seminar on Gift Planning**—9:30-11:00 am Horticulture II (free)
Monday

CNPS Meeting—7:30 pm Horticulture II; Chris Lay, Director of UCSC Kenneth Norris Center for Natural History

MAY 22 **Board Meeting**—5:00 pm Horticulture II
Wednesday

The Arboretum is a Living Laboratory

Future issues of the *Bulletin* will detail some of the fascinating research being done in UCSC labs outlined below.

Conservation Science & Solutions Lab

Research to enhance the stewardship, understanding, and appreciation of wild ecosystems. Projects focus on terrestrial ecosystems and communities, links between biodiversity and human well-being, and the implications of interacting global and regional environmental changes. Example questions:

- ✚ How have California desert plant communities changed over half a century?
- ✚ How can riparian restoration in California maximize benefits to coastal stream communities and their users?

John N Thompson Lab: *Coevolution and the Organization of Biodiversity*

Research on developing a robust framework for the science of coevolutionary biology. Projects attempt to understand how the process of coevolution contributes to the organization of the earth's biodiversity.

Example questions:

- ✚ How does coevolution shape species interactions across space and time?
- ✚ What ecological and genetic conditions allow interactions to persist?
- ✚ How does coevolution shape webs of interacting species?

Kay Plant Evolution Lab

Research centers on understanding diversification mechanisms of flowering plants, including adaptation and speciation. Focus is on natural plant populations, from both tropical and temperate systems, to understand the ecological and geographical settings in which speciation occurs and the genetics underlying those adaptations. A special interest is in plant adaptations to pollinators and to the edaphic environment, and the role those types of adaptations play in plant diversification at the population, species, and whole-flora levels. Current projects include the study of Neotropical spiral gingers (*Costus*), *Clarkia concinna* and *C. breweri*, the primrose family, and California flora in general.

Parker Lab: Ecology and Evolution of Plant Populations

Research on a range of questions at the intersection of ecology and evolution, embracing both basic and applied systems with a focus on understanding the causes, consequences, and dynamics of biological invasions, especially the effects of species interactions—e.g., herbivory, disease, pollination, and microbial mutualisms—on plant invasions. The program has four major branches: 1) the biology of invasive species, 2) ecological and evolutionary dynamics of novel plant-pathogen interactions, 3) anthropogenic influences on the evolution of domesticated species, and 4) the conservation of rare plant species in California.

Pitterman Lab:

Research on the structure and function of plants with a focus on vascular tissue. Example questions:

- ✚ What is the adaptive significance of species' functional traits and how can they inform evolutionary ecophysiology of ancient and extant flora?
- ✚ How does physiology relate to biogeography in current and past climates?
- ✚ How will climate change affect California flora and can physiology provide clues to species' range limits?

Arboretum Staff, Board Members, Contacts, & Member Feedback



Martin Quigley
Executive Director



Amber Burke
Development
Director



Brett Hall
CNP Program
Director



Katie Cordes
Volunteer Program
Coordinator



Theresa Milam
Office Manager



Angelica Gomez
AmeriCorps Program
Coordinator



Martin Grantham
Nursery Manager



Rick Flores
Director of
Horticulture



Samantha Spurlin
Plant Inventory
Specialist



Melinda Kralj
Curator of
Collections



Tom Saucedo
Curator of New
Zealand Collection

The Bulletin of the UC Santa Cruz Arboretum & Botanic Garden

Editor: Linda Lane

Photos/Articles:

Linda Lane/Arboretum Staff/Volunteers

Friends of the Arboretum Board Members, 2018-19

Stephanie Nielsen, President
Maura Connolly, Vice President
Julia Cowell, Secretary

Martin Quigley, Campus Representative

At-large Members:

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For the Bulletin's "Gallery of Photos" feature (p. 10), Arboretum staff, members, volunteers, and UCSC faculty and staff are invited to share photographs of favorite Arboretum plants, gardens, birds, or events. Native and Mediterranean-climate plants in home and public gardens or seen while traveling are welcome. Please email entries, along with a "selfie" and brief bio, to Amber Burke (aburke1@ucsc.edu).



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