



Bulletin of the UC Santa Cruz Arboretum & Botanic Garden

NEWSLETTER FOR ARBORETUM MEMBERS & FRIENDS

ARBORETUM.UCSC.EDU / ARBORETUM@UCSC.EDU

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South African Garden



Australian Garden



New Zealand Garden



California Native Garden



Aroma / Succulent Gardens



Butterfly Garden

Springtime in the Gardens



A day in the gardens this time of year is full of surprises, sometimes sunny and hot like a summer day, other times cool and cloudy. No matter the weather, the mornings are full of birdsong, fresh air, and calm energy, all great for exploring what's blooming—and, if you find a bench in the gardens and sit still for a few moments, the resident animals will start to emerge. It's *also* a great time to put on your gardening gloves and volunteer to help keep our gardens gorgeous and thriving. If interested in joining us, visit the **Volunteer** webpage to view opportunities available and send in the online application.

—Katie Cordes,
Volunteer Program Coordinator

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Spring Plant Sale Photos: Before & During



Arboretum News

Work has already begun on extending the plant sales area behind Norrie's Gift & Garden Shop, which will enable us to display a much larger quantity of plants year round. The new plant display will add about 800 square feet of area, and plants will all be kept on new nursery tables, rather than on the ground. There will be a railing on the driveway side, partially replacing the large and rotting timber planters now being used to display the plant pots. Around the whole new pad, new perimeter posts and awnings will match the existing Norrie's overhangs. The entire area will have a low-visibility deer fence, as well, to add some security.



In other news... the South African shrubberies are in glorious spectacle—Protea and Leucospermum are flourishing after the wet winter, and many other less-known species have joined the display. If you visit within the next few weeks, you'll also enjoy the Peruvian Puya (right), now in full bloom, and with a hauntingly unique color you'll never see anywhere else.

Staff and Board Updates: Goodbyes & Greetings!

Julia Cowell and Bill Ruskin are leaving the Arboretum Board in June 2019. We can't thank them enough for their too-numerous-to-count contributions in making the gardens a more beautiful, healthier, and welcoming place.

When I first met Julia Cowell, then Board President, we discovered we were both from Chicago so had much in common. During her time on the Board, she has been a true advocate for the Arboretum, finding new ways to connect with donors and revive events. As examples, she invited water colorists to participate in Hummingbird Day (which significantly raised revenues that year), and over the years hosted numerous events at her home, both to welcome new donors and thank contributors—this spring she held a gathering for the homeowners who participated in the Home Garden Tour. Describing herself as "mother bear," she is always there to encourage us when times are hectic and challenging, and she has seen the Board through many transitions. I learned from Julia not only fund- and friend-raising strategies but also leadership skills. She will be greatly missed on the Board, but I plan to see her often on campus or at the gardens.

Bill Ruskin has been a tremendously productive Board member, involved in all aspects of the Board's directives and mandates. One of his priorities has been ensuring both member and stakeholder feedback is solicited before we finalize our ideas and plans. He has been very active in reinvigorating the docent program—as he sees it, "Docents are needed to demystify the place." To support that view, he regularly volunteers as a docent as well as a Garden Sweeper. I especially recall his contributions to researching the feasibility of the amphitheater renovation; as part of that project, he took us on a field trip to the new Shakespeare Santa Cruz facility, which was enjoyable and instructional. This spring, he helped ensure the success of both the Home Garden Tour and Hummingbird Day. We will miss Bill's quiet and amenable demeanor. He always puts a smile on my face, and I look forward to seeing him in the gardens as a docent.

In the fall, Maura Connolly and Alison Tassio will also be leaving the Board. A September membership meeting will announce the new board members and the new slate. Stay tuned for updates.

-- Stephanie Nielsen
Friends of the Arboretum Board President

This spring we bid a very fond farewell to **Theresa Milam**, who, as the Arboretum office manager, helped us through stressful times with her warmth, positivity, and competence. Theresa always goes above and beyond, and is a friend to all. “I miss her already,” says Katie Cordes, Volunteer Program Coordinator, “as a friend and as a colleague, as an event-coordination-partner-in-crime, as a foodie with whom to share sardines, cheeses, and crackers, and as an office manager who could multitask like no one else I've ever met. Her hard-working professionalism, thoughtfulness, and kindheartedness continue to inspire us.”



Theresa and her husband will soon be relocating to the Sierra foothills to be nearer to her cherished grandson, and she and her husband, Adam, will be travelling extensively. Meanwhile, she is busy preparing to rent their Watsonville house and enjoying some well-earned relaxation. Thanks again, Theresa, for your devotion to the Arboretum!



The Arboretum warmly welcomes **Yelcka Huaynalaya** as our new office manager. She started her job May 13 and will be overseeing budgets, purchases, and the general operations of the gardens. Yelcka has worked at UCSC for over 20 years and comes to us from the Financial Affairs division where, among other things, she ran the Purchasing help-line, which is a testament to her patience and people-skill.

Taelor Whittington, student intern extraordinaire, recently “graduated” from the Arboretum after several years of working in the nursery. She started as a Garden Assistant under Helen Englesberg and continued on when Martin Grantham became Nursery Manager in 2018. Taelor was his primary helper, putting in 30 plus hours per week, and he can’t say enough good things about her: *“She has an incredible work ethic; quickly learns each new task assigned; and, with her big smile and calm demeanor, is willing and able to take on and deal with just about anything and anyone.”*



The list of nursery duties Taelor successfully performed was long and varied: ensuring the vast number of plants both outside and in the greenhouses were amply watered and continually weeded; daily grooming of rows and rows of propagation flats in the Mist House; refreshing and repotting the stock plants to ensure healthy cuttings; and helping to select plants ready to sell then artfully arranging them at Norrie’s Gift & Garden Shop. She always said her favorite “job” was seeing the tiny seedlings grow into big, beautiful, healthy plants, so it is ideal that her new position is working with native plants and learning about re-vegetation. The Arboretum staff and volunteers who knew Taelor wish her the very best in her new career and invite her to come back and visit often.

Arboretum Resident Female:
Anna’s Hummingbird

Migrating Male:
Allen’s Hummingbird

photos by Ferd Bergholtz



New Arboretum Board Members



Ferd Bergholz

A few years ago, Ferd took his camera to the Arboretum and soon became a volunteer photographer: his photos of plants, birds, and events are on the website and in the *Bulletin* newsletter. He also enjoys wood-working and several of his artistic creations are featured at Norrie's Gift & Garden Shop. As a Board member, he plans to focus on ensuring new visitors enjoy their time exploring the Arboretum.



Elizabeth Evans

A Santa Cruz resident and UCSC alumna, Elizabeth has spent much of her career inspiring others to value nature as an interpretive park ranger and educator in California national parks. Recently, she developed educational programs for the Santa Cruz Museum of Natural History and currently works for Santa Clara County Parks as an Interpretive Program Supervisor. As a member of the Board, she is most interested in supporting community engagement through education and interpretive activities and events.



June Heaton

June developed a love for the outdoors from her father, who frequently took her hiking, fishing, and foraging. Recently, she was a sales associate at the American Cancer Society's Discovery Shop. Both her childhood and recent activities drew her to the Arboretum. As a current volunteer at Norrie's Gift & Garden Shop, her experience and knowledge of the Arboretum bring valuable insight to the Board.



Pam Swain

A long time Santa Cruzan, Pam became interested in plants at an early age. After she and her husband moved to Bonny Doon and discovered most of the plants on their property were from the Arboretum, they became members and began adding new plants to their collection. With her 25 years of expertise in project leadership and global engagements, she is eager to start working on tasks with other Board members and to be able to give back to the community.



The UC Santa Cruz Friends of the Arboretum Board has several Board member openings. The Board advocates for the Arboretum, collaborates with the Arboretum leadership and the community to meet the organization's objectives, and facilitates committees and groups that focus on fundraising and achieving strategic initiatives. On-going 2018-19 goals include reviving a Garden docent program 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.

What's New in the Nursery? *Watsonia* Hybrids!

Watsonia, a member of the Iris family (subfamily Crocoideae), was named after British botanist Sir William Watson in the early 1800's. Though native to southern Africa, the plant soon became a garden staple in Australia and, by the 1940's, was grown world-wide. Though *Watsonia* prefers a temperate winter rainfall climate, if taken indoors or protected during harsh winters, it can flourish in cold weather, too.

Gardeners who favor *Watsonia* do so because of its abundant stalks of brightly colored blooms—every hue except blue and yellow—and because of its stately height reaching up to 7 feet tall. Others, however, tend to find the larger species intimidating, too big, especially for today's smaller gardens, and often too invasive: plants must be thoroughly dead-headed each season to prevent unchecked spreading.



Martin Grantham, Nursery Manager at the Arboretum, appreciates *Watsonia* but chooses to specialize in propagating only the underrepresented and undeveloped dwarf varieties; those with flower spikes as short as 6-8 inches are appropriate for any size garden and allow gardeners to fill a planting space with an interesting variety and profusion of colors. At right is the “potential selection cart” of *Watsonia* hybrids Grantham brought to the Arboretum for experimentation. The plants include F1 and F2 hybrids of the following species: *W. coccinea*, *humilis*, *laccata*, *rogersii*, *spectabilis*, and *tabularis*.

Several characteristics of *Watsonia* are factors in determining which two specific plants Grantham will cross-breed:

- ❖ do flowers densely congregate or have distance between them
- ❖ are the flowers shaded or uniform in color (see photo below)
- ❖ does the flower hang down, rise up, or face forward
- ❖ is the plant broad and stocky or small and delicate
- ❖ are the petals narrow and pointed or round and full
- ❖ are the pollen (stamen) colors dark or pale
- ❖ do flower stalks grow symmetrically up both sides or spiral around the plant



Flower traits: shaded vs uniform coloring

Though Grantham definitely prefers flowers that face up or forward, his primary focus is producing diversity—the more flower shades and shapes and the more foliage forms and sizes, the better! Currently he is enthused about unexpected flower colors of some of his recent hybrids: a new deep purple, a unique shade of lavender, and a subtle bi-color. He is especially interested in cross-pollinating a *Watsonia hystera* that is producing red blooms on a stem completely devoid of leaves to see what new variations might occur.

Many gardening gurus see themselves as the creator of new hybrids, but Grantham has an artistic point of view: he is *only revealing* the genetic potential hidden within a species of plant, allowing it to express itself in bringing forth concealed combinations of style, color, and shape. Readers can look forward to seeing the results of Grantham's artwork later this year as *Watsonia* plants become available to purchase at Norrie's Gift & Garden Shop and at future Arboretum plant sales.

Calling on Friends!

Linda McNally, who is in charge of the Succulent Garden, enjoys her work, especially when tending to plants at the top of the hill where she has spectacular views of the Arboretum gardens and the ocean. She'd like visitors to have the same experience but in a more comfortable, relaxed setting so



came up with the idea for a shade structure, similar to the one recently installed near the three Future Garden domes (at right). As you see, she has already cleared and prepared the site so now only the funds are needed to start



the building phase. If you would like to help McNally realize her vision, any contribution to this project would be greatly appreciated. To donate or for questions, contact Executive Director Martin Quigley (831.502.2314, maquigle@ucsc.edu)



Calling on Photographer Friends!

For the *Bulletin's* **Gallery of Photos** feature (see p. 8), you are invited to share your photographs of favorite Arboretum plants, gardens, birds, or events. Native and Mediterranean-climate plants and succulents in home and public gardens or those seen while traveling are welcome. To be featured in the next *Bulletin* issue, by September 1, please email 4-6 photos, along with a brief bio and "selfie," to Amber Burke (aburke1@ucsc.edu).

And while at the Arboretum... explore the venues available for weddings or upcoming social events or business meetings—the beautiful gardens or spacious meeting hall could be the perfect setting. Visit **Rentals** on the website for forms and additional detail on indoor and outdoor locations.



The Australian Rock Garden & Picnic Area (above) has a capacity of 150 guests, and the smaller South African Garden site easily accommodates 80 people.



The Horticulture II Meeting Hall is idea for indoor events; it comfortably holds 125 people for lectures and 85 people in a classroom or sit-down meal format.

Plant Q & A: What Constitutes a “Family”?

Adapted from the Kew Royal Botanic Gardens report titled *State of the World’s Plants 2017*.

What constitutes a family differs between major groups of organisms—e.g., birds versus plants—and, for most groups, what is recognized as a family depends largely on tradition.

With plants, the writings of the ancient Greeks, such as Theophrastus, show they recognized the existence of sets of plants with a common design, such as orchids, legumes, and daisies. A “family” was therefore a rank of classification that associates genera sharing some set of what are considered to be the more important or significant features.

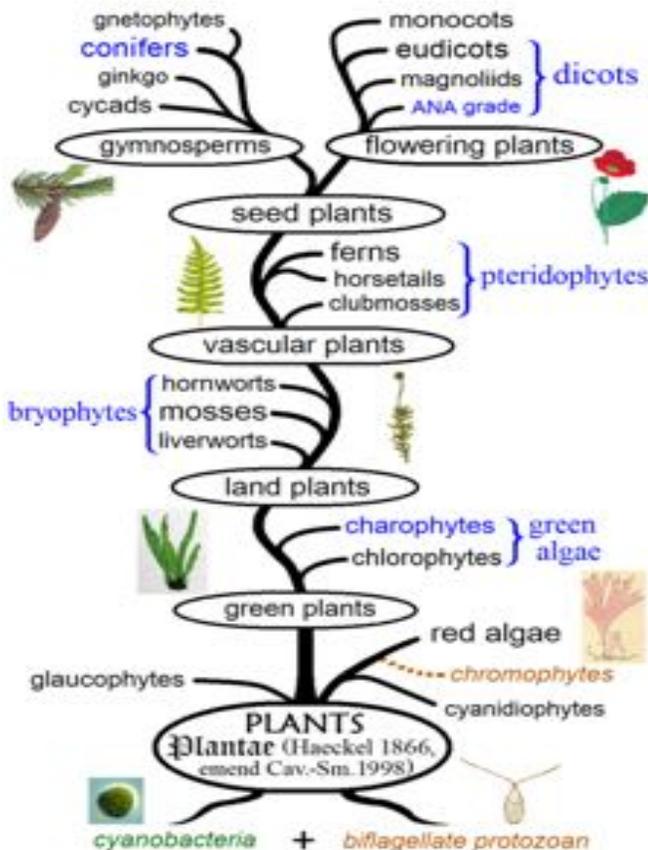
Some families have been redefined when it is discovered through morphological and/or molecular DNA studies that one family is embedded within another; in certain circumstances they are merged, but many plant families have a long history of recognition so resist a change in classification.

But, when a genus, or group of genera, does not share the genetic make-up of the family in which it has long been classified, the question considered is whether it fits better in another,

already recognized family or whether it should be placed in its own, newly described family. This process of evaluating genetic relatedness has determined the set of plant families known today. And this process has resulted in the changing numbers of families recognized, as DNA technology has improved and newly discovered results have enhanced the understanding of plant evolution.

Of note: Twenty flowering plant families each have more than 3,000 species, covering 46 percent of all vascular plants. The five largest families of flowering plants are as follows:

Family	# of Species
 Asteraceae (daisies)	32,581
 Orchidaceae (orchids)	28,237
 Fabaceae (legumes)	20,856
 Rubiaceae (coffees/herbs)	13,686
 Poaceae (grasses)	11,434



Of these, Poaceae and Fabaceae are of economic importance in that they, along with Brassicaceae (cabbages) total 80 percent of food derived from plants.

The smallest families have only one species (monotypic). There are 33 of these, which equates to just under 8 percent of all vascular plant families but less than 0.01 percent of all species. Sixteen monotypic families are endemic to one country (in Australia or in South America or Africa) while the others are more widespread.

Gallery of Photos



Steve and Marilee's garden was recently on the Arboretum's Home Garden Tour. When they moved into this house over 30 years ago, the only plant in the yard was a lemon tree and the rest was lava rock and cement. The uniqueness of this garden is that it has so much in so little space. They have created vignettes that showcase different collections using pique assiette (broken tile mosaics), garden art, pottery, and rusty metal in every square inch of the property. Marilee, mostly a self-taught gardener, started gardening around age ten. Steve mostly thought of gardening as an annoying chore. Together they have become an amazing team in creating and designing fences, archers, and artistically displayed succulents: Steve is the groundskeeper / builder and Marilee is the visionary / detailer, the perfect balance to get the job done.

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Side Garden



Front Garden



Aeonium Decorum & *Aeonium Mardi Gras*

Aloe Plicatilis



UC Santa Cruz
is one of the
top research
universities in
the world

Excerpts from the Pittermann Lab's Research Webpage

Old plants, new tricks: the evolutionary ecophysiology of Pteridophytes

Ferns are one of the oldest free-sporing vascular plant lineages with origins in the Devonian. They have undergone at least three major radiations since this time and were once a significant component of the Carboniferous floras that make up the extensive coal deposits mined in the Northern Hemisphere. Today, ferns continue to be a steadfast presence in a variety of habitats where they display a diverse array of semi-arborescent, climbing, and erect morphologies. Despite fern abundance, diversity, and evolutionary significance, fern physiology is conspicuously absent from modern plant physiology textbooks. Yet fern vasculature is fascinating because the xylem (vascular tissue) is based on single-celled conduits like in conifers but ferns do not develop secondary xylem, that is, wood.



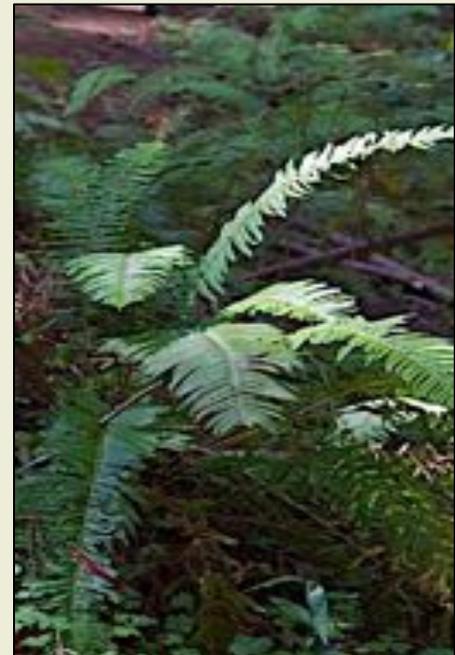
Jarmila Pittermann

By examining the hydraulic architecture, leaf function, and anatomy of these ancient plants, Pitterman and numerous colleagues from around the country are investigating how vascular structure and function relates to the evolutionary trajectory, life history strategy, and biogeography of Pteridophytes [ferns] and Lycophytes [fern "allies"].

Climate change and the redwood forest understory: a mirror for the canopy

Ferns can be very sensitive to drought with frond traits changing seasonally depending on water availability during development. As such, ferns can be harbingers of drought and ecosystem change. In California's coastal redwood forest, the sword fern is one such indicator in that its size, frequency, and perhaps even fertility, can change over the water availability gradient from the northern to the southern range of the redwoods. Long-term monitoring coupled with an understanding of fern physiology can inform our understanding of the effects of drought on the redwood forest understory.

The UCSC campus is part of a large climate change project lead by the Save the Redwoods League, a non-profit organization in San Francisco. Pitterman and her colleague Dr. Emily Burns, Science Director at the League, are researching the role that plant physiology, life history strategy, and ecology can play in forest management and conservation.



Buy Local: Finding the Perfect Pot



With two locations, one in Santa Cruz (2600 Soquel Ave.) and one in Los Gatos, (15796 Winchester Blvd.), Pottery Planet has in

stock—or can order—hundreds of planters in every imaginable size, shape, texture, style, and color. Also available are strawberry and herb pots, fountains, fire pits, statues, garden furniture, and unique décor items. The staff is very friendly and accommodating: they'll drill a drainage hole if needed or convert almost any pot to a fountain. More detail and photos are on the website (www.potteryplanet.com) and both stores are open Tuesday through Sunday.



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

Arboretum Spring-Summer-Fall 2019 Calendar

Check the Events webpage for any schedule changes and additional activities.

JUN 01 Saturday	First Saturday Garden Tour — 11:00 am at Norrie's (with paid admission)	SEPT 15 Sunday	Members Meeting — details TBA
JUN 04 Tuesday	Community Day — Free admission to Arboretum 1st Tuesday each month	SEPT 28 Saturday	Save the Date: Poetry Reading Aided Medina
JUN 12 Wednesday	Yoga & Ethnobotany—Last Class! pre-register/pay fee online	OCT 12 Saturday	Save the Date: FALL PLANT SALE!
JUN 15 Saturday	Community Science: Phenology Walk — 11:00 am-1:00 pm; Meet at Norrie's	NOV 23 Saturday	Save the Date: Gift & Wreath Sale
JUN 22 Saturday	Photography Walk with Bill Bishoff — 4:30-6:00 pm; free; register online	DEC 07 Saturday	Save the Date: Norrie's Open House



Arboretum membership provides you, your family, and your friends the opportunity to explore, learn, and be inspired by nature year-round. Along with receiving the exciting benefits and privileges membership provides, you are *giving* to the Arboretum's internationally recognized plant collections, regional conservation efforts, leading scientific research, and pioneering education and horticulture programs. Join or renew your membership online today—select from eight levels: Student/Recent Alumni, Individual, Household, Garden Advocate, Garden Enthusiast, Trailblazer, Change Maker, or Visionary. You can also support the Arboretum with donations, by volunteering, or by sponsoring a tribute bench or other garden feature.

Arboretum Staff, Board Members, & Contact Information



Martin Quigley
Executive Director



Amber Burke
Development
Director



Brett Hall
CNP Program
Director



Katie Cordes
Volunteer Program
Coordinator



Yelcka Huaynalaya
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Angelica Gomez
AmeriCorps Program
Coordinator



Martin Grantham
Nursery Manager



Rick Flores
Director of
Horticulture



Samantha Spurlin
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Specialist



Melinda Kralj
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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

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Susan Leo, **Vice President**

Pam Swain, **Secretary**

Martin Quigley, **Campus Representative**

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Ferd Bergholz, Jan Biegenzahn

Maura Connolly, Julia Cowell

Elizabeth Evans, Marisa Gomez

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