



UCRBG Newsletter

Fall Pop-up Shop Plant Sale

Sunday, October 4, 2026, 9 am - 1 pm

By Janine Almanzor

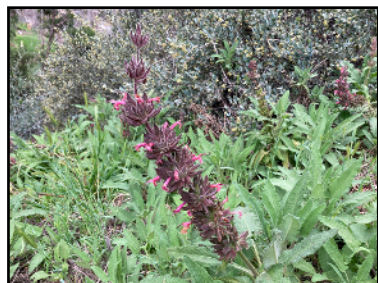
As summer winds down it's time to think about your fall planting. Fall is the best time in the Inland Empire to plant California native plants, which will be the focus of our Fall Plant Sale. Planting in the fall gives the roots time to get established before the summer heat. The sale will be near the entrance of the Gardens and will wrap around to the patio of the Meeting Room. Our Friends members will receive a 10% discount on all plants. If you would like to become a member or renew your membership, please visit our website gardens.ucr.edu/friends. Another great benefit of membership is access to 400 Botanic Gardens for free through the AHS Reciprocal Admissions Program, ahsgardening.org/ahs-garden-network/.

In addition to California native plants, there will be a variety of different plants for sale including trees, vines, shrubs, herbaceous plants, house/patio plants, and cacti and succulents. Here are some of the California native plants we will have available.

White sage (*Salvia apiana* var. *compacta*) This is a drought-tolerant, local native, evergreen shrub with silvery-white, extremely aromatic leaves and tall spires of pollinator attracting small, white and lavender flowers. It grows to about 3 feet when not in bloom, and blooms from late spring to early summer.



Black sage
photo credit: Wikipedia



Hummingbird sage

Black sage (*Salvia mellifera*) Also a drought tolerant, local native, evergreen shrub with extremely aromatic leaves. The leaves are dark green, and it has tall, "shish-kabob" spikes of small, pale-blue flowers from late spring to early summer attracting bees and hummingbirds. Like most of our California native plants, black sage needs good drainage.

Hummingbird sage (*Salvia spathacea*) A standout California native, hummingbird sage spreads into a lush groundcover featuring bold, deliciously aromatic, textured foliage. In bloom, it reaches about 2 feet tall, topped with "shish-kabob" spikes of vivid, tubular, rosy-purple flowers. True to its name, this resilient perennial is an irresistible magnet for hummingbirds.



White sage

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Director Updates -Patricia Springer



Since stepping into the role of Interim Director four months ago, I have spent time learning the inner workings of the Gardens — and there is a lot to take in! I've always loved the Gardens, but my understanding of its operations was somewhat limited.

The budget has been especially challenging to understand. It won't surprise you that we operate on a small budget, about half of which comes from gifts and memberships. Cost escalations, along with the growing need to fund maintenance and infrastructure, make managing that budget difficult. Notably, our costs for tree maintenance and removal have increased substantially in the past two years as damage from the devastating shot hole borer insect pest expands. Damaged trees can be a safety hazard, so we are vigilant about removing them. As we remove dead or dying trees, we need to replace them, and Miguel and Janine are working to expand our tree collection.

We operate with a small staff of five full-time and two part-time permanent employees. They bring tremendous passion and a strong work ethic to everything they do, often going well beyond their job descriptions, and I'm continually impressed by their resourcefulness in keeping the Gardens running smoothly. Even so, our staff would be too small a team were it not for our volunteers, who donate thousands of hours in service to the Gardens. We could not operate without them. I am in awe of their horticultural knowledge, dedication to the Gardens, and commitment to ensuring our visitors have a great experience.

I've heard from many of you that you wish the Gardens had more open hours on weekends. I share that wish! Prior to the COVID-19 pandemic, we were open seven days a week, but staffing challenges prompted a move to a more limited schedule. We are currently open Monday through Friday, and the first and third Sundays of each month. In January, we plan to be open every Sunday, as a first step toward expanding our hours.

To address declining membership, we will launch a membership drive this fall. My hope is that the expanded Sunday hours will help draw more people to become members. Please encourage your friends to visit the Gardens and to join.

This fall, we will also launch a fundraising campaign for the Plant Pavilion, which will replace the Geodesic Dome (see article on pages 6 and 7). We're working on a few smaller projects as well, and hope to make significant progress on them soon. The Gardens really needs a full-time permanent Director, and I expect that we will initiate a search fairly soon.

You can get the latest information about what is happening in the Gardens on our website, eNews, and social media. Please send your comments and suggestions to me at bgdirector@ucr.edu or leave a message at 951-827-7291. Thanks!

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Nancy Cullen, Visitor Services Coordinator
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College of Natural & Agricultural Sciences

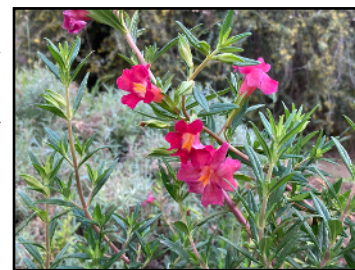
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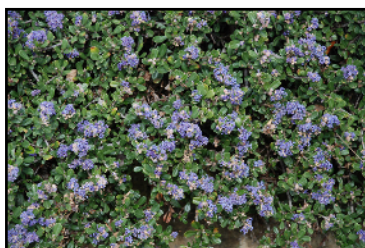
Foothill penstemon

Foothill penstemon (*Penstemon heterophyllus* 'Margarita BOP') Margarita BOP is a nice selection of this California native – a spreading perennial with narrow, gray-green leaves that blooms heavily with spikes of trumpet-shaped, bright blue flowers from late spring to early summer. It stays low growing to 2 feet tall by 3 feet wide.

Sticky monkey flower (*Diplacus aurantiacus* 'Trish') This is a water efficient, shrubby perennial with shiny, narrow, slightly sticky leaves and 1 inch, trumpet-shaped, dusky rose flowers born over a long spring to fall season. It stays to 1 – 2 feet tall and spreads to 2 - 3 feet. The hummingbirds love it.



Sticky monkey flower



California lilac

California lilac (*Ceanothus maritimus* 'Frosty Dawn') There will be several different California lilacs of varying shapes and sizes available for sale. Frosty Dawn is a wide-spreading, low growing shrub to 2 feet tall. The evergreen leaves are gray-green, and the flowers are dark lavender-blue in winter. It is slow growing but lives longer than most California lilacs and over time will spread to about 5 feet wide.

Apache plume (*Fallugia paradoxa*) This drought tolerant shrub has tiny, deep green leaves and pretty, 1 1/2 inch, white, rose-like flowers in spring, followed by very attractive, plume-like seed clusters. It grows to about 6 feet tall by 5 feet wide and attracts birds, butterflies and other pollinators.



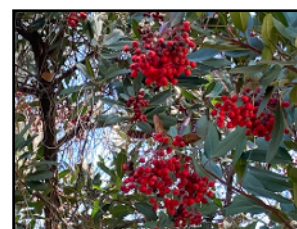
Apache plume



Engelmann oak

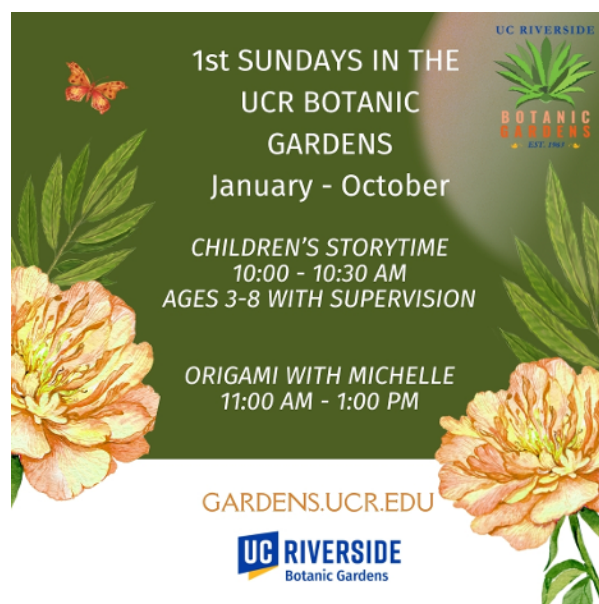
Engelmann oak (*Quercus engelmannii*) The Engelmann oak is a resilient, drought-tolerant tree known for its wide-spreading canopy and holly-like leaves. Though fast-growing in its youth, it matures into a picturesque specimen reaching up to 60 feet tall. To conserve water during intense summer heat, it may temporarily drop its leaves. It serves as a vibrant, natural haven for local birds and butterflies.

Toyon (*Heteromeles arbutifolia*) This water efficient shrub is versatile and adaptable reaching 10 feet tall and 8 feet wide and can be trained into a small tree. The toothed, glossy green leaves look good throughout the year. Large white flower clusters are displayed in late spring to early summer, while showy red berries adorn it in winter, adding to it's year-round appeal.



Toyon

Other plants for sale: bay laurel (*Laurus nobilis*), desert willow (*Chilopsis linearis*), manzanita (*Arctostaphylos*), island bush poppy (*Dendromecon harfordii*), frangipani (*Plumeria*), fiddle leaf fig (*Ficus lyrata*), sacred fig (*Ficus religiosa*) and many more.



Around the Gardens

July Twilight Tour

By Nancy Cullen

The first of two summer Twilight Tours in the Gardens was on July 18th. Despite the unrelenting high temperatures and unusually high humidity, we had 54 brave guests to explore our 40 acres, led by our experienced docents. Our thanks go to Teresa Wassman, Laura Simpson, and Barbara Dawson for leading the groups safely through the trails. Thanks go to Jean Weiss in the Herb Garden, Karen Fleisher in the Native American Garden, and George Spiliotis in the Butterfly Garden for sharing their knowledge and enthusiasm with the groups. Our events wouldn't be a success without our wonderful volunteers, who create a beautiful oasis of refreshments where guests can unwind and rehydrate after the tour! Huge thanks to

Linda Carter and Sherri Harris for their hard work on such a hot and steamy evening. Special thanks go to Bob Cullen, who provided temporary lighting to ensure that all volunteer and staff vehicles could safely navigate the pitch-black turnaround parking area. Bob formed a runway of light to guide us through the low-hanging limbs of the mesquite trees.



Laura Simpson (center front) leading her tour group



Jean Weiss (2nd from right) talking about the Herb Garden

August Twilight Tour

By Nancy Cullen

There was a large turnout of about 80 guests for our August Twilight tour on August 15th. Mid-August has brought shorter days, so we started the tour at 6:00pm to ensure we finished before it got dark. Guides and visitors enjoyed the trek onto the quiet trails of the Gardens. The cooler temperatures didn't bring out as much wildlife as we hoped, but the evening light on the Gardens was wonderful. This Twilight Tour was featured in the [Press Enterprise on August 16th](#). The PE photographer was mostly part of Teresa Wassman's tour group. Be sure to look for the article!

We must thank our wonderful docents Karen Fleisher, Kay Force, Laura Simpson, Claudia Clark, Kim DuBry, and Teresa Wassman who led tours, and Jean Weiss sharing her expertise in the Herb Garden. Volunteers Linda Carter and Yvonne Wilczynski helped with the set-up and provided plenty of refreshments for the group after the tour.

This was our last Twilight tour of the year. We hope to see you at a Twilight Tour next summer.



Guests enjoying refreshments after the tour



Karen Fleisher (center) gathering her group to start the tour

Spotlight on Kay Force

By Janine Almanzor



Kay is an incredible volunteer who has contributed across so many different areas in the Gardens that we feel complete confidence in her – at times it almost seems like she’s a staff member. Kay began her volunteer career in the Gardens after she retired from a 25-year teaching career in 2019. Kay was taking the Master Gardener class when she began volunteering at the Gardens. Her first jobs at the Gardens were weeding, trimming plants, and propagating for plant sales and the Gardens’ collection. In 2022, Kay ventured out and took the Docent Training Class, which was a perfect fit. Her teaching background, combined with what she learned as a Master Gardener, has made her an excellent docent. She loves leading tours for all age groups, and she is especially skilled at leading tours for guests with special needs – a strength she brings in part from her experience raising a daughter with special needs. Kay has taken an interest in learning about the Native American uses of plants and enjoys leading tours focused on that subject. She is part of the Roaming Docent team that is available on our open Sundays (the first and third Sunday of every month) to answer questions visitors may have and talk about the plants. Kay has also been a tremendous help with the new docent training, leading several of the classes and mentoring incoming docents.

Kay has also given her time to a wide range of other areas and events, including watering potted plants, the Rose Pruning Demonstration and rose maintenance, the South Africa and California North Coast gardens, the Native Bee Garden, the Native American Garden, the Ficus Grove, Twilight Tours, Art in the Gardens, succulent planting events, and plant sales. When Kay is helping at plant sales or other events, we are confident they will go smoothly, because she knows the Gardens very well and understands how it operates. Kay always seems to know what is needed and she consistently steps up to meet any need. She also loves to speak with visitors and share her knowledge about plants. At plant sales, Kay provides advice about individual plant’s water and growing needs. She also knows how many of each we have propagated and where they are located in the nursery, because she is involved with the propagation and maintenance of almost every plant we sell. No matter what Kay is doing in the Gardens, she is communicating with visitors eager to explain what she’s doing or share her knowledge.



Kay currently volunteers at the Gardens twice each week. One day is dedicated to propagation and the other to working in the Gardens. Any tour she leads or docent she trains is in addition to those activities. When she is not volunteering, Kay loves to hike, camp, travel, and grow plumerias – many of her plumerias will be for sale at upcoming plant sales. We are so thankful for everything Kay contributes to the Gardens. Whether it’s propagating, leading tours, or weeding, she always has a great attitude and a smiling face.



Volunteers welcomed!

Visit gardens.ucr.edu/volunteer
for more information



Plans to Replace the Geodesic Dome

By Drew Hecht & Patricia Springer



The Geodesic Dome in 2017

The UCR Botanic Gardens' geodesic dome was constructed in the mid-1980s and dedicated in 1986 in memory of Dr. Francis A. Gunther, a Distinguished UCR Professor of Entomology. It was fabricated and donated by Monterey Domes, Inc., a company that sold prefabricated dome home kits. Monterey Domes was started in the mid-1970s by Robert Gunther, Dr. Gunther's third son; his younger brother Kurt joined the company in 1977 and helped engineer the dome for mass production. The iconic Botanic Gardens dome structure is based on a design pioneered by R. Buckminster Fuller. Beyond Monterey Domes' generous donation, other Gunther family members and friends funded the dome's construction and dedication.

The dome has long been a highlight for visitors to the Gardens, housing a collection of prehistoric cycads and other exotic plants that thrive in its cool, shady environment. Unfortunately, the ravages of time – and especially plants growing on its surface – have damaged it beyond repair and it has been closed to the public for several years. Former Botanic Gardens Director Jodie Holt, who passed away in April, worked with the UCR Planning, Design, and Construction (PD&C) department to design a replacement structure, now called the Plant Pavilion.

Jodie initially asked Drew Hecht, Director of Project Management in PD&C, to visit the dome and assess its structural integrity. Drew found it bulging at the base in a couple of spots, and further inspection determined that the deterioration was too extensive to warrant what would likely have been endless repair work. That the dome lasted forty years with minimal maintenance is a testament to its inherent structural integrity and construction. Its light lath framing left the wood exposed and unprotected, and where soil encroached against the structure, the wood was subjected to a constant wet/dry cycle, creating ideal conditions for dry rot – a fungal decay that breaks down the wood's cellulose fibers, causing it to lose its natural strength. The extensive deterioration raised safety concerns, and the dome was unfortunately closed to the public in 2019. Finally, in 2025, part of the dome collapsed prompting it to be tagged for demolition.

Jodie understood how important the dome was to Botanic Gardens visitors and wanted its replacement to evoke the original. Restoring or rebuilding the dome proved unrealistic, and replacing it with another domed structure was found to be unfeasible – modern structural requirements had to be met, and no commercial companies still build domed lath houses. As a result, Jodie worked with PD&C to commission an architect to design a structure that would be reminiscent of the dome while offering greater durability. She also envisioned a gathering space around the new structure – a place for events, learning, or just relaxing. The resulting design was elegant, but highly custom, with curvilinear walls made of entirely unique pieces, with no two alike. A professional estimate put the design at a prohibitive \$5 million.

So it was back to the drawing board and that's where Drew came in. Drew had come to know Jodie well, and found her charm born of warmth, sincerity, and enthusiasm motivating; he wanted to help her and the Gardens find a way forward. Having worked with Jodie on the dome for some time, Drew knew intimately what she wanted, but he also knew what was practical and affordable. Understanding that the Gardens didn't have resources for endless iterations, he decided to develop a scheme himself, independent of his duties at UCR. Drew spent nights and weekends over a couple of months working on a design. When he shared it with Jodie, she



Rendering of an aerial view of the Plant Pavilion

immediately loved it – it satisfied so many of her needs for the building. Drew found the experience meaningful and quite satisfying.

Jodie took the new plan back to her team at the Botanic Gardens for input and also showed it to potential donors. It was well received and Jodie chose to move forward and develop the design. Through PD&C, she hired another architect to convert Drew's plans into construction documents, with strict oversight from herself and Drew. They chose Ruhnau-Clark, a local firm with ties to the early campus, to develop the schematic design into construction documents that are ready for bidding – and that's where we are today.



Rendering of the inside of the Plant Pavilion

The replacement, now dubbed the Plant Pavilion, is structurally simpler than the dome, but no less interesting. The circular feature at its center is pulled directly from the circular path inside the original structure, defined by a raised seat wall where visitors can sit and enjoy the plant collection. It also creates a place where small groups can gather around a lecturer or docent describing the collection from the center.

The new pavilion draws first on the simple, direct, rectilinear shape of agrarian buildings, then builds on that theme with natural heavy-timber wood in an expressed structure, much like the restored Barn on campus. The structural connections are hidden within the beams, braces and posts, again reminiscent of agrarian craft. The lath is turned inward to provide a contiguous backdrop for the plant collection, minimizing visual disturbance and keeping the focus on the plants rather than the building. Over time, these natural materials will age and patina, and the new pavilion will look like it's always been there.

The large door serves two purposes: it allows access and functions as an architectural element – a perpendicular wall announcing the entrance to the pavilion, which adds to the design's architectural sophistication. It is a pivot door that rolls on an industrial raw steel wheel, inspired by those once used on wheelbarrows. The wheel will also patina to a natural finish as it ages.

The door faces north, preventing unfiltered sunlight from reaching the plants inside. A receiving courtyard outside the door can be used for organized gatherings. The courtyard steps down the grade to the north, where seats shaded by trees to the west allow for lectures, gatherings or simply a spot to enjoy lunch. To the south of the new pavilion, an accessible ramp connects the Pavilion to the restrooms, further adding to the sense of a purposely planned space.

To facilitate long-term maintenance, the foundation has been raised – separating the structure from the encroaching soil that caused much of the original dome's deterioration. This raised foundation does double duty, allowing the interior circular seat-wall to form a raised bed for better viewing of the plants. Maintenance is further eased by the lath's repeatable modular design, whose components are easily replaced and readily available.

Regrettably, Jodie passed away before her vision for the Plant Pavilion became reality. We are committed to seeing the project through to fruition, and will launch a fundraising campaign this fall, with a goal of raising \$1.5 million. If you would like to support this effort, please visit our giving page at gardens.ucr.edu/donate and select "Plant Pavilion Fund."



Rendering of the outdoor gathering space

Become a Friend!

The UCRBG is an institutional member of the American Horticultural Society. A Friends membership entitles you to the benefits of participating in the AHS Reciprocal Garden Network, which gives you free or discounted admission and other discounts at 400 gardens and arboreta throughout North America. The AHS member gardens can be viewed at their website:

ahsgardening.org/gardening-programs/rap.



Pam Ferre and daughter Kendall at the Brooklyn Botanic Garden





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PURCHASE BRANDED MERCHANDISE ONLINE

ITEMS:	
Safari Hat, one-size	30.00
Apron	30.00
T-Shirt, Lng-Slv, Stone	30.00
T-Shirt, Tan (2-logo, 2XL)	30.00
T-Shirt, Tan (2-logo)	25.00
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T-Shirt, Green	20.00
T-Shirt, Grey, V-Neck	20.00
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Flag	8.00
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Glasses Cleaning Cloth	4.00
Fan, 2-Sided	3.00



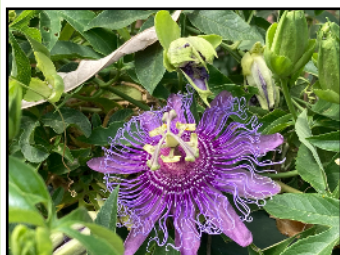
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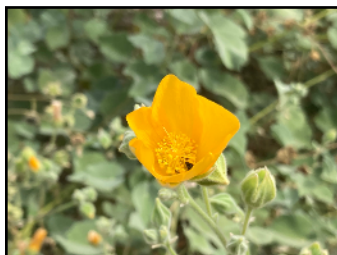


To see some of the plants in bloom please visit gardens.ucr.edu/information/bloom.

The intense summer heat has been challenging for the plants, but there are still plenty of blooms to see throughout the Gardens. Here are some highlights from the Butterfly, Rose, and Herb Garden areas.



Passiflora 'Incense'
"passion flower"
Butterfly Garden



Abutilon palmeri
"Palmer's Indian mallow"
Butterfly Garden



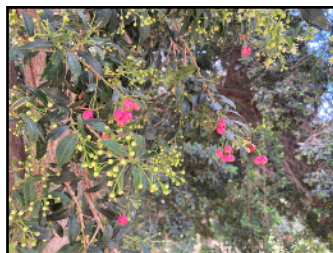
Eriogonum giganteum
"St. Catherine's lace"
Butterfly Garden



Rose Gardens



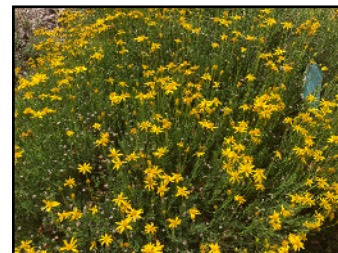
Gossypium hirsutum
"upland cotton"
near Herb Garden



Syzygium paniculatum
"Newport"
"brush cherry"
Herb & Iris Gardens



Perovskia abrotanoides
"Russian sage"
Herb Garden



Chrysactinia mexicana
"damianita daisy"
Herb Garden

Wildlife of the Gardens

Big Brown Bat

By Michele Felix-Derbarmdiker

There are twenty-six species of bats found in the state of California. While an official bat survey of the UCR Botanic Gardens has not been conducted, several species may be present. Two likely species are the California Myotis and the Big Brown Bat. While both bat species are common, the Big Brown Bat is comfortable in the urban wildland interface found around the Gardens. The California Myotis prefers desert canyons and riparian forests. This article will focus on the Big Brown Bat.

Habitat/Diet

The Big Brown Bat (*Eptesicus fuscus*) is a generalist when it comes to both its neighborhood and food. Healthy deciduous forests are their favorite haunts, but they easily settle into suburban and mixed agricultural areas. These areas provide plenty of their favored food, insects. While it is true that some species of bats consume blood, there is no need to stock up on garlic or arm yourself with a wooden stake on your night walk. The majority of our bat species, including the Big Brown Bat, emerge from their roosts at sunset and just before sunrise to hunt insects. Bats locate their prey using a specialized technique known as echolocation. Echolocation relies on the echoes of emitted sound waves. Bats can analyze the timing, intensity, and frequency of returned echoes to determine the distance, size, shape, and direction of moving and stationary objects. This allows them to be experts in hunting night-loving insects. The Big Brown Bat primarily feasts on a variety of leafhoppers, moths, and beetles. A healthy population of these bats serve as allies to both forest managers and farmers. During pupping season, reproductive females can easily consume their body weight in insects each night.



Photo credit: Public Domain Pictures

Breeding

Breeding occurs in the fall, and the females store sperm over the winter season. In the spring, pregnant females form maternity colonies of various sizes. Colonies can be found in tree cavities but as humans continue to encroach into forested areas, it is common to find colonies in man-made structures. Here in the west, females have one pup. The birthing process is quite an ordeal. The females hang by their thumbs then use their wing and tail membrane as a net to catch their newborn pup. The pup, helpless and hairless, climbs to the mother's chest to nurse. The pups are left behind in the colony each night while the mother leaves to nourish herself. After only a month, the pups are ready to fly.

Identification

Though classified as a microbat, this species is large relative to other local bats – with a wingspan reaching up to fourteen inches and a weight of up to twenty-six grams. Its fur is predominantly reddish brown, contrasted by black coloring on the face, ears, and wing membranes. These features are difficult to observe in twilight hours but there are tools that can be used to identify bats by sound. Similar to other animals, bats have calls distinct to their species. Bat acoustic detectors and their accompanying software can gather and analyze the sounds and identify species. This type of equipment used to be limited to just researchers but less expensive units that attach to phones or tablets are commercially available.

Threats

The population of this species is currently considered stable, and it is not listed at the state or federal level. Like other species, Big Brown Bats face threats such as disease, loss of roosting sites, habitat destruction, pesticide exposure, climate disruption, and collisions with cars and wind turbines. Humans can support healthy bat populations by promoting insect biodiversity through native plant landscaping, properly installing bat houses, reducing light pollution, providing safe water sources, preserving tree snags, and avoiding disturbance of bats during sensitive periods such as hibernation and rearing of young.

In the Works

By Botanic Gardens Staff

Our hot summer and reduced number of student workers and volunteers has slowed our productivity somewhat. We continue to maintain the Gardens and are planning projects for the fall. Here are some of the projects and activities underway:

Gardens and Grounds:

- ▶ We are looking forward to student workers returning in the Fall. We will have seven UCR students employed by the Gardens and ten students who are part of the UCR College Corps program. UCR College Corps, part of the statewide #CaliforniansForAll initiative, pairs full-time undergraduates with local nonprofits, schools, and community organizations for a year of service in K-6 Education, Food Insecurity, or Climate Action. Fellows are paid by College Corps, and build professional skills, community connections, and get hands-on public service experience.
- ▶ We launched a new tree adoption program for memorials, replacing our memorial bench program, now that we have run out of space for additional benches. Families who adopt a memorial tree make a donation that covers a bronze memorial plaque placed by the tree, with the rest of the contribution going toward the tree's ongoing care and the upkeep of the surrounding gardens. So far, two families have adopted memorial trees.
- ▶ Volunteer Doug Holt has completed some needed repairs on the greenhouse. We are actively planning for the renovation of the first greenhouse module, to convert it into a new Display House that will be open to the public.
- ▶ We continue to plan for installation of timed sprinklers and other upgrades to our irrigation system throughout the Gardens. Our hard-working Gardens staff spend a huge amount of time hand watering plants, and this project will eventually result in savings in time and expenses.

Activities and Events:

- ▶ Welcome Week events for new UCR students will take place Monday 9/21 – Wednesday 9/23. There will be a plant giveaway, tours of the Gardens, a scavenger hunt, and Kona Ice.
- ▶ Mini plant sales featuring plants that are suitable for dorm rooms and other student housing will take place during the Welcome Week activities. Plant sales will be for new students but will also be open to the public.
- ▶ Future Plant Sales are scheduled for October 4th and November 7th along with Art in the Gardens.
- ▶ Master Gardener Docents will be in the Butterfly Garden on the 1st and 3rd Sundays through October.
- ▶ Volunteer, Teresa Wassman will host Children's Storytime on the 1st Sundays through October.
- ▶ Michelle Lofquist teaches origami to kids and adults of all ages on the 1st Sundays of the month through October. Or you can find her by the Meeting Room on Monday mornings.
- ▶ Volunteer orientation is available on the 1st Sundays and 1st Tuesdays of each month at 9:30 am with Nancy Cullen. RSVP at nancy.cullen@ucr.edu.



Bronze plaque for memorial trees



Welcome Week events: Kona Ice, plant giveaway, tours, & scavenger hunt



Children's Storytime

Cycads

By Norm Ellstrand



Dioon spinulosum, "giant dioon"

The late Jodie Holt's greatest wish was to see the aging geodesic dome replaced. Plans for that replacement are detailed on pages 6 and 7 in this newsletter. Since cycads made up most of the dome's original inhabitants, I wanted to feature them here. Cycads also grow throughout the Botanic Gardens – in the Latin American and South African sections, near the Garage Office, south of the Ficus Grove, and in the greenhouse, which is not currently open to the public. Forty species of cycads in eight genera call the UCRBG home, and cycads are placed throughout the UCR campus.

Here, I focus on cycads as a group, detailing some of their remarkable natural history. Some cycad species are so notable that they deserve a dedicated article in their own right. I'll save those for future newsletters.

Cycads, living and extinct, form the order Cycadales. These palm-like trees feature a rosette of large, pinnately compound, evergreen leaves atop a stout trunk. Unlike palms, which bear flowers and fruits, cycads are cone-bearing gymnosperms that produce naked seeds. Cycads are dioecious, meaning each plant is either male or female and pollination depends on specialized insect vectors. Remarkably, cycads, along with *Ginkgo biloba*, are among the only living seed plants with motile sperm. Each sperm cell is covered with thousands of flagella that propel it toward an awaiting egg cell after release from the pollen tube.

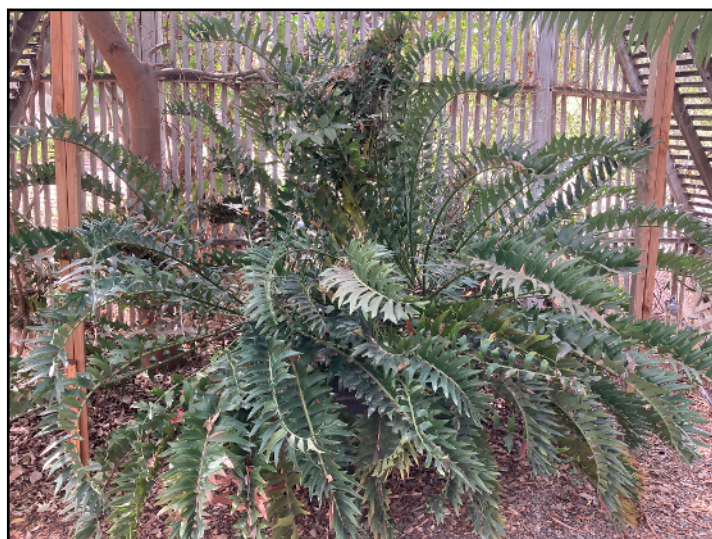
Cycads also have a symbiotic relationship with nitrogen-fixing cyanobacteria – the roots protect the bacteria, while the bacteria supply usable nitrogen to their host. Cycads have another distinctive trait: unlike young palm leaves, which are just miniature versions of the adult leaf, young cycad leaves emerge curled like fern fiddleheads.

Cycads evolved during the Permian, pre-dating flowering plants by millions of years and even pre-dating the dinosaurs. By the time the dinosaurs flourished, cycads were a dominant feature of the terrestrial landscape and paleobotanists call the Jurassic the "Age of the Cycads". However, despite fossils dating back over 300 million years, living cycads are not true "living fossils" like *Ginkgo biloba*. Genetic studies suggest that most living species emerged from a fairly recent radiation, about 12 million years ago.

Current cycad species are distributed roughly across tropical and subtropical regions, with one species reaching as far north as Florida. Almost all of the rest range from Mesoamerica to northern South America, sub-Saharan Africa, India to Southeast Asia (extending north to the southernmost parts of Japan), and suitable regions of Australia. A handful of species occur in the islands of the western Pacific Ocean.

Though slow-growing, cycads are prized as ornamentals. The following genera make up the majority of garden varieties: *Ceratozamia*, *Cycas*, *Dioon*, *Encephalartos*, *Macrozamia*, and *Zamia*. Other ethnobotanical relationships vary by species – cycad leaves appear on Vanuatu's national flag, and some species' seeds are ground and roasted for food, though raw seeds are toxic and require careful processing.

Having a collection of valuable cycad species in the UCRBG and housing them in the new Plant Pavilion showcases the diversity of these remarkable species. Please consider donating to the construction of a new home for the cycads and honoring the memory of Dr. Jodie Holt. Details are found on page 7 of this newsletter



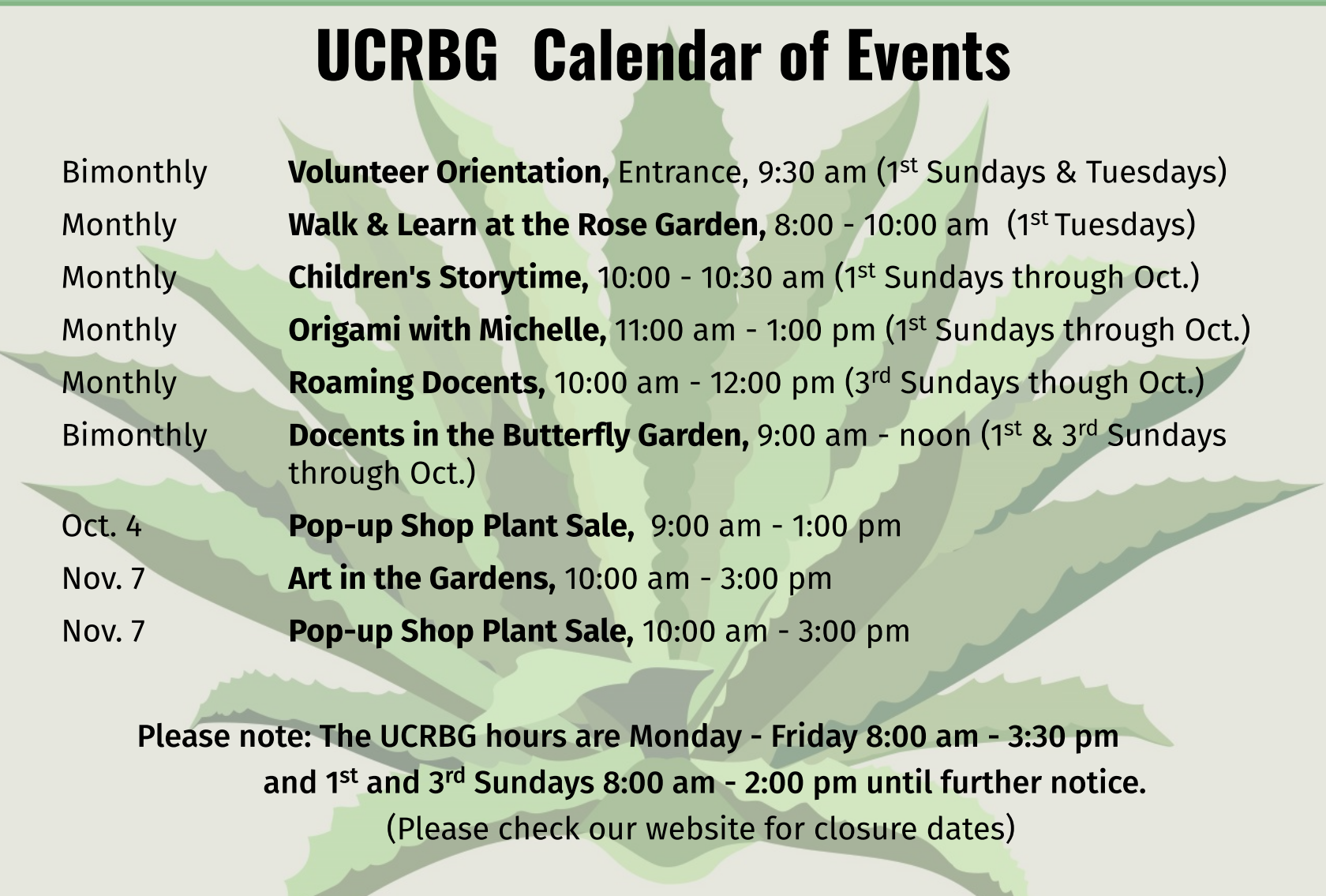
Encephalartos arenarius, "dune cycad"



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UCRBG Calendar of Events



Bimonthly	Volunteer Orientation , Entrance, 9:30 am (1 st Sundays & Tuesdays)
Monthly	Walk & Learn at the Rose Garden , 8:00 - 10:00 am (1 st Tuesdays)
Monthly	Children's Storytime , 10:00 - 10:30 am (1 st Sundays through Oct.)
Monthly	Origami with Michelle , 11:00 am - 1:00 pm (1 st Sundays through Oct.)
Monthly	Roaming Docents , 10:00 am - 12:00 pm (3 rd Sundays though Oct.)
Bimonthly	Docents in the Butterfly Garden , 9:00 am - noon (1 st & 3 rd Sundays through Oct.)
Oct. 4	Pop-up Shop Plant Sale , 9:00 am - 1:00 pm
Nov. 7	Art in the Gardens , 10:00 am - 3:00 pm
Nov. 7	Pop-up Shop Plant Sale , 10:00 am - 3:00 pm

Please note: The UCRBG hours are Monday - Friday 8:00 am - 3:30 pm
and 1st and 3rd Sundays 8:00 am - 2:00 pm until further notice.
(Please check our website for closure dates)