Euphorbia multiceps grows on windy plains in South Africa. Photo by Sue Hakala.

LOCATION CHANGE FOR OUR MEETING. The CACSS November 18 meeting will be held at the Sunnyslope High School auditorium at 2 p.m. Sunnyslope High School is located at 35 W. Dunlap Ave., Phoenix. This location is more centrally located in Phoenix than the DBG. We will have signs out on Dunlap for both of the available parking lots at the high school and also direction signs on the school doors.
Our featured plant this is *Euphorbia*.

Join Peter for our monthly meeting at Sunnyslope High School auditorium on November 18, at 2 p.m. There will no silent auction; don’t bring plants.

The genus *Euphorbia* is found throughout the world, ranging from small weeds called spurge to large candelabra tree like plants, leaves to no leaves, spines or not, and every shape in between. In Africa, succulent *Euphorbias* have filled the niche that is occupied by cactus in the new world. The many forms of *Euphorbias* mimic the many forms of cacti which often leads to people confusing them with cacti. In this talk, I will discuss the care, maintenance, seed, hybridizing, and the diversity of succulent *Euphorbias* for both collections and landscape.

I will make the case for the breakup of the genus into as many as 20 new genera, and most likely, many more. I will also make the case for my thoughts on the genus based upon morphology and ability to hybridize with other species. The genus *Aloe* was broken up for the same reasons. There are those people who would like to place *Monadeniums* back into *Euphorbia*, for instance. I have never had a *Monadenium* cross with any other *Euphorbia*. Many *Monadeniums* will not cross with other *Monadeniums*. When they do, they often produce mules—sterile offspring. I would guess that this genus should be broken into at least four genera.

With such a high degree of diversity, you can find a *Euphorbia* to match your interests as a collector or as wonderfully diverse specimens for the landscape.

I graduated in 1985 from Cal Poly Pomona with a B.S. in Ornamental Horticulture. I then worked as manager, production manager and section manager for three wholesale nurseries for 14 years. I then owned a landscaping business for another 14 years, the last 5 years of which I specialized in succulent landscapes. During the landscaping part
of my life, I restarted collecting plants for my collection. This led to propagating plants from seed, and thus the seed was sown for the nursery that I now own and have run for the last four years.

My interest in succulent plants really got going in college in 1981-82. By the time I graduated, my collection had grown to 200 plants. Many are still alive. This collection has currently grown to more than 2,000 plants. The collection consists of cacti, *Euphorbias* and caudiciforms.

I am the current president of the Palomar CSS and was on the board for the San Diego CSS. I have been on the board for the CSSA for the last eight years and currently serve as the nominations and sales chair. I served as show chair for Palomar, two times for the San Diego club and once as co-chair for the Intercity Show.

To further broaden our knowledge of *Euphorbias*, Ken Luiten is coordinating a display of *Euphorbia* plants for the meeting. He will discuss the different types in a Featured Plant segment.
Euphorbias occur naturally in many parts of the world, chiefly Africa, Asia and South America. It is an extremely diverse group of plants with over 2,000 species. Succulent Euphorbias are tropical plants, mostly from arid areas requiring bright light, well-drained soil and moderate climate.

**Light**  Planting requirements of *Euphorbias* vary depending on the species. In general, most are sun lovers, with some tolerating partial shade. *Euphorbias* need to grow in a place with bright light. However, this does not mean full midday sun in Phoenix! In habitat, while many *Euphorbias* thrive in full sun, their roots are usually in a relatively cooler soil, often under rocks. *Euphorbias* with deep-purple or reddish foliage will have more intense coloring with greater sun exposure. Remember to always protect your plant from direct summer rays in our low desert.

**Temperature and Humidity**  Although *Euphorbias* are suited to warm, dry conditions, minimum temperature requirements differ widely. Minimum winter temperatures vary

*Euphorbia coerulescens in bloom.*
depending on the plant’s native habitat. “As a rule of thumb, species coming from Arabia, central and west Africa and the tropical and sub-tropical parts of the Americas need 12-14°C (54-57°F) in winter. Madagascan and east African species need 10-12°C (50-54°F), while species from North and South Africa can endure temperatures below 10°C (50°F) if kept dry. Some South African species can survive frost if temperatures rise rapidly the next morning.” ¹

Most *Euphorbias* are considered winter dormant. Increases in daily temperature differences encourage winter rest as the cool fall nights arrive. Humidity follows temperature. While *Euphorbias* can enjoy high humidity and temperature during their active growing season, humidity needs to be low during their winter rest when temperatures are lower. During winter rest, it is suggested to grow *Euphorbias* indoors with full sun (at least 6–8 hours of direct light a day), keep the soil nearly dry, and withhold fertilizer.

**Watering** One of the main benefits of growing *Euphorbias* is their drought tolerance. However, the idea that succulents only grow in dry places is not quite accurate. While the majority grow in areas where water may not be available in certain periods or only as fog or dew, as far as possible, the requirements of individual species need to be considered. For *Euphorbia*, well-draining soil and regular, heavy watering are necessary through our hot summer growing season.

Pottery choice has a bearing on watering:

- Unglazed earthenware absorbs and loses moisture through the walls creating a natural safeguard against overwatering and allowing oxygen to enter the soil and aerate the roots.

- Glazed earthenware and plastic pots prevent evaporation through the walls. They do not dry out as quickly, restrict air exchange and hold moisture longer. While this means they need less watering, there is an increased risk of roots being damaged by excess moisture. Plastic pots can also get very hot in the sun and cause the roots to burn.

*Euphorbia coerulescens*
Golden rules for *Euphorbias*:

- Just because *Euphorbias* can survive drought, does not mean that they need it. During the growing season, regular and copious watering is recommended.
- Heavy and deep watering once is preferred over light watering often. Heavy watering wets the whole pot of soil encouraging healthy root growth.
- Most species do not appreciate dry soil in the resting season and need a little water from below (at soil) or carefully from above (at crown.)
- Evening water during the warm season is preferred. The plant will take up more water in the relatively cooler evenings, with less evaporation. Early morning watering is acceptable and suggested in the winter months.
- As always, if in doubt, DON’T water!

**Soil and Feeding**  
Soil provides a hospitable place for a plant to take root and a holding medium for needed nutrients and moisture. In cultivation, the soil must not be so dense as to prevent root growth. Furthermore, the soil must be well-drained so that surplus water can properly drain and prevent root rot. Remember, plants in pots will rapidly exhaust nutrients and will need regular feeding or repotting when required.

Repotting small or slow-growing species will not be necessary each year. However, faster-growing species can exhaust the nutrients in that time despite regular feeding. During the growing season, regular but light fertilizing is recommended. When feeding, it is preferable to choose fertilizers with a low nitrogen content. As the composition of all fertilizers varies considerably, it is best to vary the brand from time to time to avoid a deficiency of any particular component. Both of the club’s fertilizer options are low in nitrogen and suitable for use with *Euphorbias*.

**Vegetative Propagation**  
Propagation of *Euphorbias* from cuttings is the easiest and quickest method for many species. The best time is in the spring when growth starts. Summer is also a suitable time. Cuttings should be taken with a sharp clean knife, using a pulling, rather than pressing motion to obtain a clean cut. Branching species should be cut just above the branching node. Solitary plants can be decapitated to encourage production of side shoots. *Euphorbias* with large leaves should have leaves removed just above the cut. Always remember to allow the cut surface to dry several days before planting. Dusting the cut surface with a hormone rooting powder will encourage root growth.

**Pests and Problems**  
Ventilation, in general, is beneficial for these plants. *Euphorbias* tend to grow problem free, but there are a few pests and diseases to be alert for:

- Root rot, as mentioned above, becomes a problem when plants are allowed to sit in wet soil due to poor drainage.
- Mealybugs and spider mites are common pests. Catching them early is your best chance of controlling them. If you suspect that your plant is infected, isolate it immediately. Hose the pests from affected plants before reaching for bigger guns like insecticidal soaps or horticultural oils. Many pesticides are ineffective against spider mites and may worsen conditions as beneficial insects are lost to treatment.
• Powdery mildew is a fungal ailment thriving in warm dry climates with a fairly high relative humidity. Lack of good air circulation can worsen the condition. It is suggested to correct the humidity/circulation conditions as the first line of defense as strong fungicides may not be acceptable for your plants.

And last...While there are many redeeming features of *Euphorbias*, they do come with drawbacks. *Euphorbias* produce a milky white sap known as latex. This sap is toxic and can cause irritation and inflammation to the eyes and skin on contact. It’s important to use care when pruning and wash up immediately afterward. This white sap appearing after cutting should be completely washed away. Spraying cold water stops the sap flow quickly.

EUPHORBIA ARTICLES

Visit the club website at centralarizonacactus.org then choose newsletters, indexes, then plant index. Find the article you are looking for by month and date.

- Euphorbia by Scott McMahon, 4/04, 7/02, 10/99
- Euphorbia: Working with Euphorbias by Scott McMahon, 2/17
- Euphorbia horrida found within Plant of the Month (no author), 2/89
- Euphorbia horrida by Gard Roper, 8/17
- Euphorbia Latex Dangers by Sue Hakala, 3/12
- Euphorbia obesa: Growing Euphorbia obesa in the Phoenix Area by Lawrence Garvie, 7/08
- Rooting Euphorbia Leaves by Kent C. Newland, 1/76
- Three Cold-Hardy, Full-Sun Euphorbias for Your Landscape by Tom Gatz, 3/07, 2/16
- Useful Euphorbias (no author), 12/79

Euphorbia friedrichiae grows in sandy, windswept areas of the North Cape in South Africa.
Photo by Doug Dawson.
CACSS LIBRARY BOOKS ON *EUPHORBIA*  
By Nancy Mumpton, co-librarian

Our CACSS library owns all 10 volumes of the *Euphorbia Journal* by the *Euphorbia* Society. Each is a hardcover book and very comprehensive on the *Euphorbiaceae*.

Other titles located in Webster Auditorium locked shelves (contact Nancy Mumpton at nancy.mumpton@gmail.com) are:

*Succulent Euphorbiaceae* (2 volume set) by White, Dyer and Sloane, published 1941

*Genera of Living Euphorbiaceae* by Wheeler, published 1943

Did you know that poinsettia is *Euphorbia pulcherrima*? It contains the same milky latex that can cause irritation. It’s wise to keep it away from kids and pets.

Publication of material in the *Central Spine* does not imply agreement with the ideas expressed therein by any portion of the membership of the CACSS, nor does it constitute an endorsement or support for any portion of such material by the CACSS, or the *Central Spine*, regardless of any position or office held by the author. All such material represents a comment and/or personal opinion of the author.
GROWING SUCCULENT *EUPHORBIA*

Learn what species of *Euphorbia* to plant and how to maintain them in this class at the Desert Botanical Garden, January 15, 10 a.m.-noon, members $30, non-members $38. Taught by Scott McMahon *Cactaceae* collections manager at the garden. Scott is a club member, past president and frequently judges our annual show. He has also grows some gorgeous *Euphorbias*.

*Scott McMahon bringing Euphorbia lauranii for our annual show a few years ago. Photo by Sue Hakala.*
HOLIDAY PARTY SUNDAY, DECEMBER 2

By Sue Glenn

Our annual holiday party will be on December 2. Please RSVP with your name and item you will bring to pass (main dish, appetizer, salad, vegetable, or dessert). Please include a serving fork/spoon with the item you will be bringing. We will supply the plates, napkins and eating utensils. RSVP to Sue Glenn at 920 327-3137 or ekmglenn@outlook.com

We will have ham and turkey for all to enjoy. I will need one person to volunteer to purchase and cook a turkey (I will be supplying the other turkey). We will need volunteers to help set up at noon and clean up at the end.

We will be having a plant exchange for anyone interested. If you bring a plant, you will need to get a ticket from Jo Davis. Jo will conduct the exchange during the meal, so please wait for your number to be called before taking a plant.

Tumbleweed Recreation Center
Cotton Room
1-3:30 p.m.
745 East Germann Road
Chandler

FAVORITE TOOL

Photo and Text by Rita Gosnell

As I drag hoses in every direction all summer long, a favorite timesaving tool is the hose valve. Gard Roper suggested this small item several years ago, saving me countless steps. It allows a hose, sprinkler or sprayer to be added or subtracted and flow adjusted without going back to the hose bib.
The 2018 October auction was another success for the Central Arizona Cactus and Succulent Society. This was in a large part due to the many volunteers who helped with the event, and those members who donated many show-worthy plants and the members who came out to purchase them. We also wish to thank the Desert Botanical Garden for allowing us the time and space for this fundraiser for the CACSS.

This year, Thom Young and I volunteered to oversee the event. Unfortunately, Thom fell ill the night before leaving me to rely on several “seasoned” volunteers who helped with auctions in the past. Thank you Mike Gallagher and Chris Ginkel for your all around support, Lee Brownson, the ever important auctioneer, Jo Davis, Cricket and Don Peterson, Nancy Mumpton, Sue Glenn, Judy Tolbert, and new members Cathy Good and Christine Willis for their overall help.

A very big thank you goes out to Eric and Heather Holst. Many large pots and plants had been donated to the club several months back, and Eric has been instrumental in helping move these around. Numerous times! And, we are not done yet! I would also like to extend a very personal thank you to someone who does not get enough credit—Emily Glenn. Emily is back at the treasurer’s table for most monthly meetings and has been a volunteer for every auction (and Show and Sale) since I have been treasurer.

Please thank all these people the next time you see them. The value of their volunteer time is a priceless commodity to our club. I hope I did not forget to thank anyone, if I did, please forgive me as it was a whirl-wind morning with a sprint to a 2 p.m. deadline.

The final numbers for the live auction were $863.50 and for the silent auction $6,878.00. After expenses, our net gain for the 2018 Auction is $7,514.74. Thank you to everyone who created this success.

Barnaby Wasson spent $50 on this beautiful Agave ‘Green Goblet’ at the auction. Photo by Sue Hakala.
IN MEMORIAM: STEVE EUGENE MACK

By Loran Rodewald

Steve was born August 15, 1953, to Sally and Gene Mack in Denver, Colorado.

Steve obtained his bachelor’s degree from Principia College in Elsah, Illinois. He earned his master’s degree from North Dakota State University, and his Ph.D. in range management from Colorado State University.

Steve served two years in the Peace Corps, an organization sponsored by the U.S. government that sends young people to work as volunteers in developing countries. Steve was stationed in the Congo, Africa. He taught English and other subjects. He was an avid collector of African art. His mask collection was outstanding.

After coming back to the U.S. for a few years, Steve went to work for the United States Agency for International Development, and was once again sent to the Congo. He specialized in teaching soil conservation and land terracing. He had a large home and excelled in growing quinine, tea and coffee. He remained in Africa for several years, and acquired many friends and notable acquaintances.

Returning to the U.S., Steve became an accomplished horseman, owning his own horses. He became a champion barrel racer. He was named Mister AGRA in the year 2000.

Steve was a member of our club for a long time, serving in many volunteer capacities. Two years ago he was chair of the CACSS Annual Show and Sale, an unqualified success.

Known for his sharp intellect and kind heart, he will be deeply missed by his friends, family and colleagues. He is survived by his mother Sally, in Phoenix, and brother David of Windsor, Colorado.
Best Arizona Native Plant of the 2018 Show: *Escobaria robbinsorum*
Grown by Cliff Fielding

**PURCHASED:** Mesa Garden 2016

**POT:** It’s in a beautiful Mark Muradian pot.

**FERTILIZER:** I use half strength fertilizer when I water.

**POTTING MEDIUM:** It’s in a well-draining mixture of sand, pumice and a little desert dirt. I use limestone gravel on top because it grows on limestone in habitat.

**SUN EXPOSURE:** It gets full sun mid-November to mid-February, and 30% shade the rest of the year. It gets no late afternoon sun.

**WATERING:** This is one of the smallest cacti in Arizona (usually less than an inch). It is found in the southeastern corner of Arizona. I water regularly in the winter and monsoon seasons as it would receive rain in its habitat. I water only lightly outside of these times.

**FROST PROTECTION:** They grow at an elevation of 4,000 feet, so one can imagine, they would be subject to an occasional frost in the winter.

*Photo by Wendy Barrett.*
Best *Mammillaria* of the 2018 Show: *Mammillaria petterssonii v. saltensis*
Grown by Sue Hakala

PURCHASED: I got this at Baker’s Nursery as a single head.

POT: Grown in a terra cotta pot.

FERTILIZER: I use the club fertilizer (10-16-32) at half strength in the spring and early summer when it’s growing.

POTTING MEDIUM: I use a cactus mix with 1/2 small pumice, a couple handfuls of perlite and one of small gravel as this is a really large pot and needs to dry out rapidly.

SUN EXPOSURE: It gets full sun, November to probably March. The rest of the year it’s full sun until 1 p.m., then covered with 30% shade cloth. I bring it in any night when the temperature is predicted to be over 90F and put it out in the morning.

WATERING: No water in winter. Watered about every 10-14 days in the hot months, if it doesn’t rain.

FROST PROTECTION: This plant is kept in my heated plant house in the cold months. If it is forecasted to be 35F or less, it comes in just for the night as I don’t want to take any chances.
Best Advanced Cactus of the 2018 Show: *Echinocereus pacificus*  Grown by Pam Edsall

PURCHASED: Bought at a nursery in Kansas City around 14 or 15 years ago.

POT: It’s in a Mark Muradian pot.

FERTILIZER: I use what the club sells (10-16-32).

POTTING MEDIUM: I use Black Diamond Cactus Mix with added pumice.

SUN EXPOSURE: Full sun all day long.

WATERING: Depending on the time of year, it gets water usually every 10-14 days and much less in the winter.

FROST PROTECTION: None

SPECIAL NEEDS: I haven’t found any special needs. It’s not real picky.

*Photo by Wendy Barrett.*
The November meeting will be about epiphytic cacti. Yes, they CAN grow in Arizona. The meeting is **November 17, 2-4 p.m.** in the Whiteman Conference Room (Webster Building) at the DBG. Admission is free to the garden for those attending the meeting.

The July meeting was a great success where we all learned a lot about cacti with leaves and how to grow them. Everyone went home with cuttings or plants to try them out at home on their own. I hope they all were successful for each attendee.

At the next PEG meeting, we will be learning about epiphytic cacti. You've probably heard about the usual Thanksgiving cactus, Christmas cactus and Easter cactus—all of these are epiphytic cacti. We will learn about the struggles to grow them in the desert and how you can be successful with them. We'll also learn about other types of epiphytic cacti. As usual, we will have giveaways of a couple of species that we will be talking about.

We hope to see you all there!

**NOTE** Time changed from our regularly scheduled meeting because of DBG event conflict this month only.
OCOTILLO IMPACTING HUMMINGBIRDS

Plants for the Southwest Nursery in Tucson has plant care sheets on their website. There is a tab for ocotillo. They say that sales of this plant have impacted hummingbirds.

Ocotillos are a popular landscape plant. Up until now, most plants that have been available have been dug out of the desert, mostly from Texas and Mexico. Besides other ecological problems, the hummingbird migration in southern Texas and Mexico is being affected by the wholesale removal of ocotillos for landscape use here in Arizona, Nevada and southern California. A large percentage of these dug-up plants die, usually after one to two years of struggling to re-root.

Seed grown plants have a better chance of survival because the root system is not disturbed in the growing and planting process. Ocotillos can be fast growers, reaching up to 18” in one year from seed if watered properly. Three-year-old plants can be 4 feet tall with 4-6 branches. During a good monsoon season, ocotillos will grow one foot per branch! With proper care, seed grown ocotillos are not slow plants and will survive quite nicely once the water is turned off.

Be sure to visit CACSS on the web at: centralarizonacactus.org the Society’s website. Facebook Central Arizona Cactus and Succulent Society CACSS Swap and Shop, a place to connect with members.
Our Central Arizona Cactus and Succulent Society (CACSS) Facebook (FB) page is an open and inclusive forum on cacti and succulents (C&S). Our FB members have many C&S photos, questions, and commentaries, along with requests for C&S IDs. Our FB page membership rose to a total of 4,214 members in October. Please join the CACSS FB page by copying and pasting this url to your search engine: https://www.facebook.com/groups/cacss2/

Each month we feature a cactus and a succulent (non-cactus) photo posted by our FB members. September’s featured cactus photo (on right above) is Mike Harris’ Gymnocalycium horstii in bloom. The featured succulent photo is Chris Ginkel’s post of Ariocarpus fissuratus with double flowers. Thanks to Chris and Mike for posting their photos on the CACSS FB page.

Facebookers keep posting! Please be aware, if you are a member of the CACSS you are eligible to become a member of the CACSS Swap & Shop. You will get great deals on C&S, pottery and trades. Join today!

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A BIG thank you goes out to Thom for keeping us updated on the FB happenings for the past years. He is stepping down to take on other duties for our club. Michelle Schrade has volunteered to write the FB feature in the future. Welcome aboard Michelle!
TIME TO RENEW YOUR MEMBERSHIP
By Membership Chair, Beth Kirkpatrick

It is time for your CACSS membership renewal for 2019. If you have not paid ahead, your membership dues are due: $20 for single and $25 for household or family by December 31 for your 2019 membership. Our membership is on a calendar year, January 1 to December 31.

Please pay via PayPal or credit card HERE.

You can also download the membership form from the website and pay via surface mail or at one of our meetings.

EDUCATION GROUP
By Chair, Sue Hakala

The ED Group hopes that you’ve enjoyed this issue of the Central Spine featuring Euphorbia. Our goal was to give members information about growing these amazing plants here in the low desert, and to highlight club resources available to you.

Periodically, the ED Group will educate us by featuring a genus of plants. In January, Aloe hybrids will be showcased tying in with our monthly program. The majority of members who participated in a very informal survey at recent monthly meetings, are giving the group direction. Future plant subjects will include Ferocactus, Arizona natives and Kalanchoe. The group thanks you for your input.

Join the ED Group. We’d love to have your ideas or, just submit them, comments, or suggestions to cacsscentralspine@gmail.com.

Euphorbia decaryi v gulliminiana grown by Loran Rodewald. Photo by Wendy Barrett.