



Central Spine

NEWSLETTER OF THE
CENTRAL ARIZONA CACTUS AND SUCCULENT SOCIETY



Euphorbia fusca by Scott McMahon.

Euphorbias are very large and diverse genus in the *Euphorbiaceae*, the Spurge Family. There are over 2,000 species with about 750 considered succulent. While some succulent species occur in the Western Hemisphere, the majority of interest to collectors are found in the drier parts of the Old World, from Africa to western India. There are many growth forms within the genus, ranging from small globular and shrub forms to large tree-like species, and inhabiting a range of terrain and vegetation types.

The *Euphorbias* in Madagascar have evolved into three major growth forms based on common physical characteristics: the Millii Group, the Decaryi Group and the Viguieri Group. In Africa and elsewhere, some species may be considered closely related to each other but aren't as well organized into larger formal groups. We just go by whether they are trees, shrubs, spineless, multi stemmed, caudiciform, globose, etc.



Left, *Euphorbia esculenta* with a single thick stem, and right, *E. astrophora*.

There is, however, a larger group of similar species called the Medusans, because their bodies resemble a head of snakes. They have a single thick stem or caudex from which grow many succulent branches. These branches are rounded with shallow grooves and tiny leaves. They produce their cyathia (flowers) from the ends of the branches. The cyathia are yellow or white, some with interesting bracts and some with a nice fragrance in the case of *E. esculenta*.

In some cases, the branches are deciduous, drying and dropping off with age or during a dry spell in habitat. Other species retain their dead branches and should not be removed. As a rule, only remove parts of your succulents which will readily come off with little effort. These dead parts of the plant, that are persistent, make up the overall natural appearance of the plant and contribute to its defense or ability to blend in with its surroundings.

Their culture is like other *Euphorbias* and cacti, needing a well-drained mix and a summer watering schedule. Some are easy to find, as some are grown in large

numbers in California, and others are rarer and require some searching. Try the big box stores and local nurseries for starters, and don't grow them in direct summer sun. Arid Lands Nursery in Tucson has an astounding number of *Euphorbias*, probably the most in the world, and they do mail order. Their catalog has the species arranged in a few generalized groups for simplicity, so you will find plants in the medusan category that don't fit the above descriptions exactly.



Left, *E. cf arida* and above, *E. pugniformis*.

Some of the typical medusans are *E. caput-medusae*, *flanaganii*, *pugniformis*, *inermis*, *esculenta*, *decepta*, *gorgonis*, *suppressa*, *arida*, and some occur as crests. Below, some of Scott's collection.



As I write my President's Message each month, I try to visualize many of your faces. It helps me remember who I am writing to. While I have not been able to tell you in person, I want to let you know that all of you are missed.

I understand that, for many of you, our monthly meetings are more than an opportunity to hear a new presentation. You come to see old friends and make new ones. You might also come to join the bidding excitement during our silent auction or leave with a new treasure from the freebie table.

Some of you also come to check out the great books we have in our library. Whatever the reason that brought you to our meetings, we have not been able to fill that monthly void. I understand that viewing videos on our YouTube channel from home is not the same as seeing presentations in person with your friends. For now that is all the CACSS can offer, but may I suggest viewing the video presentations and then discussing them with your friends. Staying in contact with family and friends during these troubling times is very important and therapeutic. I enjoy it and find it very healing.

Even though the Desert Botanical Garden is now open, we still do not have approval to hold in-person meetings. The Covid-19 situation in Arizona is showing signs of improving but not to the point where we can have in-person meetings. We will need to cancel our August 30 meeting.

Jeffery Lee Moore of Arid Adaptations Nursery in Tucson has kindly agreed to create a presentation for our YouTube channel. It should be available for viewing by the end of August. Jeff will be discussing growing from seeds, including basic concepts, detailed instructions for growing difficult species, and the steps taken to grow a nice plant. Jeff is a wealth of knowledge and a vendor at our Annual Show and Sale. I hope he can come to Phoenix and give us a presentation when we are able to meet again.

I will continue to provide you with information as it becomes available. As always, do not hesitate to contact me with your questions or concerns. You can reach me through Facebook Messenger.

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ORGAN PIPE NATIONAL MONUMENT With Javier Gurrola
Photos by Javier, Text by Editor Sue Hakala

CACSS YouTube Channel has a new presentation from club member Javier Gurrola. Join Javier on a tour through Organ Pipe National Monument as he shows us some amazing Sonoran Desert native plants. I've been to and through Organ Pipe many times. Javier showed me some plants I had never seen there, especially a BIG double crested organ pipe cactus (*Stenocereus thurberi*). Be sure not to miss it. To see

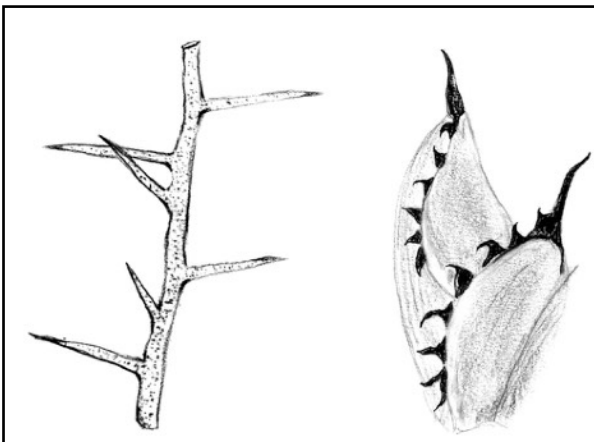


Javier's presentation, visit [YouTube.com](https://www.youtube.com). In the search box, type in centralarizonacactus. Several video presentations will come up on this page. Scroll down until you find the one you want. You can watch anytime.



A common question about cactus and other succulents is related to the confusion associated with differentiating spines from thorns. Most people are familiar with spines as structures present in cacti. Of course, not all spines are the same. The color, size and shape of a spine can be variable depending on the type of cacti.

Things get complicated when people point at a *Euphorbia* or other thorn-bearing succulent and call it a cactus. A common statement would be, "Oh but it has spines, so it is a cactus." We would point out that those are not spines but thorns, and that the only spine-bearing succulents are cacti. Unfortunately, the difference between spines and thorns is hard to explain unless we approach the subject from a botanical perspective.



Drawing of thorns by Ric Lopez.



Thorns on (left) Euphorbia avsmontana, right, Euphorbia triculeata by Scott McMahon.

Spines and thorns, while similar in appearance, have different origins. Thorns are modified branches or stems that arise from buds. Once leaves fall the modified stem that remains is technically a thorn.

Spines, on the other hand, are modified leaves or parts of leaves that are produced from specialized structures called areoles that are only found in cacti. For reasons that are not very well known, cacti are the only succulents that bear spines.

It is interesting to note that the presence of thorns or spines is believed to have multiple functions. One is being a type of defense mechanism that protects the plants from plant-eating animals. The second function is that of providing shade for the growing part of the plant, thus protecting this sensitive area from excessively high temperatures. This appears to be the case with cacti. Spines help cactus reduce transpiration (the loss of water) through shading, and can direct water to the roots.

This information may help, but it may still be confusing to cactophiles new to this hobby to differentiate between cacti and cacti look-alike succulents. My best advice is to approach this problem as if you were learning to read. You start slow and begin to recognize shapes of letters and then you begin to associate the letters with the sounds and so on. Basically the more familiar you become with succulents of all kinds, cacti included, the easier it will be for you to identify cacti and other succulents that look like cacti. The best way to do this is by reading about succulents, looking at photos and live succulents of all types, going to shows and nurseries, and growing your own succulents.



Spines can take many forms. Above left, spines on *Ferocactus cylindraceus* ssp. *cylindraceus*, and right, *Mammillaria albicoma*. Photos by Sue Hakala.

A tip to remember is that succulents in the genus *Euphorbia* (a genus in the very large *Euphorbiaceae* family) are often mistaken for cacti (*Cactaceae* family). There are hundreds of succulent *Euphorbias*. They all have very small flowers and the plant secretes a milky sap when punctured, and have thorns. These two characteristics are not found in cacti.



The similarity of thorn-bearing succulents to spine-bearing cacti is a great example of convergent evolution, a phenomena that is evident in some plants and animals that occur in similar environments in widely separated locations (e.g., deserts of Africa versus the deserts of the Americas).

Left, is it thorns or spines on *Fouquieria splendens* by Wikipedia?

EPITHELANTHA MICROMERIS

Photos and Text by Elton Roberts

Elton has been designated a master grower by the Cactus and Succulent Society of America.

Epithelantha micromeris is self-pollinating and makes a lot of seed. In habitat, the plants are solitary or clumping with heads about three inches in diameter. In cultivation, my plants are about 2" in diameter and about 3" tall. I also have some that are in clumps about four inches in diameter.



In some books, it is suggested that the plants be given limestone or a highly alkaline soil. I had a very hard time growing my plants with alkaline water. It was only when I gave the plants acidic water that they started to grow and look good. (Acidify water by adding 1 tablespoon white vinegar to 5 gallons of water.) People forget that plants growing in alkaline soil in habitat still get rained on, and that rain water is acidic. The plants take up the rain water until it is neutralized by the alkalinity in the soil. They then stop growing until they get the acidic rain water again.

With the emails and letters I receive, I know there are a lot of people that are now acidifying their water, and their plants are growing like they haven't in forever. Try it, you'll see I'm right.



Left, in flower and right, with seed pods.

Pumice has been in use for over 2,000 years, dating to the time of the Romans. It was an ingredient in ancient Roman concrete which has lasted to this day in their domes, aqueducts, arenas, and piers. Today it is used in industry as an abrasive, in water filtration, chemical spill containment, cement manufacturing, and for the pet industry. It is also used in personal care products as an abrasive material in toothpaste, hand cleansers and in household cleaning products. It is also used in gardening and horticulture and should be added to any cactus and succulent mix.

Pumice is a mined, porous volcanic rock. It is formed when volcanoes erupt and explosively spew super-heated, highly-pressurized rock which quickly cools and depressurizes, trapping tiny gas bubbles (including water and carbon dioxide) in the rock. The rapid cooling creates a light-weight igneous rock with a foamy, sponge-like texture filled with tiny and microscopic holes called vesicles. The name pumice derives from the Latin word "pumex" which means "foam."



Found where explosive volcanic eruptions occurred, it is mined in North America from locations in Nevada, Oregon, Idaho, Arizona, California, New Mexico, and Kansas. Because pumice accumulations are found at ground level, mining it is somewhat environmentally-friendly, requiring only bulldozers and power shovels. It can then be crushed and sorted by size into lump, coarse, medium, or fine grades. As no further treatment is needed, pumice is ready to use. (See photo left.)

Containing only a few trace materials and minerals, pumice is pH neutral. It does not break down, decompose, compact or rot, and it does not blow away. It is porous and light-weight. The tiny vesicles in pumice hold moisture as well as nutrients dissolved in the water.

Because of these physical properties, pumice is recommended as a soil amendment for use in gardening and horticulture. Adding pumice to the soil mix does many things beneficial to plants. It allows excellent soil drainage, improves soil structure, loosens heavy soils, and prevents soil from compacting, even if the soil is wet from too much rain or overwatering.

The porous, sponge-like structure of pumice holds water and nutrients in the tiny vesicles and releases them to plant roots as the plant needs it. It reduces root-rot by absorbing excess water. The structure of pumice holds air in the root zone and allows aeration of the soil by providing space for the roots to exchange gases with the air.

Adding pumice to the soil mix is ideal for plants that require excellent drainage, like cactus and succulent plants that store moisture and for plants that are prone to root-rot. Various soil mixes are recommended depending on the type of plant. For mixes the CACSS members recommend for cacti and succulents, please refer to the Newsletter Miscellaneous Index, on the club website, for articles on *Pots and Potting Mix* and *Soil* from the March 2016 newsletter. Another article for review is *Pumice Pile: A History* from the February 2019 newsletter.

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Our club buys pumice (small and large grind) in bulk and passes the savings along to members at a Pumice Pile Event. Tom Briggs, who manages the pile, says the next Pumice Pile Event has yet to be scheduled but will happen when the temperature is much lower. Tom is hoping that'll be September/October.

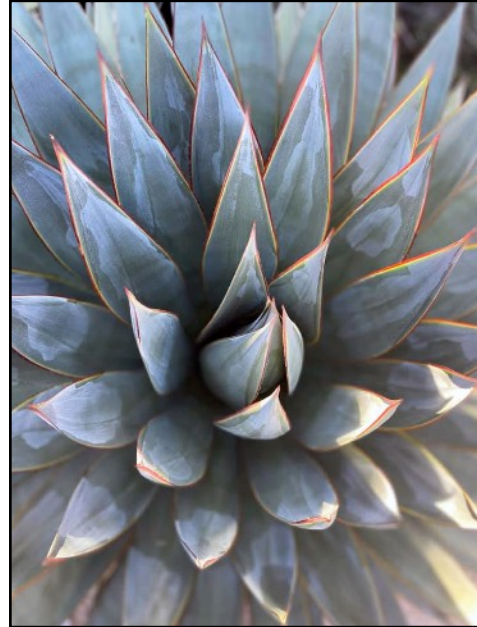
The Pumice Pile Event sale usually happens on a Saturday morning and is in south Phoenix, near Southern Avenue and 26th Street. The exact times and address will be emailed out to club members about a week before any event. Reminders will also be posted on Facebook.

The price is \$5 per 5 gallon bucket of pumice. You'll need to bring your own bucket or other containers. There are two sizes of pumice available, small and large grind. With the coronavirus, you'll also need to bring your own shovel, mask, and exact change/ cash only.

If anyone is in high need of pumice before the next event, Tom has a few extra buckets of both sizes that can be purchased and picked up from his home near 32nd Street and Chandler Blvd. 85048. If you have any questions, contact Tom by phone, text or email.

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These photographs were taken at the Desert Botanical Garden in early January 2020. They are some of my favorites captured, so far, as an amateur photographer. Other than using them as wallpaper on my various electronic devices, or framing and hanging them, I wondered if there was another way to admire my work. That is when the idea of stickers popped into mind.



Agave truncata left, and *Agave 'Blue Glow'* above, and made into a sticker.



In the past, I had ordered stickers from an online site called StickerYou. These were some of my simple drawings to sell through my and my mom's small online art shop, GenerationsXTwo. I decided to do the same with these botanical pictures. It was a great decision, and I recommend it to anyone looking for a unique way to reproduce original art! I also have some extra stickers for those who are interested.

The CACSS FB page has hit a milestone! We now have 6,000 members worldwide. In honor of the occasion, this month's Cactus of the Month is from Italy. Cesare Brancaleoni regularly posts photos of his beautiful rooftop cactus garden in Rimini, Italy. All his plants are in pots, and he has grown several of them for 30 years. You can join the CACSS FB page at: <https://www.facebook.com/group/cacss2/>

Post with Most Likes: *Mammillaria mazatlanensis* posted July 5 by Sue Hakala with 248 likes.



Left, Cactus of the Month: Parodia leninghausii posted July 31 by Cesare Brancaleoni. Above, Succulent of the Month: Hybrid Adenium 'Rocket' posted July 21 by CACSS member Dan Smith. Dan is a local expert on growing Adeniums.

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Facebook, Instagram and YouTube at: [CentralArizonaCactus](https://www.facebook.com/CentralArizonaCactus), and
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Please contact Editor Sue Hakala at centralspine@gmail.com with comments and suggestions. The newsletter needs article submissions.