

Central Spine

Newsletter of the Central Arizona Cactus and Succulent Society



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Wendy Barrett's spectacular photo of a *Trichocereus candicans* flower and pollinator.

Join Rob for our program at 2 p.m., on August 28, in Dorrance Hall at the Desert Botanical Garden.

There is a small mountain range in southern New Mexico, the Jarilla Mountains. Situated just east of the town of Orogrande, it is a very special place indeed. It is here that five species of echinocereus occur together and have created what is arguably the most spectacular array of hybrids that one can find in nature. These hybrids have likely crossed and back crossed for a very long time. The variety of flowers they produce is quite amazing. One can see a rainbow of color along with different shapes and sizes.



Blooming hedgehogs in the Jarilla Mountains of New Mexico.

Easily accessed and open to hiking, there are also several other species of cacti and other succulent plants to see. The program will showcase a time when conditions were such that a banner year of flowers were on display.

Rob Romero is a long-time amateur cactus hobbyist and field explorer. He enjoys



growing various cacti of the southwestern U.S. and Mexico. Growing from seed is a long-time addiction. He is also one fourth of the writing team that helped to create the very popular book, *Field Guide to the Cacti and other Succulents of Arizona*.

All three plants are *Echinocereus x roetteri*.



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THE PRICKLY PROBLEM OF *OPUNTIA*

By Mary Osmond Jeulfs and Kim Andrews

The Sonoran Desert is rich with yellow blooms. We have our brittle bushes, cascalotes, creosote bushes, desert marigolds, desert primroses, fiddlenecks, palo verdes, prickly pears, yellow cups, and more. Why did someone want more yellow blooms in the Sonoran Desert by bringing in a South African native stinknet, *Oncosiphon piluliferum*? This plant is spreading rapidly, squeezing out native plants, blocking tortoise movement, and increasing wildfire temperatures.



Baboons attracted to fruit contribute to the spread of the plants and increased human-wildlife conflicts. Photo: Marcus Westberg, <https://www.biographic.com/a-plague-of-cactus/>

Our human nature is curious about new, unusual plants. We search for ways to find practical and useful applications of plants that can survive our environment. We complain about how stinknet has negatively impacted our desert, but let's look at how one of our native plants has impacted its non-native environments.

Over 200 species of prickly pear cacti are in the genus *Opuntia*. The prickly pears are members of the Cactaceae family and contain some of the most widespread and damaging invasive plant species in the world.

Opuntia is a highly commercialized plant for their horticultural, hedge, erosion control, agriculture, and medicinal applications. It has escaped from cultivation, naturalized and spread to the point of being an invasive pest. They are established in Australia, Pacific Islands, China, Macedonia, Austria, France, Italy, Portugal, Spain, Tunisia, Kenya, South Africa, Namibia, and Lesser Antilles.

It adapts and survives in many environments, including semi-arid and arid regions, but also open woodlands, dry forests, semiarid thickets, savannas, rangelands, grasslands, pastures, waterways, roadsides, coastal thickets, disturbed sites, and waste areas. It thrives in many climates, from hot and humid conditions to arid areas, while also being frost tolerant. The countries most severely affected are Australia, South Africa and Spain.

When non-native plants are first introduced, they entrench themselves in the area because there are no natural predators and competitors to control their growth. Livestock and wildlife play a major role in the dispersal and germination of prickly pear seeds. The cactus tends to grow densely along elephant corridors, spreading at a pace of about 1.5 miles per year. As they become invasive, they generate a negative impact on the biodiversity, ecosystems and the local economy.

Prickly pears imported into Australia to host cochineal scale for the dye industry spread, impacting 15,000 square miles of farm land as unproductive.

Opuntia invasions result in negative impacts by degrading rangelands, reducing livestock health, negatively impacting wildlife, and crowding out native plants because the native local plants and wildlife did not co-evolve with opuntia. They never developed the co-adaptions to survive with them.



Invasive mesquite trees in Africa.

Some major negative impacts are:

- Spines and glochids cause physical injuries and induce allergic reactions, sarcoma, foreign-body granulomas, and ulcerations, according to medical journals.
- Animals are blinded by spines piercing their eyes when grazing near or in cactus.
- Spines and glochids lodge in lips, mouths and gastro-intestinal tracts of livestock and native animals leading to weight loss, less milk production and stomach abscesses, often leading to death.
- Native plants are crowded out, including those depended upon for food and medicinal purposes.

Opuntia is frequently found with other semi-arid rangeland invasive species, such as chollas and mesquites. *Prosopis* sp. (mesquite) has a negative impact on livestock and camel health in many African countries through thorn injuries. Diabetes, and the loss of teeth in animals, is due to the consumption of their pods that have a high sugar content. These plants are considered an undesirable competitive weed because they have few

benefits, cause major losses for community livelihoods and block migration and herding paths.

Invasive weed management is needed to prevent a decline in human well-being, even though it is expensive and introduces new risks by using herbicides and biocontrols. In 1925, Australia successfully introduced the cactus moth from Argentina for use as a biological control of the species *Opuntia stricta*. Other arthropods have been introduced into Australia with partial success in suppressing the invasive prickly pear. New species that have been introduced include: spider mites, *Tetranychus opuntiae*, two types of cactus bugs, *Chelinidea tabulata* and *C. vittiger*, and three types of cochineals, *Dactylopius opuntiae*, *D. tomentosus*, and *D. austrinus*.



Left, cactus bug nymph, right, adult, *Chelinidea vittiger aequoris*.
Photo credit: https://entnemdept.ufl.edu/creatures/beneficial/c_v_aequoris.htm This is the insect that sucks the life out of your plant and leaves a permanent white circle.

Even as weed management may reduce the quantity of these plants, the risk of new introductions is high. These plants are spread by wildlife, livestock or naturally with little influence by humans today. The horticultural and nursery trade continue to promote and provide these plants. Seeds are available online from mail-order companies, along with many other ornamental cacti. Successful controls include regulations for the prevention of introducing new species, along with guidelines for finding and eradicating established species to reduce the impact on the environment.

In 2015, The Global Cactus Working Group was put in motion to identify the needed actions, improve international collaboration and limit the impacts caused by cactus invasions throughout the world. They recommended invasive cacti be regulated and invasions be treated physically or chemically before they become widespread. They advocate the use of biological control to manage widespread invasive species.

Invasive plants are a problem world-wide. As gardeners, collectors and admirers of non-native species, we should know where our plants originate and if they are a potential environmental threat to our environment. We have an obligation, to both the environment and nature, to never dispose of seeds or plants in a way that will cause more harm. What plants are you growing that are not native to the Sonoran Desert?

Efforts continue in retrieving long overdue library materials as we return the collection to pre-COVID status. Many members (and former members) were emailed over the past several months regarding returning books. Thank you to everyone for responding in a timely manner. We are rounding up the last few books.

For both new and longtime members, a brief reminder about the CACSS Library Collection and Policies:

- Since our CACSS books do not have a permanent home, it has become a “mobile collection” transported by volunteers to approximately nine meetings per year. Of course, this means not every title will be available at every meeting. Contact the librarians if you would like to borrow a specific title.
- A listing of the materials owned is available on our website. Choose ‘Library’ from the drop-down menu, and use the links for books, journals and periodicals to search for specific titles.
- Checking out books, journals or magazines: We limit each member in good standing to 2 items for 2 months. If an item becomes overdue, we will send an email reminder shortly before the next meeting. Contact the librarian if other arrangements must be made for return of items.
- PLEASE return items by placing only in the RED Book Return Bin on the library tables.
- Donations: If you want to donate an item or items, please put a slip in each item with your name. If you want your item returned, if we can not use it, state that on the slip with your name.
- Our Library Donation Policy: We reserve the right to put items in the CACSS collection, sell on Amazon or eBay, sell at meetings, or donate to other libraries. All these decisions are according to the librarian’s knowledge and research on the donation.

If you have questions or requests, please contact:
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CACSS 501(c)(3) EXEMPT TAX DESIGNATION

By Treasurer Nick Diomedé

The Central Arizona Cactus Succulent Society (CACSS) board and membership wish to thank the anonymous donor who contributed \$1,000 to the society. This donation is extremely appreciated and helps us continue our mission of serving our community as a nonprofit organization.

A defining factor between a nonprofit and for-profit organization is the IRS code 501(c) designation, which excuses nonprofits from federal (and in some cases state and local) tax liability. The CACSS is an organization designated as 501(c)(3), commonly referred to as charitable (exempt) organization. As 501(c)(3) exempt organization, we are committed to the service and advancement of education, science and conservation of our desert communities.

Our purpose: (1) to study, propagate and cultivate cactus and succulents; (2) to educate members and the public; (3) to aid conservation programs; and (4) to support the Desert Botanical Garden and other institutions.

Being designated as a 501(c)(3) allows us to receive tax-deductible contributions to fulfill this mission. While these contributions greatly benefit the CACSS, taxpayers are also able to reduce their tax liability by claiming a charitable deduction on their taxes.*

*Any charitable contribution tax benefits should be discussed with financial/accounting professionals.

PRESIDENT'S MESSAGE

By Cricket Peterson

We will be back at the Desert Botanical Garden for our regular meeting on August 28, September 25 and October 9 for our Silent Auction. November 13 will we back at the church. December 11 will be the holiday picnic at Papago Park.

I would like to thank the anonymous donor who so generously donated \$1,000 to our club. The CACSS is a 501(c)(3) non-profit organization, and members can donate to the club if they choose. We are grateful. Thank you.

I've had a few members ask what is required of a board member? The term is two years starting January 2023. We meet on Sundays at 11 a.m., usually before the regular meeting for about a 1-2 hour meeting. We only meet every other month, so six times a year is the commitment. It's a great way to learn more about the club and give input to better serve and improve the CACSS.

We need nominees for our Honorary Lifetime Memberships. If you know of a member that has made a substantial contribution to the CACSS, please submit in writing a nominee to me, the president, by September 1, 2022 at cricketcacss@gmail.com.

I have been told many times and in various ways, that two heads are better than one. This is certainly true when facing a difficult problem. Does this colloquialism hold when referring to cactus plants? Anyone growing a *Copiapoa cinerea* would almost always prefer a second, third or fourth head on their plant. This would be true for many species of cactus and succulents that we grow. What if the cactus normally has only one growth point? For example, what about our local barrel cactus (*Ferocactus cylindraceus*). Anyone walking in our Phoenix desert can spot the barrel cactus looking like solitary pawns to the majesty of the saguaros. Every once in a while, you can spot one that has more than one head. Why is this happening, and is it good for the plant?



Front and back side of large multi-headed barrel. The heads in the front are resting on the ground and may be preventing the plant from collapsing.

Cacti are very unique in their growth habit compared to most other plants. Being succulent, and needing to store water in the body of the plant, makes any growth very heavy and difficult to support. It has been speculated that this has led to a reduced number of growing points (apical meristem) at the tip of each arm, body or roots. The ferocactus in the Phoenix area have only one active apical meristem for upward growth and will not normally develop arms. It is possible to see some older specimens towering 6 and 7 feet high. These larger barrels will usually be very straight vertically. If they had a slight tilt, any heavy rain would add tremendous weight to the column and it would lever their weak roots out of the ground. When hiking one morning during a wet winter, I was able to witness a huge barrel tumbling end over end down the hillside.



Three headed barrel is an odd growth form.

The apical meristem at the tip of the barrel can be damaged by many causes: frost, rocks, insects, etc. The cactus will tend to stop growing up and start to grow new heads near the top. Many areoles, located just above each spine, will now activate a dormant apical meristem that will produce a normal barrel cactus growth habit. When they are new and small, the multi-heads look terrific perched on top of an old fat stem. However, they do not stay small. Over many years, that old fat stem may be trying to support 10 to 20 heavy fat barrel cacti. Evolution then proves its wisdom in only having a single active growth point by crushing the main stem under the weight of the multiple heads.

I have seen several of these amazing plants fall apart and disintegrate very quickly. Like any deviation from the norm, there may also be some barrels that get new heads all over the body. When you are out hiking our deserts, please note all these exceptional plants and take pictures! You never know how much longer they will be



around.



Left, multi heads on a short stump may have started when the plant was very small. The normal barrel is a separate plant. Right, weak and flimsy root system of the barrel cactus exposed.

Usery Mountain Regional Park encompasses nearly 3,700 acres of natural Sonoran Desert. It ranges from 1,700 - 2,750 feet in elevation. It is east of and a bit higher than the greater Phoenix, AZ area. My husband Terry and I have been visiting Usery for over 45 years; just a 30 minute ride east of our home. We've enjoyed watching desert plants sprout, grow, mature, and die over the decades. Lately, we've seen lots of ferocactus die.



Above a healthy ferocactus, right, a funky apex growth probably from freezing.



A blown over ferocactus.

In 2015, there was a hard freeze in the Phoenix metro area, and as Usery is at a higher elevation, the freeze was felt more keenly there. In 2017, we noticed that many feros had a funky growth at the apex of the plant, probably from freezing. In the next years, the growth got larger. Then in 2019, many feros fell over due to a big wind storm that came howling down the mountainsides. I'm guessing that these plants were victims of the freeze and had damaged roots, making them easy targets.

It was sad to see many plants with roots in the air, or at least very exposed. It didn't take long for bacteria and pathogens to make their way into the plants. Desert insects and animals must also have enjoyed the banquet. It only took one year for the plants to

completely flatten! In some cases, in just one year there was nothing left but some brittle skin and spines, some with just an outline of spines. Interesting to see for sure. Don't worry, there are still lots of healthy and perky plants in the park.



A fallen friend about six feet tall with roots in the air.



From left, nothing left but a flattened ferocactus. An outline of a plant with brittle skin and some spines. A vague outline in spines of a ferocactus.

Pumice is purchased in bulk by the club as a service to our members. A nursery in south Phoenix hosts our pile. Pumice is the soil additive that you need to use to help your cactus and succulents dry out faster, preventing rot. Use at least 50% pumice to soil, depending on the plant of course. When visiting the pumice pile, bring your own shovel and bucket and be prepared to fill the buckets yourself.



Leslie Parsons-Shell fills her bucket at the pumice pile.

Some dates for the pumice pile sale have changed. Mark your calendars for these dates: October 15, 2022, February 11 and April 8, 2023. These are all on a Saturday from 8-11 a.m.

Future emails and announcements will have the address and will be sent prior to each date. Check your emails from the CACSS.

If you need to come outside of the 8-11 a.m. time frame, please call me ahead of time to try to make arrangements. We cannot be on this property outside of the sale time and dates. If you need pumice and can't make the sale dates, please contact me directly at 480-510-2403 to see how I can help you get pumice.

Send comments, suggestions and submissions to the editor at cacsscentralspine@gmail.com

Answers to quiz: 1 C, 2 F, 3 B, 4 A, 5 H, 6 G, 7 D, 8 E

Be sure to visit CACSS on the web at: centralarizonacactus.org, Facebook, Instagram and YouTube at: CentralArizonaCactus, and members only at: CentralArizonaCactus Swap and Shop.

A NEW OPPORTUNITY AND MY FIRST CSSA SHOW AND SALE

Photos and text by Nick Diomedede

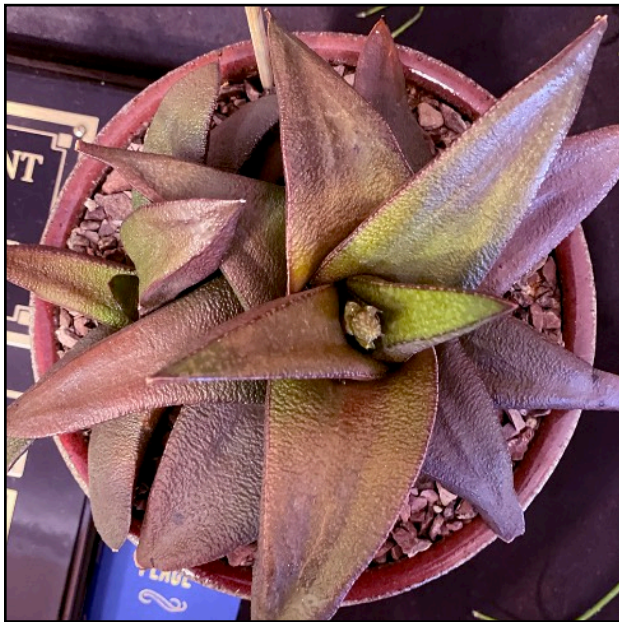
For six out of the past eight years, most members have seen me at the treasurer's table, whether they were paying a membership fee, an auction win, to ask a question, or just say hello. Many also see me taking money (as fast as I can) during our large auction events and overseeing the registers/vendors at each of our last five Show and Sale events. While deeply involved with the CACSS, in recent years I had started getting involved with our national organization, the Cactus and Succulent Society of America (CSSA). During this time, I set my sights on increasing my responsibilities within the community. On July 1, 2022, I was appointed to the Cactus and Succulent Society of America's treasurer position.



That July weekend found me at The Huntington Botanical Gardens (HBG) for the Annual CSSA Show and Sale event (my first time at any California show and/or sale event). While I was hoping to have some time to enjoy the event and the HBG, I was there to oversee the sales and register area and the auction event. True to form, it dominated my time. However, there were no regrets as this is what I have always enjoyed doing.

I did get to see some fantastic show plants (seen in this article), see some old friends and make many new friends in the cactus and succulent community (why did I not do this earlier?). Typical of an event that happens once a year, it had its share of challenges (and in my opinion, the southern CA weather was not one of them!). The event was very successful, with many people seeing and purchasing a lot of great plants!

I would be remiss if I did not say something about the fantastic show plants I got to see. With so many divisions of plants to admire, I need to limit this to my favorites. Those would be the ones with out of the ordinary color. The two top ones being *Neoperteria occulta*, sitting with its first-place ribbon, black as can be, or the variegated *Euphorbia poissonii*, with colors so vivid I sought out the grower to ask if he used food coloring when he watered his plant. These favorites were followed closely by the burnt red copiapo, the purple tinged gasteria and red tinged astrophytum. There was quite a bit of jealousy knowing the sun we share treats them better over there. Onward to the Inter-City Show!



CentralArizonaCactus Facebook page is an outreach of the Central Arizona Cactus and Succulent Society. Created in 2014, with 6,360 members worldwide, it is a fun way to discuss and share all things cactus and succulents and make new friends.

An above average monsoon season for the greater Phoenix metropolitan area was forecast by the National Weather Service and, by golly, they were right! July brought an abundance of monsoonal moisture and humidity ending the horrible dryness and our struggle to keep our gardens alive. Members' posts were full of pictures of plant renewal and bonus blooms.

Many of our newer members posted pictures of their gardens and greenhouses. Be sure and welcome them to our group and encourage their sharing. I found it fun to see CAC member Mike Kolibabzuk's pictures of his amazing cactus collection in New Jersey. I've never seen a more welcoming greenhouse. He calls it his greenhouse man cave. Check it out!

Each month a photo of a cactus and succulent posted by CentralArizonaCactus members is selected for recognition. You can join the CAC FB page at: <https://www.facebook.com/groups/cacss2/>



Cactus of the Month: Schick *Echinopsis* hybrid 'Minuet' posted July 13 by Celeste Gornick.



Succulent of the Month: *Aeonium* posted July 28 by Cricket Caires-Peterson.

When people ask which are my favorite cacti, my stock reply is, “Small ones with beautiful flowers.” I like small cacti mostly because I can fit more individuals in my limited growing space. Since few flower for a lengthy time, having more species means more likelihood of having flowers on any given day. Simple!

Popular small genera that grow easily here in Arizona include *Mammillaria*, *Gymnocalycium*, *Turbincarpus*, *Parodia*, *Escobaria*, *Stenocactus*, *Eriosyce*, *Coryphantha*, *Thelocactus*, *Astrophytum*, to name but a few. One genus that I have never seen for sale at a nursery in the Phoenix metropolitan area, and only rarely in Tucson, is *Rebutia*. When I ask local folks why, the reply is usually something along the



Rebutia flavistyla

line of “Don’t bother with them; they cannot take the heat here.” Native to cooler mountainous high elevations in Bolivia and Argentina, it stands to reason they would not like our hot, low desert. However, after trying several species, I have learned that some *Rebutia* can do quite well here.

The brutally hot summer of 2020 was a good test of plants’ heat tolerances. These are the *Rebutia* I kept through that memorable (or forgettable) year, none of which showed noticeable damage: *bullardiana*, *fiebrigii*, *flavistyla*, *heliosa* var. *theresae*, *krainziana*, *miniscula*, *neocomingii*, *pygmaea*, and *vulpina*.

Many include *Sulcorebutia* with *Rebutia*, so I will toss in as well my *Sulcorebutia*: *mentosa*, *pulchra* var. *albiareolata*, and *rauschii*. While most sources indicate *Rebutia* like bright light, we in the Valley of the Sun know our version of bright light is not what most authors are describing. I keep mine on a table which receives full sun until around 10 a.m., followed by 50% shade until 1 p.m., then full shade for the rest of the day. Ones I tried in my little greenhouse, which provides 40% shading all day, seemed just a bit stressed there, probably because they were receiving light during the hottest hours of the day. I must conclude that it is not just heat alone which spells inevitable death for many soft succulents, rather the combination of heat and sunlight that causes many *Rebutia* to struggle here.

As far as growing mix, fertility and watering, I treat them no differently than anyone else. In winter, I keep them on the dry side and above 40-45 degrees fahrenheit, just as I do with all my potted plants.

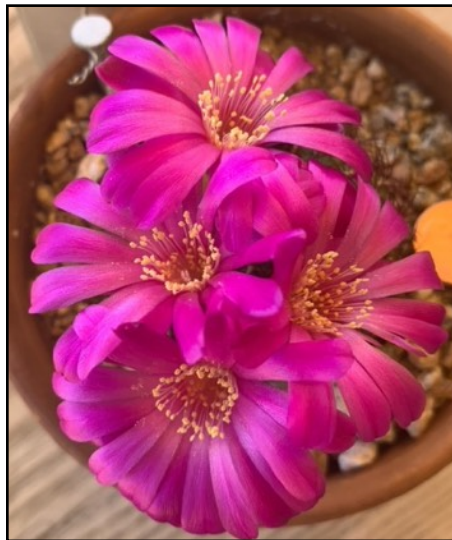
Few genera show more vibrant but also pastel colors than *Rebutia*. Many are orange to red, but there are also shades of yellow, pink, salmon, purple, white, often offering multi-colored petals. Most form clumps at a very early age, although some remain solitary. In certain locations, they are nearly continuous bloomers, but do not expect this in hot Arizona. However, most of mine bloom several times through the year. Three I have



R. Heliosa var. *theresae*



R. neocumingii ssp. *tolii*



R. mentosa syn. *Sulcorebutia mentosa*

started from seed are *bullardtiana*, *pygmaea* and *heliosa* var. *theresae*. Each had good germination and no difficulties with growing on. In fact, the latter was one of the easiest cacti I have ever grown from seed. I recently sowed seeds of 28 different taxa. It will be a few years until I know which of these grow well here, but based on my experiences so far, I have high hopes.

There is often much to be gained by disconnecting from prevailing opinion and simply starting fresh with an open mind. With computers, we make a clean start by pressing the power button and “rebooting.” I suggest Phoenix area growers and hobbyists consider taking another look at these wonderful plants. I, for one, have been most pleased with my *Rebutia* “reboot.”

VOCABULARY BUILDING

Match the words with their definitions. Answers are in the newsletter.

1. clone
2. stomata
3. caudex
4. cultivar
5. holotype
6. species
7. family
8. genus

- A. not of wild origin
- B. swollen storage structure on a plant
- C. a group of genetically identical plants
- D. a group of plants that share similar features such as flowers and reproductive parts
- E. a group of closely related species
- F. breathing pore of a plant
- G. interbreeding population of closely related plants
- H. one specimen that best illustrates a new name in a herbarium sample



Crested barrels cactus