Dudleya saxosa collomiae. Barnhardt, Trail March, 2010--Photo by Doug Dawson

Growing Dudleya in the Low Desert

by Leo A. Martin

Luscious, mouth-watering rosette succulents, too perfect for this vale, fleshy cabbage roses, white as a nymph's thigh, impossibly thick, spiraling leaves sprinkled with powdered sugary wax. An Elizabethan collar of reflexed, rusty brown dry leaves. We drool zombie-like before them, bereft of will, bewitched, entranced, powerless... we... must... TOUCH! Show Chairs in vain hide them on the far side of the table, guarded by impotent signs. After touching, the next impulse is always to possess one (or more.)

They can grow here. They require extra care.

As with any other plant, it is useful to know something about them and their native habitat. There are about 40 species, all New World members of the Crassula family, signaling to a succulentist they cannot tolerate hot summer nights. There are three divisions of the genus: the rosette succulents most of us know with flat leaves, rosette succulents most of us know with pencil-like leaves, and unusual, small shrubby plants with thick, cylindrical leaves, often growing from tubers. Of course, at one time these were three different genera.

The shrubby ones are found from southern California south, along coastal headlands, and are little cultivated.

The rosette types sometimes are solitary, but some species split by dichotomizing, as do some Mammillaria.

These species can form mats of rosettes.

Dudleya saxosa collomiae, with Graptopetalum rusbyi, Barnhardt Trail April, 2009- Photo by Doug Dawson

Nearest relatives to Dudleya are genera Echeveria, Graptopetalum, Sedum and Villadia. This list will raise a red flag for those of us who have tried to grow these genera in the low desert and found them succumbing rapidly as the weather warms in spring.

Most Dudleya are found inside the USA, with some species straddling the border with Mexico. A few are Mexican endemics, found along the Baja California peninsula. All but a handful are strictly coastal, not occurring outside the coastal fog belt, seldom more than 20 miles inland. Some, like D. pulverulenta, found from Orange County, California south to El Rosario in Baja California, prefer sandy soils a few miles inland, often along watercourses. On the flats it can develop 2-foot diameter rosettes, too heavy to hang from coastal cliffs. We have two outliers here in Arizona, a surprise to many people; they have the same growth cycle as their coastal relatives. Almost all live in a winter-wet, summer-dry Mediterranean climate. This is the key to growing them in captivity.

Dudleya saxosa collomiae, (right) with Mammillaria grahamii, Apache Trail, March 2010) Photo by Doug Dawson

The coastal dwellers receive water as dew, fog or rain on most nights during their cool winter growing season.

Frost is rare to nonexistent for most species. As fall rains begin they unfurl from long summer dormancy and grow luxuriantly and lasciviously, looking like small to enormous cabbages, nestled in the coastal scrub or growing on sea cliffs. New leaves are produced from the center throughout the growing season, and live 1-3 seasons before reaching the outside of the rosette, curving back while dying and drying to form a collar.

Flowering begins late spring, well after rains have ended, when surrounding vegetation is dry and brown.

Inflorescences emerge from the outsides of rosettes and grow far into the air, up where pollinators can see them above the surrounding grasses, or well away from cliffs. Many Dudleya have red flower stalks and yellow or white flowers, which stand out against the surrounding sea of brown plants, making it easier for pollinators to find them. Our native D. saxosa ssp. collumiae is acknowledged to have the most beautifully-colored inflorescence.

As the dry, cloudless summer progresses and temperatures rise, fruits mature and split, allowing powdery seed to be blown to new sites. Inflorescences dry to a crisp, but remain standing to attract succulent and native plant enthusiasts. Plants curl inward and old leaves shrivel slowly as they transfer their water back to the stem. In late fall fires are possible. Dry inflorescences burn, but the collar of old dry leaves protects the stem and living rosette much as a fire jumper's beard protects his face. With fall rains growth resumes and seeds sprout.

Our two Arizona natives (the other being D. pulverulenta ssp. arizonica) also grow exclusively during the winter. They may be found on north-facing mountain peaks throughout the low desert, or on west-facing cliffs at higher elevations in the Salt River canyon. During the summer they shrivel away to nothing visible and often cannot be found except by their inflorescences. With winter rains they resume exuberant growth. Being higher-elevation plants, they struggle in captivity during low desert summers.

With this in mind we can grow them better. If you're tired of reading by now, here's the brief summary: Keep them outside in the winter, in full sun, and keep them moist from the time it cools down in November until it begins warming in the spring. Protect most from frost. When nights begin warming, take them into the house and put them in a bright window. Don't water them all summer. Don't even mist them unless on a cool night. If you don't take them into the house they will almost always die even if you keep them in the shade.

Nights are just too hot here in June and July.

If you want more detail, read on. Recall they live on cliffs, cracks in rocks, and shallow sandy soil. Their roots are very shallow, which eventually leads to problems in cultivation. More on that later. They need very loose soil for the tiny yellow roots and it doesn't need to be very deep. Roots emerge between all the old leaves at most times during the growing season. This is why they are so easy from cuttings. The small rosette types like D. gnoma (often sold as 'Green Sprite' or 'Twinkle') may form mats on cliffs; they are so close to the rock that detritus accumulates around the old dried leaves, and roots grow into it, attaching the plant to the new soil.

Dudleya pulverulenta arizonica, Saddle Mountain near Tonopah, AZ, November, 2004, Photo by Doug Dawson

In cultivation stems may grow longer and longer until they are quite exposed to our summer heat and aridity, even in the house. These old stems may die near the soil due to our abnormal conditions. The rosette remains alive, madly trying to grow new roots from the stem nearer the living leaves, but the new roots can't reach the soil in the pot. The plant withers away and dies. In habitat the stem would be near the soil and new roots could reach the soil. Or, as the plants dichotomize, stems would bend horizontally and continue rooting and dividing, to form the mat. Before I figured this out I lost several that looked like they should have been growing during the winter but gradually shriveled away and died. I now realize the stem base was dead and the rosette was trying to grow new roots but couldn't reach the soil. I think this may be why people think D.pulverulenta is hard to grow. Or, maybe it's just short-lived.

The upshot is that I think it best to unpot dudleyas every 2-4 years during the growing season, remove old stem, remove some old leaves, split the clumpers if desired, and reroot them. They never grow in habitat like a cabbage on a stick, so they shouldn't look like that in cultivation. My D. gnoma fell apart over the summer.

You may have seen it in the show in years past; hundreds of 1/2 inch rosettes in a very shallow, 4" oval, blue glazed container. The stems just got too long and died. I have separated the remaining rosettes, all of which were rooting prodigiously just below the green leaves, and am rooting them up. I put one rosette back into the original container. It will be a few years before I enter it again.

They are easy from seed. Just crumble dried flowers into a seed packet to harvest. Even if it's a very old inflorescence, there will probably be a few viable seeds left. In the fall sprinkle the dust onto the surface of any soil and keep moist and bright. I have seen carpets of D. pulverulenta seedlings on the wet banks of an Orange County stream during the winter. Drying out is fatal to seedlings in the first few months. The main trick is to get them big enough to survive that terrible first summer, so start early, and water and fertilize heavily. And, every time your plants flower, save some seed. They are self-fertile, and if you unexpectedly lose a plant during the summer, you will have its progeny.

Reading

There aren't many books on Dudleya. You can look for Paul Thomson's self-published 1993 book Dudleya and Hasseanthus Handbook. They don't do well in hot, humid greenhouses in the east, midwest or Europe, so lots of succulentists give up on them quickly and aren't interested in reading about them. If you peruse old issues of the CSSA Journal you will stumble on articles published by Reid Moran, formerly at the San Diego History Museum, who was an expert on, among many other kinds of plants, the Crassulaceae of North America. And there was a special CSSA issue featuring Dudleya in 2004 (was it that long ago?), Volume 76, #5, with two articles by your fellow CACSS members.

Dudleya saxosa collomiae, March 2008 - Photo by Doug Dawson

Some species

Easiest to grow here (in order of most to less ease) D. saxosa ssp. collumiae is our native and is quite easy to grow here. Each of us needs at least one. It has been spotted growing on the north side of Squaw Peak, and luxuriates in the Salt River Canyon. It is probably in full glory right now. Looks like a miniature, very white octopus agave, with rosettes to perhaps 5" maximum. It dichotomizes to form clumps. The flowers are really something, bright red stems with bright yellow petals. Doug Dawson has been growing this from seed for years and trying to get all of us to grow it, so if you don't have one yet, shame on you. And call Doug to get one. Only this one may you leave outside in the shade in the summer, but it may lose its leaves. Better to bring it in with the rest.

D. gnoma is from the California Channel Islands. It forms a mat of 1/2" diameter rosettes, featuring several dozen stiff, firm, pointed 1/4" leaves. They are covered with white powder and nestled into a collar of old grey leaves. It's a dramatic miniature and quickly fills a shallow dish, each head splitting at least once and often twice or thrice annually. Mine came from Steve & Rowena Southwell in 1997 under the name 'Twinkle'. It doesn't flower as often as my other species.

D. brittonii is a larger, solitary plant, to a foot in diameter, growing on cliffs overlooking the sea from Tijuana south. Most plants are chalky white but, there are always a few pure green plants, which are especially beautiful. I used to have a green one with red tips that looked exactly like Echeveria agavoides until it bloomed. I lost that plant before I understood the old, elongated stem problem. My plants came

from the old DBG sales house and was one of a group of seedlings in a 1-gallon pot. I have one adult left. They were labeled D. anthonyi, which may be the same species, though what is called by that name has narrower leaves than D. brittonii.

D. candida has longer, thicker leaves than most and forms more of a stalk. Still, I don't let it get too tall before beheading and rerooting. My plant, from Tom Steuber, forms 4" rosettes on stilts.

D. guadalupensis is a mat former from Guadalupe Island off the west coast of Baja California. The island is no longer accessible to hobbyists. It was a botanical wonderland until goats arrived. With goats now gone, an amazing variety of once-thought-extinct plants is coming back. This is a beautiful plant with 3" rosettes of thick, waxy, green-purple leaves without powder. Each rosette dichotomizes once per winter. I lost mine when it fell apart as hot weather approached and I wasn't able to keep the remaining pieces, trying to root, alive until cool weather. If I had understood then about the stem length issue I would have rerooted it at the start

of the previous growing season, and kept it. It came to me from John & Dorothy Pasek, and until recently the Huntington had a very large bed of it, which I didn't see the last time I was there. I hope it's still around.

Worth trying

D. pachyphytum is one everybody wants. The name means "thick leaf" and it is fitting. Imagine a stem with a rosette composed of 30 leaves, 3" long, 1 1/2" thick, cylindrical and blunt-ended, powdery white, like giant jelly beans rolled in powdered sugar. It's from a tiny island off Mexico and really doesn't like summer heat. It forms mats in habitat. I also got one from Steve & Rowena but didn't know how to grow dudleyas back then.

D. pulverulenta is breathtaking in the field. Imagine a winter stroll through the boojum desert near Rosario or the green grasslands in Orange County, California, and stumbling on an acre of bushel-basket-sized, powdery white cabbages. Has a reputation for being touchy and dying for no known reason. I wonder whether maybe it's just short-lived. Grow it if you can. If you're headed to Orange County and want to see a population, call me, and I'll tell you where they are. You park 10 minutes from Interstate 5 at a public parking lot extorted from a famous megachurch when it wanted to build next to an environmentally sensitive creek, walk downstream 5 minutes (if the creek ain't risin') and there they are. Along the way watch for rocks bearing fossils of long-extinct sea mammals. I grew up less than 5 miles from the spot.

D. pulverulenta ssp. arizonica is our other native. It grows on a few mountaintops between here and California. It doesn't look anything like the California pulverulentas; much smaller. But the flowers are almost the same. It's much touchier about summer heat than is saxosa. Doug also grows this one.

Sources

I told you where I got mine. Maybe some of our members will bring seedlings into the next meeting.
Steven

Brack at Mesa Garden (mesagarden.com) often lists a few on his Other Succulents page under both

Dudleya and Hasseanthus, which was once a genus, now considered a subgenus of shrubby tuberous

dudleyas. You don't need to uproot plants in the field. There are almost always old inflorescences at hand,

loaded with seed, which is how you should start. Current season's seed doesn't ripen until early summer.

Collect dead flowers and crumble into a seed packet. Take a lot in case there are only a few seeds.