

The Bulb Garden



~Gardening with Bulbs~

What's Inside...

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GROWING CALOCHORTUS FROM SEED or BULBS by Robin Hansen

Who among us has tried multiple times and failed either to germinate calochortus seed or once germinated, to grow it on? Most of us, I suspect. Many species in the genus *Calochortus* are difficult to grow, partly because few of them occupy a wide range of geographic regions. Most are endemic to fairly limited areas of western North America and prefer hot or cool, very well drained sites, although some tolerate part shade. Seed has been regularly available from the Pacific Bulb Society seed exchange, including some of the “easier” species to grow.

“Easier” is a relative term, however. For those of us who have some species in our local areas, those locals are more likely to provide immediate success. *Calochortus tolmiei* is all around me, and I’ve mostly succeeded with growing it, if not always flowering it. Other species are growing in cool greenhouses in fast-draining media with limited watering. Greenhouses and cold frames or similar arrangements are almost essential for immediate success, until one has enough to try some in the garden. I never plant all of the few bulbs I have outside; I do that only if I have enough for both garden and greenhouse, lest the outdoor bulbs are eaten, rot, dry out, or succumb to myriad other fates.

A review of information from calochortus experts and written sources provides the following tips to succeed with growing these beautiful, finicky members of the lily family. Don’t hesitate to seek out other sources such as the Pacific Bulb Society website and www.calflora.org. There are also several good books on California

natives, listed at the end of this article.

Fall sowing into a porous potting mix which allows for good drainage, rather than into soil in the garden, increases your chances of success. Pots can then be left in the cold frame, cool greenhouse, or other protected space. Once the seeds germinate, keep the leaves going as long as possible, because calochortus bulblets are tiny — about the size of a rice grain or less. Seedlings will bloom, if you’re lucky, usually in three to five years. Calochortus are summer-dormant bulbs, needing dry conditions, and should be planted two to three inches deep in the fall in sun



Calochortus tolmiei taken on coastal headlands, southwestern Oregon. Photo: Robin Hansen.

to part shade, depending on species. A deep root run is necessary, because every year the bulb plunges deeper. The more you research each species, the better your chances of replicating and

CALOCHORTUS *continued*

successfully growing these bulbs. Try to replicate their native habitat as much as possible, focusing on the species that grow most closely to where you live.

If you have gopher or other munching creature problems, plant in wire cages with small openings or in pond baskets such as those used for water lilies. If growing in man-made soil mixes, calochortus will need about 1/4 of the fertilizer dose recommended by whichever fertilizer you use. As with other bulbs, some years they may remain dormant, perhaps as a response to significant variations in weather.

With such a wide variety of habitats where calochortus are found, excellent drainage is necessary whether in the ground or in pots, allowing most species to go dry in summer. All calochortus are early spring or summer flowering. The Pacific Bulb Society website is an excellent resource and describes specific climates for these bulbs, ranging from mild, moist climates to mild dry or cold-winter continental.

Even those that might be a bit tender, if grown with protection, can be successfully flowered.

A few species, such as *Calochortus tolmiei*, can be found on coastal headlands up to scree and cold mountain areas, such as the Cascades. Many other species are fairly limited in distribution and seed may not be readily available. Your best option for acquiring seed is to join a plant society with a regular seed exchange, such as the North American Rock Garden Society, Alpine Garden Club of British Columbia, Scottish Rock Garden Club, or Pacific Bulb Society. Unfortunately, the seed collectors we have been relying on for years — Ron Ratko, Alan Bradshaw and others — are either no longer collecting or rapidly approaching retirement, a sound rea-

son for collecting and distributing your own seed.

Seed remains viable in storage for five to six years, according to Michael Mace (PBS Wiki), and longer if stored cold in paper or glassine envelopes placed in a tightly sealed container. Jane McGary reports good germination from seed as old as eight years. What do calochortus seeds look like? They are flat, tan to dark brown, and if you look closely, you will be able to determine whether seeds are viable. Fertile seeds will show a slight swelling with color a bit different in the middle of the seed. Discard infertile seeds. The PBS Wiki has some good photos of fertile and infertile seed in the lily section; lily seeds are similar in appearance to calochortus seeds.

Consider, as you begin your journey to grow calochortus, that more care will be needed than for iris, narcissus, or galanthus, to name a few, so controlling your growing conditions is very important. If you try growing under conditions too warm or without enough light (once germinated), you reduce your chances of success.

We can think of calochortus as specializing in one of three basic types of growing conditions. We have a clear image of them growing in sunny, dry areas. However, some Mexican species grow in areas with regular rain combined with cooler, drier periods in winter with little or no frost. High-altitude species remain dormant through long winters, dry and at moderate temperature under snow, with moisture in early spring (often snowmelt) followed by dry summers with little rain.

Be aware that getting the right combination of soil mix, light, temperature, fertilizer, and moisture will be an ongoing process, and especially with calochortus. If you can obtain more than a few seeds, consider sowing several small batches with slightly different conditions, depending on the species, of course. Calochortus, as with most lily-like seeds need to be covered with a quarter inch of potting mix, pumice or other material as they need dark to germinate. If you do, keep good records, observe what works and what doesn't, and *record* the details. Not

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The Genus *Hippeastrum* in Bolivia

The Genus *Hippeastrum* in Bolivia is available from the Pacific Bulb Society—see advertisement below for contact information to purchase this book. Dr. Lara spent many years researching, traveling and studying *Hippeastrum* in his native country before writing this treatise. Below and to the right are some photos from the book. For each species listed in the book, there is a photo with full description including locations, a distribution map and notes. In addition,

there is a key of the Bolivian *Hippeastrum* species, altogether a most useful book for those interested in growing *Hippeastrums*.



Fig. 25. Detail of the flower of *Hippeastrum caupolicanense* in which can be noted the yellow speckling characteristic of this species. Photo: R. Vasquez.



Fig. 86. Detail of the base of the petals, stamens, and pistil of *Hippeastrum starkiorum*. Photo: R. Vásquez.

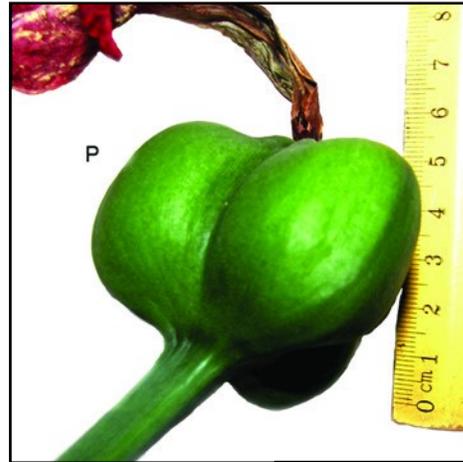


Figure 5.6 P = fruit (capsule). Photo. H. Huaylla.



Figure 5.7 Q = seeds. Photo: R. Lara.

AVAILABLE NOW!

A treatise based on twelve years of research and field studies

from
Pacific Bulb Society, Inc.
 a 501(c)3 corporation
The Genus *Hippeastrum*
 (Amaryllidaceae)
 in Bolivia

Raúl F. Lara Rico
 Roberto Vásquez Chávez
 Margoth Atahuachi Burgos

For more information, contact PBS at:
hippie.book@aol.com

CALOCHORTUS *continued*

every method will work all the time. Often in the past I've ordered the same seeds from three different exchanges over several years and had no luck germinating them until the third or fourth try. This is often due to lack of seed viability, poor storage conditions, or carelessness in mailing the seeds. My struggles after many more than a few years resulted in gentians from one batch taking firm hold, to the point where I'm now dividing pots

overflowing with them. Every time I walk by those healthy green plants, I heave a sigh of relief!

If you're struggling to get good germination, more research may trigger a realization that you missed a step; or find someone who grows calochortus and have a conversation. There's a lot more information now than even a decade ago about growing our native bulbs.

Another good source on calochortus is *Calochortus: Mariposa Lilies & Their Relatives* by Mary E. Gerritsen and Ron Parsons (Timber Press, 2017). It contains a page of various soil mix recipes (p. 201). One recommended potting

mix for calochortus is about half artificial soil mix containing peat, bark, etc., and about half

red lava, 1/4–10 gravel, pumice, sand, or vermiculite, sometimes in combination. What you use will depend on materials available

where you live. Calochortus seem to prefer clay soils in the wild, so if you want to try planting seed out be aware you need to watch the site where you sow it carefully, and it would be wise to cover the area with a light mesh (like that used in screen doors) or Reemay floating row cover, well anchored.

Various fertilizers need to be used with soilless mixes, but only at a quarter to half strength when in growth. I've used Apex fertilizer and bone meal, and others have used Miracle-Gro Root and Bloom and similar fertilizers. It's the quantity of fertilizer, not the kind, that matters most. Osmocote is a resin-coated, temperature-release

Color variations in *Calochortus venustus*.
Photos: Mary Sue Ittner.



Calochortus superbus—note the variation in markings between the two photos, common to many seed-grown *Calochortus*.
Photos: Mary Sue Ittner.



Continued next page

CALOCHORTUS *continued*

controlled fertilizer and Apex is a resin-coated, moisture-controlled release fertilizer. For cooler coastal areas such as where I live, Osmocote does not work well, if at all, because even our summer temperatures stay around 70-72 degrees F. In most but not all summers we get a few days of high 70s or 80s F, and that period isn't long enough for plants to effectively use this particular fertilizer. Osmocote works quite well in warm-summer areas; just be sure to use a very small amount. As is true of most of our western American natives, fertilizer used at normal application rates listed on the container will burn and/or kill them.

For me the hardest part of growing bulbs has been watering appropriately to avoid turning bulbs to mush. I don't think any of us at one time or another has not had this problem. I've always assumed that if given a fast-draining mix, bulbs could handle watering when dormant in summer, or at least tolerate a regular light swish of water every few days. The only solution I've found is to separate bulbs into flats based on watering needs, or — the easiest solution — planting them in the right place in the garden where natural microclimatic conditions will control the amount of moisture plants receive. The other factor in storing dry is to store them cool, not warm or hot.

The only tuber I store both hot and dry is *Cyclamen rohlfsianum*, which comes from mountains in Libya where summers are hot and winters are mild and wet. The easiest way to control the amount of water that dormant bulbs receive is to grow them in pots, particularly if the species of calochortus you're growing are not native to your area and your weather is quite different from their native habitat. You can follow all the advice available, but it really gets down to practice, intuition, observation and frequent attention. Jane McGary finds that taller species do best planted directly in a raised bed with overhead cover, but small species tolerate life in pots well; she recommends plunging pots to their soil level in sand to moderate temperature.

Be careful if you go away for a number of days and leave the care of your plants to someone who is not familiar with them. You may have to resort to discreet signs, i.e. "Do not water!" For those of us who treasure all the effort we've made to grow

special bulbs, there's no shame in being extra careful.

So, to sum up propagating calochortus from seed and growing from bulbs: if you're a regular sower of seed, start with the species that are considered the easiest or with those that grow wild in conditions similar to yours. If you've always wanted to



Above: *Calochortus splendens*. Photo: Bob Rutemoeller.
Below: *Calochortus amabilis*. Photo: Bill Bouton, Wikimedia Commons.



grow calochortus but have hesitated to try them, here are a couple strategies with which to start.

PHOTOS FROM MEMBERS

Photos on these pages were contributed by Johann-Ulrich (Uli) Urban and Arnold Trachtenberg. Uli lives in the Algarve region of southern Portugal where the climate is very Mediterranean year-round, with dry periods, very warm days from May through September, and cooler, moister months the rest of the year. Arnold lives in western New Jersey and has a heated greenhouse where he grows many tender bulbs.



Upper left: *Dahlia excelsa*. Above: *Lachenalia paucifolia*.
From an autumn 2018 sowing of Silverhill seed.

Below left: *Kniphofia*, possibly *sarmentosa*.

Below right: *Nerine undulata* from Cameron McMaster,
South Africa.

All photos this page: Johann-Ulrich (Uli) Urban.



PHOTOS *continued*


Left: *Veltheimia capensis* (or *deasii*?), 20-40 cm (8-16 inches). Needs full sun and is deciduous, from western South Africa.

Photo: Uli Urban.

Daubenyia zeyheri, right. the dark jelly mounds at the bottom of each filament are pools of nectar. This *Daubenyia* is pollinated by sunbirds. An exquisite jewel from calcareous-coastal sands of the southwestern Cape, South Africa.

Photo: Arnold Trachtenberg.



Left: *Euphorbia pulcherrima*. Not a bulb, but a spectacular plant for the holiday season, familiar to Americans as Christmas poinsettia, native to Mexico and hybridized into many forms and colors. A woody perennial in native habitat. The flowers are in the center, tiny and yellow. What are sometimes called flowers are the bright red bracts surrounding the flowers.

Photo: Uli Urban.

A FEW OXALIS TO TRY

There are without doubt a number of *Oxalis* species that are weeds in many parts of the world and especially in our gardens; they are, of course, found in places nearly everywhere they are not wanted under any circumstances.

However, the weeds are far outnumbered by the many free-flowering oxalis non-weeds we are growing or want to find. Oxalis is a huge genus of between 260 and 500 species (depending on the source) growing in every continent of the world except for polar regions. They are relatively small plants with a huge variety of leaf shapes from skinny birds' feet to large clover leaves and many are bulbous, cormous or rhizomatous.

Over the years PBS members have grown and contributed oxalis to the bulb exchange, so occasionally I've ordered a few just to see what they're like to grow and flower. This year, for the first time, my oxalis have had the right conditions to grow as they should and better yet, to flower in a delightful array of pastel colors. I was quite hesitant to order any at all because I have two of the worst oxalis weeds ever running rampant in my garden. Just looking at the seed pods cross-eyed will cause them to pop and send their tiny little seeds everywhere, on occasion into an eye if I'm not careful. When I received the oxalis bulbs from PBS, I put them in pots and there they have stayed. Given how well they've filled up their pots, they will stay there! But they seem to be happy in pots, unlike many other plants, so all is well.

I have grown our native *Oxalis oregana* in both its deep lavender pink and white forms for many years. It is rhizomatous and not a pest, being easy to eradicate by pulling up the rhizomes. This plant has been known to me from earliest childhood when we called it "sour grass" because of the oxalic acid content of the leaves, noticeable when chewed. It's a reliable plant for moist shade which dries out in summer and grows over great swathes of the coastal regions from Oregon to northern California and on the western slopes of the Cascade Mountains.

The species I have been growing are mostly all native to South Africa; in fact most species of

oxalis are found in South America and South Africa, with the rest scattered across the world. Mine are all temporarily in a west-facing garden window which gets full light and stays warm. This summer there were two or three days where the thermometer went to the high 70s F and two days of low 80s F, not exactly a heat wave but the oxalis summered outdoors in an unheated greenhouse and enjoyed the extra warmth. For whatever reason I brought them in this fall to live the winter in a west-facing greenhouse window where they bloomed for weeks.

Probably my favorite is the delicate little *Oxalis engleriana* with its bird's foot leaves which grows on shady southern slopes in the northwest and southwest Cape (South Africa). It blooms in the fall and has 5-8 linear to linear-oblong leaflets and a rose or violet flower 3 to 4 cm with a narrow yellow tube. It doesn't seem vigorous at all but it just might be the growing conditions

Oxalis engleriana. Small and delicate with subtle colored flowers. Photo: Mary Sue Ittner.



I've given it.

Another favorite is the delicate and lovely *Oxalis gracilis*, a species of the northwest Cape of South Africa. It grows on sandy flats and slopes and has trifoliate linear leaves and apricot

OXALIS *continued*



Oxalis gracilis. Photo: Mary Sue Ittner.

-pink or white flowers with a yellow tube. Mine is truly an apricot color and doesn't fade much at all as the flowers age. It seems quite vigorous but maintains its leafy delicate appearance. It tends to flop if not given enough light.

Oxalis hirta is truly a show-stopper and has just finished flowering after about three months; apparently fall is its normal blooming time, and the brilliant rose-pink flowers an inch in diameter bring cheerful color to a time of year when other plants are slowing down. It can grow to about 12 inches, and if not given full light it will flop a bit but still keeps blooming, the flowers closing at night and opening



Oxalis hirta, a bright pink form and long-blooming. Photo: Mary Sue Ittner.

in the morning as do most other oxalis. According to the PBS Wiki, it grows on flats and slopes in the north and southwest Cape of South Africa and may also have mauve or white flowers.

Another oxalis species I received from the bulb exchange that has leaves similar in color, size and shape to our native *Oxalis oregana*, but with bright red stems and pale lavender flowers, is possibly *Oxalis potamophila*, which is native to Brazil. Compared to the brilliant stems, the flowers look washed out. It grows in summer with a liking for higher altitudes and good moisture, and goes dormant in winter. It's a striking species even without blooming.



Oxalis sp. possibly *O. potamophila*. This bulb came from a PBS bulb exchange several years ago. The red stems contrasted with the grass green leaves are striking. The flowers are bland by comparison. Photo: Robin Hansen.

I think many of these species oxalis are worth trying, but only in pots, as mine seem to have plenty (too many?) offsets. Their long flowering times and attractive fresh green leaves of many shapes provide months of displays.

According to the PBS Wiki, oxalis hybrids are unknown and most do not set seed due to very particular ways of pollination. If you're interested in trying some species other than those mentioned here, refer to the Wiki

CALOCHORTUS *continued*

For those wanting to start with bulbs, Telos Rare Bulbs, Brent & Becky's or McClure and Zimmerman's catalogs usually have a few hybrids or species. Far West Bulb Farm in Grass Valley, California has a good list, but I have not dealt with them. The Pacific Bulb Society is likely to have the least expensive seed and bulbs, and also the most hybrids and species. Please be careful about the companies you order from. It's very important to order from reputable sources; prices can vary widely. For seed, try Alplains in Colorado. A query to the PBS list will often bring helpful information. Botanic gardens are another source, and California has several.

If you can afford it, buy at least two or three bulbs, plant one out and one in a pot under more controlled conditions. The named varieties or hybrids are likeliest to succeed if you don't have a lot of experience. A list of the easiest (very subjective, remember) would include *Calochortus venustus*, *C. nudus*, *C. amabilis*, *C. superbus*, *C. uniflorus*, *C. splendens*, and *C. luteus*, and if you live in coastal California or Oregon or in the Cascades *C. tolmiei* is one with which I've been successful. See also the PBS Wiki and Gerritsen and Parsons' book. Don't forget to ask for help — just remember to ask before it's too late! And don't throw out your seed pots and trays after a year; germination may occur two or three years after sowing. †††



Calochortus superbus seed. Note both fertile and infertile seeds. Photo: David Pilling.

OXALIS *continued*

Oxalis oregana, sometimes known as wood sorel or redwood sorel. A rhizomatous western American native, a good groundcover for moist wooded areas.

Photo: Bob Rutemoeller.

for comprehensive information.

I'm sure most of you are familiar with *Oxalis corniculata*, a serious weed for many of us. Its annual to perennial growth and bad habit of popping weeds everywhere at the slightest provocation cause great frustration. Just when you think you've eradicated this nasty weed, new seedlings spring up. Only frequent weeding will eventually rid you of it. Herbicides can eradicate it, but it takes a while because it seeds so prolifically, and herbicides can't be used safely in pots or other areas where other plants will be damaged.

When we may be wary of trying new bulbs, the Wiki can help us pick those that are well-behaved. †††



Oxalis corniculata. The Weed. Photo: Wikimedia Commons.

Miscellaneous



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	3rd Quarter 2021	
Balance 1/1/2020		
U.S. Members	\$	4,310.00
Overseas Members	\$	2,125.00
Amaryllis Field Guide	\$	3,300.00
BX Receipts	\$	4,743.59
Investment results	\$	1,056.30
PayPal cash back	\$	92.13
Hippeastrum book	\$	<u>4,034.50</u>
INCOME	\$	19,661.52
BX/SX Postage	\$	(1,236.28)
BX/SX Supplies	\$	(246.36)
EURO BX expenses	\$	(182.22)
Hippeastrum printing	\$	(4,813.74)
Hippeastrum Pack/Ship	\$	(71.24)
Board Insurance	\$	(578.82)
Treasurer's Supplies	\$	(472.55)
Mailing supplies	\$	(995.91)
Publications	\$	(6,560.00)
Investment results	\$	(46.90)
Stamps.com fee	\$	(167.93)
DHL to Lara	\$	(700.48)
DHL to Martin	\$	(361.55)
MSI GRANTS	\$	(1,500.00)
CA Secretary of state	\$	(20.00)
Registered agent fee	\$	(150.00)
Tax prep	\$	(500.00)
Amaryllis Field Guide	\$	(2,410.20)
Amaryllis packing	\$	(136.14)
Amaryllis postage	\$	(184.46)
Publication postage	\$	(3,410.04)
Web Registration	\$	(115.00)
PayPal Fee	\$	(672.92)
Directory Editing	\$	(225.00)
Bulb Garden editing	\$	<u>(2,100.00)</u>
EXPENSES	\$	(27,857.74)
Balance 09/30/2021	\$	<u>30,834.81</u>

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Pacific Bulb Society, *The Bulb Garden*, Volume 19, No. 2



Hesperantha baurii grown from seed by Mary Sue Ittner. Photo: Mary Sue Ittner. from seed

Inside This Edition:

Growing Calochortus from Seed and Bulbs

A Few Oxalis to Try

Photos from PBS Members

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The Bulb Garden is the newsletter of the Pacific Bulb Society (PBS). It is published, if enough articles are submitted, around the third week of each quarter and is available to PBS members. This newsletter provides gardening or bulb related articles, news of interest to members, and announcements of the PBS organization.

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