

Mariposa --

The Calochortus Newsletter

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GARDENING WITH CALOCHORTUS

In keeping with the prior promise that more emphasis would be placed on growing *Calochortus*, this special double issue is devoted to their use in the rock garden. Most growers of alpine plants are accustomed to catering to the needs of finicky species, and accepting of some degree of failure. It is true that some species of *Calochortus* will present a challenge which the expertise of most growers of alpine plants should easily overcome, while other species can be grown by almost anyone, as long as their cultural needs are attended to. It is hoped, therefore, that this issue will encourage rock gardeners to experiment with this lovely genus — the rewards are great!

First, however, is an appeal from a long-standing subscriber to Mariposa. His letter is quoted below:

Dear *Calochortus* Friends:

For the past several years I have been working on a book called *Wild Lilies of California and the Pacific Northwest*, which includes all the species of *Calochortus*, *Erythronium*, *Fritillaria* and *Lilium* found in California and the Pacific Northwest. I am photographing all these species in the field. During the 2006 spring/summer bloom season, I hope to finish my photography for the book. If you are familiar with any of the following species and can help me to locate any of them in the wild, I would greatly appreciate your help.

Here's what I will be looking for in 2006:

Calochortus clavatus var. *gracilis*

C. apiculatus

C. elegans var. *selwayensis*

C. eurycarpus—colored forms

C. nitidus

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Featured topic:
Calochortus in the
Rock Garden



Calochortus coeruleus

(photo courtesy of Gary
Monroe)

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Calochortus in the Rock Garden

Introduction

Rock gardeners are notorious for their willingness to take on the most challenging alpine species, persisting against all odds to grow the impossible. It is somewhat surprising, therefore that members of the genus *Calochortus* have received less attention than they deserve by dedicated growers of alpinists. Perhaps this is due to the perception that, although lovely, they are tall and lanky, not suitable at all for the rock garden, since the few species that are available from the brokers of Dutch bulbs are mostly of the Mariposa type, with tall stems and large upward-facing bowl-shaped flowers. This is unfortunate, since there are a few reliable sources for seed, and some sources for bulbs, and the alpine species of *Calochortus* are not only smaller in stature, but are also hardy enough for most rock gardens.

While most *Calochortus* from the lowland regions of the West need an absolutely dry summer rest, most of the alpine species do not, coming as they do from regions with heavy winter snows and frequent summer thunderstorms. Included also are many foothill species, such as *C. tolmiei*, which can tolerate some summer moisture if planted carefully, and are hardy to Zone 6 or less. Many alpine species, such as *C. westonii* and *C. leichtlinii*, are snow-melt plants, coming into growth as the heavy winter snows depart, then flowering and setting seed rapidly before they go dormant. Some alpine species, such as *C. gunnisonii*, *C. invenustus* and *C. leichtlinii* are more like summer-growers, not coming into bloom until about July or August, then ripening their seed in late summer. In the mountainous regions where they are found, they are usually in very dry conditions, growing in rocky or gravelly soils that drain rapidly, although they can receive severe drenching from summer storms, sometimes on a daily basis. These are the conditions we try to reproduce in the rock garden, rocky or gravelly planting pockets surrounded by larger rocks, often sloped steeply to try to mimic conditions found at altitude. Surface temperatures in these regions can be quite high in daytime, but melting snow or plummeting nighttime temperatures keep the soil cool at the depth of the bulb. And the bulbs grow at some considerable depth, often as much as 12" (30cm), something to be remembered when planting *Calochortus* in the rock garden.



Calochortus gunnisonii

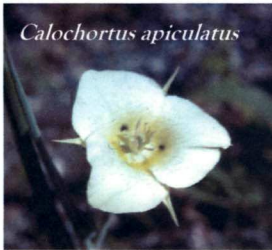
So now let us look at the species that can add beauty to the rock garden and provide the necessary challenge!

Cat's Ears

This is a large group, and includes some little gems highly suitable for the rock garden or alpine house. The group called Cat's Ears includes *Calochortus elegans*, *C. coeruleus*, *C. tolmiei*, *C. westonii*, *C. monophyllus* and a few others. From a taxonomic point of view, this category is in desperate need of revision, but for gardeners the confusion should not be a major problem. These are, for the most part, small plants — some very small, often only being a couple of inches high. They all have neat compact growth, delightfully hairy flowers, and a captivating range of color. The leaves of the Cat's Ears are usually large and single, and are not withered when the plant

flowers, unlike the Mariposas. Most have a branched stem supporting multiple flowers that open in rapid succession. Many come from fairly low altitude, but most grow at altitudes that would definitely put them in the hardy category.

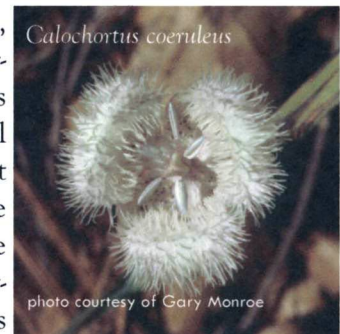
Calochortus apiculatus



Found at elevations of 4000-7330ft (1200-2200m) in the mountains of Montana, eastern Washington and southwestern Alberta, *Calochortus apiculatus* experiences extreme winters, as well as some summer moisture from thunderstorms. The flowers are creamy white to very pale yellow with a dark gland at the base of each very hairy petal, and are held on stems up to 12" (30cm). It is an excellent choice for the rock garden, especially in the southeastern US.

Calochortus coeruleus

It seems that few who write about this very tiny plant have ever seen a fresh specimen, including Kellogg, who gave it its misleading name based on the color of dried herbarium specimens. It is not blue or even blue-tinged, but has extremely hairy white petals with a center that varies from lavender to maroon. It is a very tiny plant with small flowers barely an inch across that demand close inspection. It comes from regions that receive considerable snow, and blooms in late May to June at 6000ft (1800m) in the Coast Range of California, where I have seen thousands of plants carpeting the ground, growing in light shade under scattered oaks and conifers. It needs dry growing conditions to do well, and would probably do better grown in moraine conditions in the rock garden.



Calochortus elegans



Calochortus elegans v. nanus

Although *C. elegans* was the first *Calochortus* to be described and formed the basis for the entire genus, there is still a lot of confusion over what differentiates *C. tolmiei* from *C. elegans*. In appearance it is very similar to *C. coeruleus* or *C. tolmiei*, and comes from northeastern Oregon, western Idaho and southeastern Washington. In these regions it experiences very cold winters and hot dry summers. The Jepson Manual, however, states that *C. elegans* also inhabits southern Oregon and northern California. These population would, of course, experience different growing conditions, with cold but not severe winters and more moderate summers. If you obtain seeds or bulbs of this species, you can expect a small plant with very hairy petals, and usually a deep purple center. Pay attention to the source of the seed to ascer-

tain the growing conditions your plants will need.

Calochortus monophyllus

This bright yellow Cat's Ear *Calochortus* grows at elevations of 1200-3600ft (400-1200m) and may, therefore, vary in hardiness according to the provenance of the seed or bulbs obtained. There are two types, both with hairy flowers of a very bright yellow, one having a maroon or brownish blotch at the base of the petal, the other being unmarked. Larger than *C. coeruleus*, the stems are up to eight inches, and the flowers about 1-1/2" across. Although this species grows under manzanita or in the shade of coniferous or mixed forests, I have not



found it necessary to shade the growing plants. It may be that it needs shade in the very hot regions where it grows to keep the bulbs cooler during the summer, but it is not necessary if growing it in more moderate summer temperatures.

Calochortus subalpinus

Somewhat similar in appearance to *Calochortus apiculatus*, with creamy petals that are covered with delicate hairs, *C. subalpinus* comes from regions with severe winters, growing at elevations of 3330-8330ft (1000-2500m) in western Washington and Oregon. It, too, is an excellent choice for the rock garden, its lovely flowers being held on stems that are only 8" (20cm) tall.



C. subalpinus

Calochortus tolmiei

There is a great deal of variation within this species, with plants that range in color from white to lavender, pink or purple, the paler ones having centers of pink or purple. In addition, some are tiny, others taller and branched, some very hairy and some less so. Generally speaking, they are



Different forms of *Calochortus tolmiei*



usually less than six inches (15cm) with a stem that can have several buds that open in succession and flowers from 1" (3cm) to 1-1/2" (4cm) across. They have one large single leaf that is present when the plant flowers. In appearance they are very similar to *C. elegans*, or even *C. coeruleus*. They are all exquisite and deserve a place in any rock garden or alpine house. Since they come from a fairly wide range of altitudes and differing rainfall, it should be possible to choose a population suited to your environment. They are best clustered in small groups, preferably planted in a pocket of gravel.

Calochortus westonii



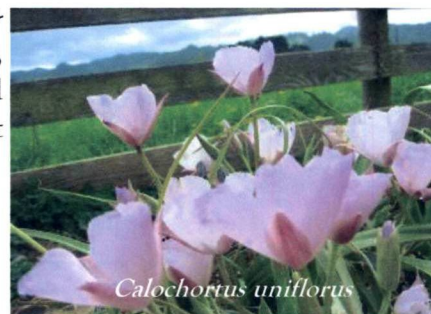
This species was covered in detail in the previous issue of *Mariposa*, Vol. XVI, No. 4. *Calochortus westonii* is truly a snow-melt plant, growing at around 6700ft (2000m) in the Greenhorn Mountains of southern California, where it spends its winter dormancy under a thick blanket of snow. Due to its tiny stature, with stems only 2-1/2" (6cm) tall and flowers barely 1" (2cm) across, it would need careful placing in the rock garden in a situation where it could be appreciated at close quarters. Like *Calochortus coeruleus*, it is probably best grown in moraine or scree conditions in the rock garden.

Star Tulips

This group includes species that have petals that are smooth, most having only a few wispy inconspicuous hairs at their base. For the most part they are taller than Cat's Ears, and are not as striking. One or two, however, are very attractive and suitable for the rock garden.

Calochortus uniflorus

One of the easiest of all *Calochortus* to grow, *C. uniflorus* has satiny lavender flowers that are produced in abundance on 4-12" (10-30cm) stems over a long period, often blooming well over two months. It increases readily by stem bulbils, and tolerates moisture while dormant even though it comes from lower elevations. It is hardy to about Zone 7, possibly lower.



The Fairy Lantern Group

While taller than the Cat's Ears *Calochortus*, these lovely members of the genus vary in height from four to sixteen inches, depending upon the species, the stems arching gracefully forward, with the globular flowers dangling below. Although most are from lower elevations, they are beautiful enough to try growing in the rock garden. Most grow on steep banks in the light shade of overarching trees. In *Adventures with Hardy Bulbs* by Louise Beebe Wilder, Mrs. Wilder describes growing *C. albus* in her rock garden in New York state, a climate that would appear to be totally unsuitable for these California natives. Careful placement was the clue to her success.

Calochortus albus



Calochortus albus is the most common of the Fairy Lantern type of *Calochortus*, growing in the foothills of the Sierra Nevada mountains of California at elevations of up to 4000ft (1200m), and also being found in a coastal distribution in the Coast Range. There are slight differences in the two populations, the Sierra form being a little larger and usually lacking any pink flush to the petals. The flowers are a translucent white, and are produced in abundance. Included here is the form often called *C. albus* v. *rubellus*, a color variation found in the Coast Range.

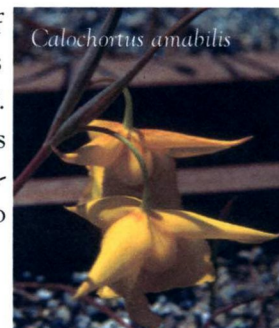
The color in these populations can range from a deep wine to a rusty red, and come from lower elevations than the white form. *Calochortus albus* was John Muir's favorite plant

"...a spotless soul, a plant saint, that everyone must love and so be made better ... With this plant the whole world would seem rich ..."

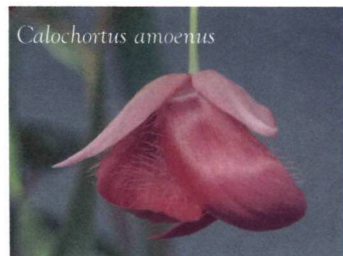
John Muir

Calochortus amabilis

From lower elevations than *C. albus*, *C. amabilis* is found in the northern Coast Range of California at elevations near sea level to about 3000' (1000m). It is also shorter, the stems usually 6-10" (15-30cm) holding the dangling bright yellow "lanterns". In our experience, *C. amabilis* needs more careful attention paid to drainage than the others. Local populations usually grow on very steeply sloping banks in rocky soils where runoff is brisk. Its coastal distribution would also indicate that it is less hardy than the others, but if attention is paid to the origin of seed, one can select for hardier populations.



Calochortus amoenus



Calochortus amoenus grows in the southern Sierra Nevada at elevations of 1670 to 5000ft (500-1500m). The flowers are of an exquisite rosy pink, sometimes with a lavender flush, and are held on stems that are from 4-10" (10-20cm). This beautiful Fairy Lantern is one of the easiest to grow, and can bloom in its second to third year from seed. It is highly recommended, and, like *C. amabilis*, one can select seed from populations from higher elevations for their hardiness. Choosing a site where the plants can be protected by neighboring plants or rocks will help in regions with severe winter.

The Mariposa Group

Although most Mariposas are too tall for the rock garden, the ones from high altitude are lower in stature, in addition to being hardy and tolerant of some summer water. In the wild, the large showy flowers often peek through low shrubby growth, a hint to how they should be placed in the garden. Some alpine species, such as *Calochortus gunnisonii* and *C. leichtlinii*, can reach heights of twelve inches or more (30cm), although in exposed conditions they are usually much shorter. These are the hardiest of the entire genus, coming from regions with extremely cold winters. A few species are intolerant of excessive moisture, making them more suitable for an alpine house, but in the drier regions of the US they, too, can be placed in the rock garden.

Calochortus ambiguus



Closely related to *C. gunnisonii* and resembling it in appearance, *C. ambiguus* is also a montane species, growing at elevations of 3000-9000ft (1000-2700m), but with a more southern distribution, and from a drier habitat, and like *C. gunnisonii*, it tolerates or even requires some moisture during the summer months. *C. ambiguus* does well in climates with a pronounced winter, but is less successful in the mild winter regions of the western US, although with its wide range, even extending into Mexico, it might be possible to select populations than need less winter chill.

Calochortus coxii

A very rare species restricted to a few scattered small populations in Oregon, *C. coxii* was only discovered in 1988. It is restricted to serpentine-derived soils and is found in alpine meadows and coniferous forests. The beautiful flowers are held on stems 8-12" (20-30cm) tall, with white petals covered with hairs, a golden interior and purple above the gland. The rarity of this species makes it unlikely that it will appear in cultivation, but should that ever happen it would be a good candidate for the rock garden.



Calochortus greenei



Also found in Oregon, *C. greenei* grows at 3330-7330ft (1000-2200m) in thinly grassed meadows, and produces its purple tulip-shaped flowers on stems that are 8-12" (20-30cm), although some can occasionally grow taller. A deep purple chevron that is present at the base of each 1-1/2" (4cm) petal is also visible on the outside of the petal. It grows in dense wet clay that dries out in summer, although it is likely that at the depth of the bulb some moisture is retained throughout the year. In its native habitat, this species blooms from late June to August when other bulbs are long past flowering.

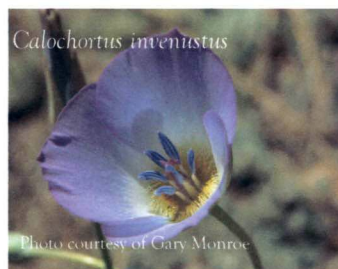
Calochortus gunnisonii

From the Rocky Mountains of Colorado, *Calochortus gunnisonii* grows at elevations of 3000-10,000ft (1000-3000m), experiencing a very long severe winter and hot summers with some rainfall from almost daily thunderstorms. *C. gunnisonii* comes into growth as the snows melt, blooming in June to August, depending upon elevation. It can grow quite tall—up to 24" (60cm), but is usually more in the range of 12-18" (30-45cm) and has large showy flowers, up to 2" (5cm) in width. Although rather tall for the rock garden, it is well worth finding a special place for



it. The flowers are white or purple, and have a strongly marked band of golden hairs within. It absolutely needs a cold winter dormancy, and also benefits from occasional moisture while dormant. Mrs. Beebe Wilder was successful with this species in her New York garden, although it would be more difficult in mild climates. It is the best *Calochortus* for the eastern US.

Calochortus invenustus



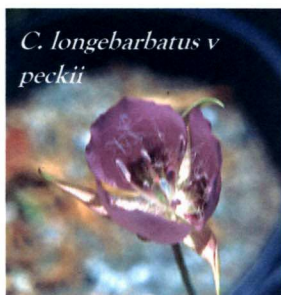
From elevations of 5000-10,000ft (1500-3000m), *C. invenustus* is from dry regions scattered around the west. Although usually around 8-10" (20-25cm) in height, it can sometimes grow taller, again needing thoughtful placement in the rock garden. The 1-1/2" (4cm) flowers are white tinted with lilac, and are often in an umbel-like arrangement, with up to eight on one stem. This species also needs a dry environment, and although hardy, would present a challenge in the rock garden in wetter regions.

Calochortus leichtlinii

Somewhat similar in overall appearance to *C. invenustus*, although not as strongly tinted with lavender, *C. leichtlinii* is seemingly more adaptable and easier to grow. From southern Oregon and the higher reaches of the Sierra Nevada, *C. leichtlinii* grows at elevations of 4000-13000ft (1200-4000m). The dazzling white petals have a blue tint to them, somewhat like the snowfields of the Sierras, and at high altitudes they grow from 4-16" (10-40cm) high depending upon the exposure. Flowers are approximately 1-1/2" (4cm) wide. The taller plants almost invariably grow through shrubby plants, while shorter ones are exposed to the elements. Although easier to grow than *C. invenustus*, this still presents a challenge.



Calochortus longebarbatus var. *peckii*



A plant of alpine meadows at elevations of 5000-8330ft (1500-2500m) in eastern Washington and Oregon with a few populations in northern California, *Calochortus longebarbatus* can be up to 20" (50cm) tall, but its variety, found in Oregon, *C. longebarbatus* v. *peckii* is smaller, reaching about 10-12" (25-30cm) with purple 1" (3cm) flowers, the inner surface of the petals covered with long hairs. In its native habitat it experiences very cold winters, and very hot summers, and seems to do better with a little moisture while dormant. *C. longebarbatus* v. *peckii* does not set seed, but forms numerous bulbils.

Calochortus lyallii

Quite different in appearance to the Mariposas described in this section, *Calochortus lyallii* has narrow petals and small flowers. While the flowers are small, they are numerous, being held in an umbel-like arrangement on 8" (20cm) stems, often as many as seven to nine to a stem. It is found in southern British Columbia to Washington state at elevations from 3330-8330ft (1000-2500m), where it experiences very severe winters. It needs dry growing conditions, however, and is more likely to be intolerant of summer water, making it more suitable for an alpine house, unless grown in the drier regions of the western USA.



Calochortus nudus

From southern Oregon to northern California, *Calochortus nudus* grows in wet mountain meadows at elevations from 3330-8000ft (1000-2400m). The populations in southern Oregon have deep lavender flowers on 8" (20cm) stems, each petal with a purple chevron at the base. Flowers are about 1" (3cm), and are tulip-shaped. In the northern Sierra Nevada there are populations that may be a hybrid form between *C. nudus* and *C. minimus*, with very pale lavender flowers that are unmarked. This dainty *Calochortus* is an excellent candidate for the rock garden, small in stature, hardy, and tolerant of summer rain.



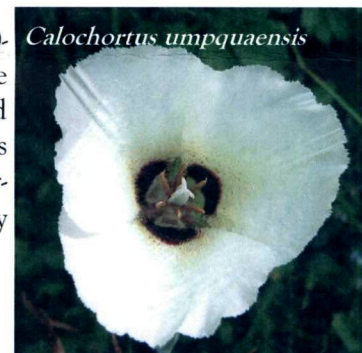
Calochortus nuttallii

This lovely *Calochortus* is the state flower of Utah, and is found over a very wide range from the western Dakotas, eastern Montana, Colorado, Nebraska, New Mexico, Utah and Arizona, as well as Nevada. In its wide native range, it occupies different habitats, from desert to mountain meadow and prairies. In general, it grows in dry conditions and experiences cold winters, but in the southern portion of its range the conditions are milder. This species is a challenge, but the beauty of its flowers in a color range of white to pink, purple or magenta, make it worth trying. As with many species from the arid regions of the west, keeping it dry enough throughout the year will be the major difficulty. In height it ranges from 4-16" (10-40cm), and often bears several 1-1/2 to 2" (3.5-5cm) flowers to a stem. Once again, studying the seed source carefully to select a population that is both hardy and more tolerant of

moisture is well advised.

Calochortus umpquaensis

Found in only two locations in southern Oregon, *C. umpquaensis* grows at 2000-3670ft (600-1100m), and is restricted to serpentine soils. The very large hairy white flowers which can be at least 2" (5cm) across have a deep purple center and are held on slightly drooping stems 8-12" tall (20-30cm). In our experience, this species seems to require more water than others, and does better with some moisture while dormant, but like other *Calochortus*, it needs excellent drainage. It should be hardy enough for cold-winter regions.



To Be Continued

Cultivation techniques, soil preparation, and growing the high altitude species from seed will be covered in the next issue of *Mariposa*, Vol. XVII No. 3.

Photographs:

Unattributed photographs are courtesy of Georgie Robinett, Chris Carley, Susan Hayek and Frank Callahan. Thank you friends! Without your help, this would not be possible.