MARIPOSA
The Calochortus Society Newsletter
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Editor: H.P.McDonald Advisors: C.Baccus,
Publ. Quarterly S.Farwig, V.Girard
Editorial Address: 260 Alden Rd. Hayward, Ca. 94541

434 LILIACEAE

7. **Calochortus élegans** Pursh.
Elegant Star Tulip or Cat's Ear Fig. 1063

[illegible]

Stem very slender, flexuous [illegible] high. Basal leaf surpassing the stem [illegible] wide; bracts linear, attenuated, 15-30 mm. long; flowers 1-3, [illegible] erect or somewhat drooping, on slender pedicels 2-5 cm. long; sepals ovate, lanceolate, acuminate, 12-16 mm. long, greenish white tinged with purple at base; petals white tinged with purple, obovate, [illegible] mm. long, densely hairy on the inner surface and ciliate on the margins; scale narrow [illegible] deeply lacerate; anthers 5 mm. long, acuminate; capsule nodding, elliptic, 2 cm. long, 12-15 mm. [illegible]

[illegible]

C. Elegans, from An Illustrated Flora of the Pacific States, by Leroy Abrams,Ph.D., Stanford Univ. Press, 1923, p.434.

I. SPECIES THIS ISSUE: CALOCHORTUS ELEGANS

In this issue, we will cover C. Elegans. By touching on a different subsection of Calochorti in each issue, we can describe species from a wider geographic range, as well as a greater diversity of types. We will postpone discussion of the two botanical-geographical variants of C. Elegans to a future issue, as they merit their own treatment.

RANGE: Lower elevations of the mountains of NE Oregon, SW Washington, and adjacent W Idaho; scattered populations in E Idaho.

BOTANY: C. Elegans, like C. Albus, belongs to the section Eucalochortus (Ownbey). Like most of the other spp. in this section, it has ten haploid number chromosomes, oblong seed capsules ("fruit") which usually nod, and does not produce bulblets (Ownbey).

C. Elegans is the characteristic type for the "Eleganti" subsection of the Eucalochorti (Ownbey), and by which it is named. Species in this subsection have erect flowers with characteristic fringed and densely bearded petals. They look, lit erally, like a "cat's ear," or "pussy ear," their common name, with hairlike "processes" covering mo st of the petal.

C. Elegans is differentiated from the other pussy ears partly by color, partly by form, and partly by the shape of the gland. It is white or greenish-white in color. However, some specimens have a purplish crescent or blotch on either the petal (above the gland) or on the sepal. This color differentiates it from C. Monophyllus, the yellow pussy ear. A further differentiating feature is the unbranched stem; this separates C. Elegans morphologically from C. Monophyllus and C. Tolmiei, which often have branching stems (Ownbey). The

gland shape differentiates C. Elegans from C. Subalpinus and C. Apiculatus. Unlike C. Tolmiei, which it closely resembles, the hairlike processes on the flower petals of C. Elegans do not extend to the very tip of the petal, but only cover most of it. Also, the petals appear fringed in C. Elegans, but not in C. Tolmiei.

C. Elegans is closest in morphology and color to C. Coeruleus. In C. Elegans, however, the flower anthers are lanceolate, i.e., spear- or arrowhead-shaped, while those of C. Coeruleus are oblong. According to Ownbey, C. Elegans is also less densely bearded on the petals. The sp. also differ in range, with C. Coeruleus occupying a more southern habitat (California), and C. Elegans having a Northwest distribution.

C. Elegans is short, from two-six inches (5-15 cm.: Ownbey), with a taller basal leaf and a bell shaped flower.

HISTORY: This was the first Calochortus sp. ever discovered. It was found by David Douglas and named and described by Pursh (1814).

HORTICULTURE: I personally know of no one who has grown this species from seed (I obtained seed from the Walkers only this year), but there are published accounts of its successful cultivation which can be drawn upon. In the wild, it grows on grassy hillsides and open coniferous woods, in montane areas (Ownbey). It is often just at the edge of the tree line or in part shade. It gets anywhere from 10-30 inches of rain per year, and is hardy to at least USDA Zone 4 (-30°F, -35°C). Given this hardiness, and its acclimatization to both snow and some summer water in its native range, it is a suitable sp. for northern gardens, and probably for Eastern and European gardens as well, especially rock gardens. It blooms from spring to early summer, depending upon the elevation.

In pots, a light, porous, friable mix is recommended with equal parts fine loam soil (two-fifths) and leaf mold or peat (two-fifths), with a smaller proportion of sharp sand (one-fifth) [Sanders, T.W., Bulbs and their Cultivation, London, 1908; Purdy, C. and Bailey, L.H., Standard Cyclopedia of Horticulture, 1914; Kruckeberg, A., Gardening with Native Plants of the Pacific Northwest, 1982]. There are no records of fertilizer use, but limestone has been successfully added to a mix (Farwig, see V below). Three bulbs to a six-inch pot is sufficient, placed 3-4 inches deep. Exposure should be in proportion to average sunshine: shade in the desert to full sun in the fog belt. The seeds or bulbs should be planted mid-to-late autumn.

In the ground, similarly, a well-drained situation is appropriate. One grower in wet southwest Oregon uses raised bulb beds of nearly pure sand to allow the heavy rains to pass through quickly (Kline). Clay soils can be modified with up to 50% organic amendment (not manure) to enrich and loosen them. The bulbs should be given a somewhat dry period from mid-summer to mid-autumn. If it rains, mulching will help keep the ground drier.

Propagation is by seeds only. The seeds should be grown in the above media, and kept moist in the autumn (see V.I, #2 for care of seedlings). Pests include rodents, who eat the bulbs; and damping-off of seedlings. Fungicides specific to damping-off pathogens can be used; or the seedling media can be baked at 200°F for two hours, cooled, and then seeded.

Landscape positions include cliffs, banks, rocky areas,

dry borders, or areas set aside for spp. which prefer a dry period, such as Mediterranean climate bulbs. Thus they may be suitable for xerophytic landscaping in cold areas, e.g. high deserts or mountainous regions.

II. NEW SPECIES ANNOUNCED

Frank Callahan and M. Ray Godfrey, both of southern Oregon, have announced the discovery of a new sp. of Calochortus in SW Oregon. It is to be described in detail in Phytologia, V. 65, #3,p. 216 ff. It is named after Mr. Marvin Cox who found the stand, noticed that the flowers differed from other pussy ears, and brought it to Ray's attention. (All three are members of ACS, of course! Frank is also the source of my information on C. Monanthus in Mariposa #2). We will discuss it at length in a future issue of Mariposa, but thought its discovery would be of interest to members.

III. The Horticultural History of Calochortus--2nd Installment.

Allen, C.L., Bulbs and Tuberous Rooted Plants, Their History, Description, Methods of Propagation, N.Y.: Orange Judd Co., 1893/1911, p. 49.

> "...They [Calochorti] are free-flowering bulbs, when grown in a moderately light soil, not very wet. They are best grown when treated in the same manner as most summer flowering bulbs, being planted in the open border, when the soil is in good condition for working. They look best in masses, or clumps, with their colors mixed; in this way there is a constant change in the appearance of the bed, always some new feature, and during the summer, from July to September, a rare display. The bulbs should be kept warm and dry during the winter, covered with dry moss or sand. They are rapidly increased by offsets, or from seed. The latter method is rather slow, as they do not flower until the third year. If well protected against frost and water, the bulbs are best left in the ground during winter."

This article, which I recently found in the library at UC Davis, predates even the Purdy/Bailey treatment in Mariposa #2. The summer germinating spp. are, again, not distinguished from the fall or spring germinators. Other than "light" soils, no media are mentioned. The treatment is primarily of Califonia spp. As the author is from the East, his advice may be of some use to Eastern gardeners, especially the part about keeping the bulbs dry during the winter. This would keep them dormant during an unfavorable season for growth in the East and thus extend their growth period into summer, alleviating the problem of summer rains. Pot culture could be used toward the same end.

IV. CONSERVATION FOUNDATION

Thanks to the Robinettes, an organization devoted to the conservation of Calochorti and other native bulbs (e.g. Camass) has been brought to our attention. They have purchased a small amount of land, and are trying to protect local sp. of the northwest. (e. g., C. Nitidus, a rare northwestern sp. According to Ownbey, et al., in Vascular Plants of the Pacific Northwest, "perhaps half its known populations--none very large--have been destroyed" as it "grows in potential farm

land." C. Longebarbatus is similarly endangered in the NW: CNPS Inventory of Rare and Endangered Vascular Plants of California, p. 19). This organization, the Mariposa Foundation for Conservation, is also interested in obtaining seeds of non-local spp. in order to increase genetic diversity and provide a refuge for all spp. (Your editor has sent as many as he can gather). Seeds or monetary contributions (to pay for land, expenses, etc.) of interested members can be sent to :

Prof. R.D.(Ross) Watson
Mariposa Foundation for Conservation (non-profit)
415 Residence St.
Moscow, Idaho 83843

V. MIXES

From "Stan Farwig's Dirtbook" (by courtesy of Mr. Farwig, Mr. Girard, and The American Rock Garden Society):
2 parts sand, 1 p topsoil, ½ p peat moss, "handfull" of ground dolomite in an 8" cubic wooden container.

This is almost the opposite of Mr. Baccus' humusy mix, (Mariposa #2) but both transplants and "volunteers" do stunningly according to Stan.

VI. Winter, Spring and Summer Growers

For horticultural purposes, the genus Calochortus is best divided into winter growers, spring growers, and summer growers. All Calochorti seem to have a genetic proclivity to germinate only at the time of year when it will be moist in their native range. Thus it is difficult to force germination out of season, e.g. summer bloomers in winter. I learned this lesson to my dismay when I tried to grow some Mexican Calochortus spp. seeds the way I was used to growing the California ones. Only one germinated, and it soon died. While winter chill may have been a factor, our area does not get very cold in winter. It was Stan Farwig who pointed out that the only significant rains in Mexico are during the summer. Trying to grow Mexican spp. over the winter, in line with the Pacific Coast rainy season, doesn't work.

Unfortunately, certain spp. don't fit into any neat seasonal schema. For others, there is little information on when the seedlings germinate. Given these qualifications, one can still distinguish three patterns of germination and growth. The winter growers include all the Eucalochorti (C. Albus, C. Amabilis, C. Amoenus, C. Coeruleus, C. Monophyllus, C. Tolmiei, C. Nudus, C. Uniflorus), with the qualification that there is no known record of a germination test for the northwestern species of this section (C. Apiculatus, C. Elegans, C. Eurycarpus, --I am listing only those spp. with a commercial source, or which are not endangered). However, the meagre records available on these latter spp. indicate a late autumn germination. As Jim Robinette has pointed out to me, the Eucalochorti are "hypogeal" germinators. They produce an underground bulblet from the seed after germinating, nourished by the early Pacific rains during the cool autumn. They produce no "cotyledon," or seed leaf, but only a true leaf in the spring. They go dormant during the dry Pacific summers.

The Mariposa section consists in "epigeal" germinators, which produce a grass-like cotyledon at first, and a true leaf later. In the warmer parts of the Pacific Coast region, these will germinate in late autumn or early winter if rain is sufficient (C. Catalinae, C. Luteus, C. Palmerae, C. Spendens,

C. Superbus, C. Venustus, C. Vestae, C. Clavatus, C. Concolor, C. Invenustus). Where it is scant, e.g. during dry years or in the desert, they may wait for the more abundant rains or snowmelt of spring to germinate (C. Flexuosus, C. Aureus. C. Kennedyi, C. Ambiguus). In the colder regions, especially the high deserts and mountains, they may be forced by cold or rainfall patterns to wait for spring (C. Leichtlinii, C. Bruneaunis, C. Macrocarpus, C. Nuttallii, C. Gunnisoni). J.Robinette adds that damping off is reduced for Mariposas by spring planting.

The Cyclobothras exhibit a similar split, with the Pacific Coast group (C. Plummerae, C. Weedii) germinating in fall or spring; and the Mexicans (C. Barbatus, C. Purpureus, C. Venustulus) starting in late spring or summer.

In areas with pronounced winters, the winter growers might best be grown in pots in an alpine house or cool greenhouse. The mature bulbs will do most of their growing in spring, but the seedlings do best with fall germination. The distinction between winter, spring and summer growers is attenuated in areas where "spring" growth begins so late that it merges with early summer. But even in such cold areas, fall planting may be better for certain species, and vital for others. The Mexican spp. are not the hardiest, and should not be allowed to freeze.

In warm areas, it is difficult to grow the spp. from more frigid climes. A trick used by tulip lovers may prove helpful: store the seeds or bulbs in pots, dry or just barely moist, in an (old) refrigerator for 6-8 weeks over the winter. After this chilling, they can be watered by placing ice on the surface for several weeks, replacing it as needed. This simulates the melting snows of spring.

VII. Mariposa Floral Postcards

Carol Greentree brought our attention to a company which prints floral postcards. One of these is a reproduction of an old Orange Co. trademark with seven different Mariposas. We can get them at wholesale cost--24 doz. for $86.40. This works out to $3.60 per doz. Drop a line if you're interested, and I'll order if I get enough responses from members.

VIII. LETTER TO MARIPOSA

I received your first edition of Mariposa with great interest. I have been growing mariposas and other California bulbs for a number of years. At times I have felt I might have been the only one engaged in such an enterprise. How welcome contact with other growers will be.

I became interested in growing mariposas because, to me, they were the most beautiful wildflowers in our local hills. Through the Carl Purdy catalogs I found out what they were, and with his bulbs I attempted to grow them.

I grow, largely, mariposas from Southern California areas, so the culture and results that I have had will be tempered by this growing location. I have had success and many failures. However, I do believe that selected species are no more difficult to grow than other bulbs, once certain conditions are met... I will end with the negative parts of growing mariposas, in my estimation: summer care, species acclimatization, alternate year or non-flowering years, little asexual propagation and long periods for seedlings to come to flower. I hope other growers have found solutions to these and other problems of growing our favorite bulb. --Fred M. Smith, Calochortus specialist and seed collector for the Theodore Payne Foundation