

**MARIPOSA**

VOL. VI, #2

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PUBL. QUARTERLY

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**MARIPOSA**THE *CALOCHORTUS*  
SOCIETY NEWSLETTER

OCTOBER, 1994

ADVISORS:

C . B A C C U S

AND

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**I. Announcements**

1. SLIDE SHOW: There will be a slide show of the entire genus *Calochortus* and their habitats given by your editor at the invitation of the California Native Plant Society. The presentation will be at the University of California at Berkeley on Wednesday, Oct. 26. It will be held in 100 Koshland Hall (the old Genetics and Plant Biology Building) at 7:30 pm. Koshland Hall is located on the northwest corner of the campus within easy access of University Ave., the main east-west thoroughfare of the city. Parking is available directly under the lecture hall for \$3 (quarters only); enter at the intersection of Oxford St. (along the west side of the campus, at the end of University Ave. where it meets the campus) and Berkeley Way (parallel to University Ave. to the north). All are welcome, from both near and far.

2. FREE SEED OFFER: The rains were erratic during the winter and spring of 1993-1994. Some areas received normal rainfall or close to it, for example the Southern Sierra Nevada Mountains and San Diego Co. Other areas were extremely dry, such as Los Angeles Co. and environs. (Strangely, the Los Angeles area lies between San Diego and the Southern Sierra!) Seed collection was mixed in proportion: some areas produced abundant seed set while others had little or none.

Send a self-addressed stamped envelope (overseas send 50 cents or a postal certificate). The seed offer this year is as follows: CHOOSE THREE SPECIES

1. *C. amoenus* the rosy fairy lantern from Tulare Co. in the Southern Sierras. Prefers light shade, moderate water, fairly hardy. First time offer to members.

2. *C. subalpinus* a creamy cat's ear with yellow hairs from Oregon's Cascade Mts. Light shade, abundant water, very hardy, MAY REQUIRE COLD STRATIFICATION IN MILD AREAS. First time offer to members from any source.

3. *C. minimus* the Sierra Star Tulip, a tiny white flower. Part shade during the afternoon heat, except at high altitudes, moderate water, hardy, may require cold stratification in mild areas. First time offer to members.

4. *C. nitidus* the Idaho meadow tulip, courtesy of Prof. R. Watson. Large, showy, lavender to purple bloom. Full sun, moderate water, quite hardy but will germinate easily in mild areas on the north side of a structure, or other chilly microclimates. Tolerates summer water.

5. *C. argillosus* the Bay Area form. White to lavender mariposa usually with a contrasting color on the back, and elaborate mariposa markings. Fairly hardy, moderate water, full sun. First time offer to members.

6. *C. davidsonianus* from San Diego Co. Showy, dark lavender flowers. Moderate water, full sun, fairly hardy.

First time offer to members from any source.

7. *C. weedii* also from San Diego Co. where it was abundant this year. Large yellow flowers on two foot stems, some with brown blotches. Moderate water, full sun, fairly hardy. First time offer to members.

8. *C. ghiesbreghtii*, "Mexican cat's ear" from Hidalgo and Queretaro states, east of Mexico City. White or very light yellow with hairs covering the petals and a red nectary at the base. Pretty species. Moderate water IN SUMMER, shade, hardiness unknown, but does well in coastal California. Probably can be grown anywhere as it should be dried out in winter and can be stored in a cool place in frigid areas. First time offer to members from any source, as far as I know. Hand pollinated, may not be pure.

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9. *C. spatulatus* brown, nodding flowers from central Mexico, some with green sepals and with yellow interiors with hairs. Moderate summer water, shade, hardiness unknown (see 8, above). New first time offer.

We also have *C. bruneanus* seeds from 1993 which have been refrigerated and should still be viable. (Very hardy, low water, full sun.)

## II. Trips: Pictures by Sunset, Camping by Moonlight or Twenty-four Calochorti in Nine Days.

By Dr. R. Werra, first of several installments.

### [Sounds like another tall tale from the redwood country--Ed.]

At 8:46 PM the sun set gloriously in the desert of Eastern Oregon. An hour later the moon rose over *Calochortus* hunters erecting their tent at French Glen campground. This ended the first of nine days on one of Hugh McDonald's *Calochortus* field trips. Neophytes Bob and Marlene Werra joined Hugh in his "*Calochortus* express" van. Bedtime grew progressively later at night (to 1 AM) [a likely story--ed.]. Just so grew the tally of *Calochortus* which we viewed to a total of 24 species. They covered an area from a few miles south of the Canadian border to near the Mexican border. Hugh deftly planned the trip to catch as many as possible in this nine day period.

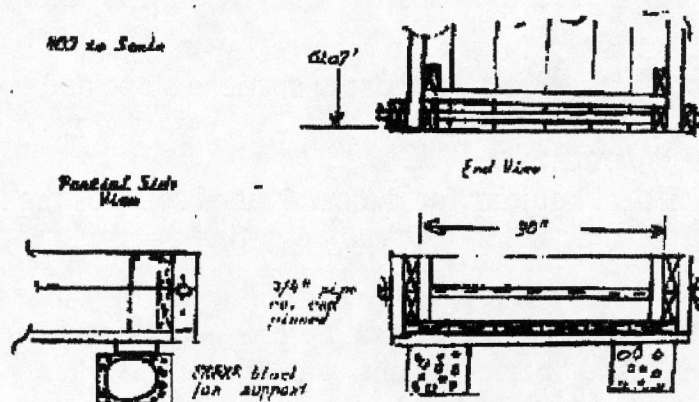
Day 1: We drove north out of Berkeley through the northern Central Valley past stands of long bloomed out *Calochortus luteus*, then east into northeastern California. No *Calochortus*, but we saw beautiful stands of *Lilium washingtonianum* and *L. pardalinum* in a recent burn area. Further east in Modoc Co. we looked for *C. macrocarpus* but saw none. In northwest Nevada we took the road less traveled. It was the road where the well-publicized young couple and baby became snowbound 2 years ago. It was just as forbidding and barren in mid-summer [Obvious novices!--ed.]. We hoped to find *C. bruneanus* in juniper-sage areas, but saw none. This special white *Calochortus* eluded us the whole trip.

## III. Horticulture--17th Installment: Building Containers for Calochorti, by C. Baccus

These containers (planters) have been developed over twelve years and provide maximum protection for the plant material. Each container provides room for 50 to 100 bulbs and can be placed on the ground, but provides less protection with added growth potential due to ground moisture. Soil mix can be native soil with 30% added humus, except where a heavy clay is used it should have additional sand incorporated.

### Materials:

- |                |       |                                 |
|----------------|-------|---------------------------------|
| 10 ea. 2X6X10' | _____ | bottom and sides                |
| 2 ea. 2X6X9'   | _____ | ends and supports               |
| 2 ea. 2X4X9'   | _____ | vertical nailers                |
| 6 ea. 8X8X8    | _____ | cinder blocks or other supports |



## V. The Horticultural History of *Calochortus*--18th Installment

Chickering, Allen L., *Growing Calochortus*, Horticultural Series Monographs #1, Rancho Santa Ana Botanic Garden Publ., May 1938. [The author, from the Bay Area of northern California, raised a great many species, and also contributed to the literature with numerous field observations. First Installment-Ed.]

"The genus *Calochortus* is almost entirely confined to Western America and many of its most beautiful species are found in California. It is with the various California species that I have been mainly concerned.

"This plant belongs to the Lily Family and, of course, therefore, grows from a bulb. The bulbs grow from seed, taking three or more years to develop sufficiently to bear flowers. In some instances they develop from little bulblets which grow on the stalk of the flower just below the surface of the ground, detach as the stalk dries up and send up a shoot the following year. Also in some instances they develop from offsets to the main bulb, and in at least one instance, *C. uniflorus*, there are little runners reaching out from the main or parent bulb, on which bulblets develop. In the main, however, they develop from seed.

"...My attention has been mostly confined to growing representatives of the three divisions mentioned [Globe Tulips, Star Tulips and Mariposas] and, accordingly, I am more familiar with them.

"I make no pretense of being a scientific botanist...I will simply say that the flowers are almost all beautiful, are arranged in threes, i.e. three sepals, three petals and a tripartite ovary, and that some species is found in almost every part of California whether it be mountain, valley, desert or rich land. Also some of them grow in rich adobe soil, more in well drained rocky or gravelly soil, some in the shade but more in the open.

"I will take up the three divisions mentioned above and treat them separately.

### 1. The Globe Tulips

"These beautiful plants usually grow on slopes where there is at least partial shade. I have grown two whites--*C. albus*, Sierra variety, and *C. albus*, Coast variety, two yellows--*C. pulchellus* and *C. amabilis*, and one pink--*C. amoenus*. All of them have done well for a time in my garden in Piedmont [Alameda Co., Ca.-ed.], but *C. amabilis* and *C. pulchellus* tend to die out while *C. amoenus* and the two white varieties do not. I believe that *C. amoenus* is simply a strain of *C. albus*, the Sierra variety.

"...*C. amoenus*...is easy to grow, either from bulbs or from seed. It is usually found growing on banks where the soil is rocky and well drained. It is almost always in partial shade. It is quite likely to be found growing with *Gilia montana* and *Brodiaea candida*, although not necessarily so. In growing it from seed I use a box with at least ten inches of soil composed of about two parts of ordinary garden soil (adobe), one part sand, one part gravel or the fine screening rock used to put on the surface of streets and one liberal part of oak leaf-mold. The seeds spring up like little spears of grass and are a glossy green. The second year the spear is wider and the bulb is much more developed. The third year a few of them may bloom, while the fourth year they should be set out as the greater part of them are then ready to bloom. The species will, also, seed itself and persist under suitable conditions, i.e. partial shade, a slope and a well drained soil."

## V. Conservation--Wetlands

One of the most critical habitats for the survival of some of the less common species of *Calochortus* consists in seasonal wetlands. While difficult to define precisely, wetlands are areas which are wet for part of the year. They are distinguished from other non-wetland areas by not drying out after rains, but remaining saturated. While the dividing line between wet meadows and bottomlands, and seasonal wetlands is sometimes difficult to draw, the latter remain saturated after the water from rains has

either evaporated or sunk in the former. Often they are fed by streams, which either sink into the wetland or overflow seasonally into them. These areas are often small, and the specialized species they support are, accordingly, limited in number. They are also under pressure for development, especially by water agencies, agriculture and others seeking the scarce water in an arid area.

Four California species and one Mexican species are wetland growers. These are *Calochortus longebarbatus*, which also grows north to Washington state, on the east side of the Cascade Mts., *C. excavatus*, *C. striatus* and *C. palmeri*. In Mexico, *C. nigrescens* is a wetland grower, known from only three locations. All of these species are either rare, threatened or both. Conservation of seasonal wetlands is critical to their survival.

## VI. Species this Issue: *Calochortus palmeri*

[Second Installment. The key was published last issue.]

The plant was named for its first collector, Palmer.

**Range and Habitat:** The species grows from San Luis Obispo Co. (reported) south to San Bernardino Co. in the Coast, Tehachapi and Transverse Ranges of California. The habitat is generally *cieneas*, i.e. seasonally wet meadows (see above), generally at medium to high altitudes. The populations are all separated by miles of inhospitable habitats, which contain no wetlands. This is a rough northwest to southeast line. There are only about ten known stands.

The plant grows in or near seasonal streams, fed mostly by snowmelt and springs. The flower is usually in full sun, while the base of the plant is hidden in surrounding vegetation. The areas in which the plant grows are saturated with water as they are flat meadows in which the streams have overflowed. Sometimes there is no outlet for the stream, but usually the stream is not flowing directly downhill, so forms a seasonal marshland. As the plants in this type of community are specialized and distinctive, it is easy to pick out a *cienea* by its distinctive vegetation, once one has seen one.

**Botany:** *Calochortus palmeri* was named for a plant from the type locality by the botanist S. Watson in 1879. (The type is a paradigm plant, usually from the locality where the plant was first found and described, the type locality. It is the standard for comparison of plants of that species.) The narrow, grooved leaf and slender seed capsule of this species put it in section Mariposa, while the smaller seeds and capsule, greener leaves, flat nectary and lack of nectary membrane place it in subsection *Venusti*, according to Ownbey's classification. Within this subsection, it is among those with the "distinctly monochasial" inflorescences, with less elaborately marked petals.

*Calochortus palmeri* is distinguished from the other monochasial *Venusti* by its habitat, its nectary, its white anthers and, from its var. *munzii*, as well as *C. dunni*, *C. splendens*, and *C. davidsonianus* its bulbiferous habit. Its wet habitat distinguishes it from all the other *Venusti* except *C. striatus*. It is distinguished from that species, with which it has been confused, by its monochasial habit, its non-striate petals, and its less alkaline, more montane wetland habitat. Finally, its white anthers and its nectary covered with yellowish, hair-like processes distinguish it from other species with rounded or ovoid nectaries, such as *C. splendens*. The flowers can appear like *C. splendens* or *C. davidsonianus* as they can be similar in color. However, *C. palmeri* is usually more variable than either of the other species, ranging from pure white through lavender and pink to almost purple. Most often it is off-white.

**History:** The species was separated by Watson in 1879. Since that time it has been confused with other species to such a degree that Ownbey commented on its "formidable array of synonyms" received from misidentification. It has been confused with *C. striatus*, *C. splendens*, *C. davidsonianus*, and *C. invenustus*. It grows near all these species, and either its habitat or its color resembles many of them so perhaps the confusion is understandable. Also, stands from high altitudes were thought to be a different species. It is probably plausible to suggest that the stands from lower altitudes formed from seeds washed down from stands higher in the mountains, as the species grows near waterways. The Riverside County stands were recently segregated as the variety *munzii*, based on their non-bulbiferous

habit. They also grow in slightly drier areas than var. *palmeri*.

**Horticulture:** This species gets most of its water during the spring from snow melt. Except at high altitudes its habitat dries out in mid to late summer and remains dry until the following spring. Although it is a wet grower, then, it can be grown like any other California species, with seasonal watering and drying off in summer. Although it has not been tested for summer watering, it would not be surprising if the species tolerated summer water, as Mr. G. Burleigh has seen it growing right in streams in the mountains. During the growing season it has an essentially boggy habitat. Yet it only needs moderate water to thrive. I have not tested it in the ground, but it does well in UC Davis mix, responds well to fertilizer and is easy to cultivate. Seeds collected from high altitudes may require cold stratification in very mild climates, but moderate chilling seems enough. This species apparently does well in wet, temperate climates, like the U. K. Full sun is usually best, although the base of the plant can be lightly shaded.

This species is intrinsically rare, as its wetland habitat is rare. Fortunately, most of its known stands are at high altitudes, above the water diversion channels and reservoirs. The lowland stands suffer from grazing, water diversion, and agriculture. Seeds of this species should be picked rarely, and only from thriving stands in good years.

## VII. Letter to Mariposa

"An aspect of *Calochortus* ecology which I do not recall seeing mentioned is the fact that several species seem to particularly flourish in the season following wildfires. I first recall noticing this several years ago following an experimental burn conducted by the Cal. Dep't of Forestry and Fire Protection...in western El Dorado County; the following spring the ground was literally covered with *C. monophyllus*, which was not nearly so abundant either before the fire nor in succeeding years.

This past spring, I had a couple of opportunities to pass along...an area [of Tuolumne Co.] scoured by last August's...fire. The area was virtually overrun by *C. superbus* and *C. venustus*, with a lot of *C. albus* as well. Friends tell me that earlier the *C. albus* was particularly showy in the burned area. It seems likely that most bulbs present send up plants in the year following a wildfire, whereas relatively few flower in most years.

Another *Calochortus* which had a particularly fine flowering following a wildfire this spring was the exquisite *C. clavatus* var. *avius*, which put on particularly showy displays in occurrences burned by last fall's destructive Cleveland fire in El Dorado Co.

Perhaps heat can be used as a horticultural device to induce flowering, at least on occasion, for many *Calochortus* or at least those which have developed on soils in forest or chaparral where wildfire has historically been an important factor in the plant's ecology.

I continue to enjoy your interesting newsletter.

Sincerely, George M. Clark

**[This has been noticed before, e.g. by Schmidt and Burleigh. Fires both destroy the canopy, giving sun lovers more light; reduce competition for space; and liberate nutrients tied up in the biomass of the larger species, trees and shrubs. In particular, potassium and phosphorus, which are often tied up in soils or other plants, and are essential to good flowering (they are one of the main components of most fertilizers), are all of a sudden liberated by fires and super abundant in soils. (Potassium used to be derived from pot ash=potash, the ashes from wood fires.) *Calochortus* do indeed flourish after light fires from the release of nutrients and the reduced competition. Whether the heat also helps is unknown, although the bulbs are several inches under the ground and may not be much affected by the heat of the fire.-Ed.]**