

MARIPOSA

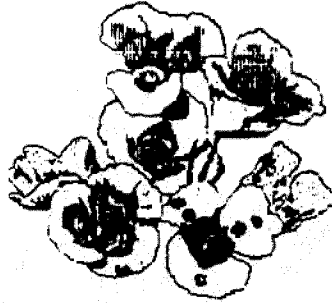
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MARIPOSATHE *CALOCHORTUS*
SOCIETY NEWSLETTER

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ADVISORS: C. BACCUS,
S. FARWIG, V. GIRARD,
AND B. NESS**I. Announcements**

1. A NEW SPECIES! *Calochortus argillosus*, a Mariposa from the central Coast ranges of California has been recognized as a distinct species in the revised Jepson Manual of California flora. Actually, the species had been separated by Hoover as early as 1944, but had not been recognized by Prof. Ownbey in his monograph of the species. Thus its specific status had been in doubt, as Ownbey had included it under *C. venustus*. It is now evident, after a study of the stands mentioned by Hoover, that the specific differences with *C. venustus* are consistent, and that the habitats of the two species are distinct while their ranges just barely overlap.

There seem to be three consistent sub-types or varieties of the species, one of which may be a species in its own right. The stands in the East, West and South (San Francisco) Bay Area generally have bicolor white/lavender flowers; while those of the inner Coast ranges are lavender to purple. A disjunct group along the central California coast from San Luis Obispo county to Santa Barbara County has smaller flowers of white with red markings. This coastal variety is distinctive enough that it may be a species. It is at least a strong variety.

2. Mr. C. Baccus has written, "I am not sure that you should key [*C.*] *uniflorus* and [*C.*] *umbellatus*: by meadow-hillside...[it may be] more of an exposure thing."

[The habitat keying was a generalization. *C. umbellatus* generally grows on slopes, while *C. uniflorus* generally grows in flatter meadows. Some populations of the former grow on very slight slopes, but even these do not resemble the meadows, with their heavy soils, favored by *C. uniflorus*. Exposure is also mixed for *C. umbellatus*, those nearer the Coast growing in more sunlight, and those farther from the Coast in the shade of trees. I have not seen *C. uniflorus* in any but a sunny exposure, although the plant may be slightly shaded by surrounding plants. -Ed.]

II. Trips

While many of our trips took us to deserts and majestic mountains, some of them took us to places not unlike our own. One such trip was our expedition to locate as many stands of the lovely, but tender, *C. catalinae*. This delicate *Venusti*, with white to pink blossoms, is on the **CNPS** watch list, so we wanted to see how the wild stands were faring.

Our trip took us through the lovely Santa Monica mountains, whose grassy slopes glide smoothly to the seashore. Since we approached them from the east, we were happy to discover some stands of *C. venustus* on our way to finding *C. catalinae*. These former were growing on the grassy knolls, as we climbed steep winding roads to the summits. We also saw the lovely fairy lantern, *C. albus*, with its gleaming white globes, growing on the steeper slopes. As we travelled higher on the leeward sides of these mountains, we found some of the golden yellow Segó lily, *C. clavatus*, growing among patches of *C. catalinae*, but only at the higher altitudes. On the windward side, we saw *C. catalinae* in pockets of grassy meadows in the canyons. As we approached the ocean, the whole length of our descent was highlighted by the views of native chapparal beside us, and by the silvery Pacific before us.

III. Germination Tests--14th Installment: Organic Matter

[This is part of a continuing series on various growing trials with Calochorti to establish information on optimum growing conditions.]

This test was set up to examine different organic amendments for **which kind** are preferred by

HOPE
YOU AND
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FAMILY
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Calochortus The test is distinct from that for media as it examined organic amendments as such rather than media. Only two species were tested. *C. amabilis*, a "wet area" species representing section *Calochortus*, was tested in a 2/3 organic, 1/3 sand mix. *C. venustus*, from relatively dry areas, and representing section *Mariposa* was tested in a half-organic, half-sand mix. Identical watering schedules were set up. *C. amabilis* was given a greater proportion of organic matter as it receives considerably more rain in its native habitat than *C. venustus* and, as organic matter holds moisture, the greater proportion in the mix for the former species was intended to compensate for its native conditions. One pot was set up for each species with each mix to test sphagnum peat moss, (pine) leaf mold, forest bark, redwood compost, garden compost, and commercial potting soil in a half and half or two to one mix as appropriate. All the mixes were pasteurized.

Although standard horticultural practices were followed in the watering schedule and mix proportions, the test is incomplete as only two species were utilized, and different proportions were not tested. Different watering schedules and fertilizer types were not tried. At best it can give a preliminary indication, not a definitive or final answer. Readers should keep this in mind before using the test as a guide.

The results were very clear-cut in the case of *C. venustus*, less so in the case of *C. amabilis*. In the former case, *C. venustus* preferred the sphagnum peat moss (UCD). Over half of the seeds survived to adulthood with this organic amendment, the only one to achieve this. None of the plants in the other amendments survived past the first year with the exception of a single bulb in the half bark mix.

In the case of *C. amabilis* however, the results were markedly different. This species preferred the commercial potting mix, as more than half of the seedlings survived to adulthood in it. Some seedlings survived to adulthood in all the others as well, with the exception of the garden compost mix. Generally, two to three bulbs survived in the mixes with the other amendments. Only in the garden compost mix did none survive to adulthood. Interestingly, the two to one sphagnum peat moss proved to be only second best for this species, while it was best for *C. venustus*. However, as the proportions of organic matter to sand were different, the tests may not be comparable.

IV. The Horticultural History of *Calochortus*-16th Installment

Grey, C.H., *Hardy Bulbs*, N.Y.: E.P. Dutton and Co. Inc., 1937, pp. 123 ff. [A sympathetic and major treatment by the celebrated British horticulturist. The article will be of great use to those trying to grow the subtropical types in temperate climates. In two installments--Ed.]

"It is, to my mind, such a beautiful genus that I cannot refrain from commenting on the criticisms to which it was subjected by Mr. Reginald Farrer. He was so great a gardener, and so great a collector, that his word is apt to be taken as law. I do not for a moment believe that it would be possible at Ingleborough [home of Mr Farrer-ed.], with its heavy rainfall, to maintain more than three or four species in health. That, however, is no reason for suggesting that, like the *Oncocyclus* Irises, they cannot be grown with success in Great Britain. They can, on the contrary, be grown with ease in any district with a moderate rainfall, if adequate attention is paid to drainage. I am growing in Kent, and have grown for years, about twenty species. Of those *C. Kennedyi* is the only species at all comparable in difficulty with the high alpine androsaces which every serious rock-gardener grows as a matter of course. The remainder, almost without exception, set seed, multiply and replenish the earth; so much so, indeed, that, as I write at the end of March, miscellaneous seedlings are appearing in profusion in a bed out of which their parents were cleared two years ago...

"*C. albus*..flowers in May-June, and is easily grown in well-drained sand and leaf-mould. Seed, freely produced, germinates very easily.

"*amabilis*..flowers in April-May, and is a most charming plant. It is, I think, exacting, so far as drainage is concerned. It does so very well in a raised bed that I tried the experiment of using it as a carpeter on a flat level in my rock garden, where it promptly disappeared.

"*amoenus*..flowers early in May, and is a very beautiful plant. I do not know any flower possessed of such a

delightful lilac colour. It does not produce seed very freely with me... Purdy suggests that it is a colour-form of *C. albus*, horticulturally...it is quite distinct.

"*apiculatus*...flowers in May, and is the only species which appreciates woodland conditions in Great Britain.

"*aureus*...has never been introduced into cultivation [1937-Ed.]...I hope to receive corms, which will doubtless require to be grown under semi-desert conditions.

"*barbatus*...I have grown it for several years, and the flowers are very freely produced alike in the open and in a pan in my alpine house in early autumn. It is a delightful plant to grow on a very gritty, well-drained rock garden slope where the flowers can fall over a rock, and is easily raised from seed and bulbils.

"*caeruleus*...flowers in June-July, and is a charming little plant. It requires moraine conditions in Great Britain if it is to survive for any length of time, and sets seed with tolerable freedom.

"*catalinae*...flowers in June-July, and is a beautiful plant. In view of its provenance I have been very pleasantly surprised to find that it continues to flourish with me in Kent and that it makes good increase. Quick drainage, and gritty sandy soil are essential in Great Britain.

"*clavatus*...flowers in June-July, and is a very handsome plant. Abrams gives its maximum height as seventy inches, but I have never seen any plant exceeding...thirty inches in my own garden. It is easily grown, and easily raised from seed, and should be a permanent inmate of every garden that can provide a sunny exposure and light, well-drained soil.

"*concolor*...flowers in June. Mr. Carl Purdy has sent me this plant more than once, but I have failed to keep it alive. The best chance of success in Great Britain is in the light sandy soil of Norfolk or Surrey.

"*elegans*...flowers in late spring, and is an attractive little plant on a sunny moraine.

"*eurycarpus*...flowers in June-July, and is a very beautiful plant, as easy to grow as *C. vetustus*

"*greenii*...flowers in June-July. It is a scarce species with a very small range, and is very beautiful. I doubt whether it has ever been established in cultivation in Great Britain...I have recently received a few corms...they have now flowered very well in a pan for two years and made a rather furtive attempt to flower in the open in a raised, gritty bed, in the summer of 1937.

"*hartwegi*...this very fine plant flowers in September. It seems to have disappeared from cultivation, but I hope that it may have been collected afresh..."

V. Conservation: Seed Collection

One comes upon a lovely stand of wildflowers, with unusual markings. Should you help yourself to seed of this stand? Mr. Wayne Roderick, dean of California Native Plantsmen, thinks not. If it is a rare and endangered species, of course, removal of the seed may further endanger the species. But what of seed of species which are not considered rare and endangered? Mr. Roderick thinks that only 10% of the seed should be collected and only if the stand is large and vigorous. There are stands of some species which literally cover the ground for acres in some areas. These stands are healthy, and, presuming that it is not a rare and endangered species, will probably not suffer from collecting. Of course, it is not necessary to collect all of the seed until one has 10%, if there is a greater abundance than one needs, but in moderately large stands 10% is ethical. Mr. Roderick believes that this will not endanger the genetic peculiarities of the stand, nor the genetic diversity of the species. Also, it will leave sufficient quantity for other collectors.

VI. Species this issue: *Calochortus longebarbatus*

Genus *Calochortus* Key (modified from Ownbey)

I. Section *Calochortus*

A. Subsection *Pulchelli*

B. Subsection *Eleganti*

C. Subsection *Nudi*

D. Subsection *Nitidi*

Stems longer, rarely bulbiferous, rarely branched; flowers erect or spreading, open and campanulate; petals sparingly bearded and unfringed.

- 1 Seed capsule nodding
 - i persistent perianth segments and hairs limited to near glandular area; flowers pink to lavender.....*C. persistens*
 - ii petals covered with short hairs, white with dark purple blotch around nectary; capsules long*C. umpquaensis*
- 2 Seed capsule erect
 - a. Hairs short
 - iii. petals entirely covered with short hairs, white with greenish area around nectary; nectary processes branched, purplish; capsule short.....*C. howellii*
 - b. Hairs on petals long and flexuous, often sparse
 - iv. Longer internode; petals lavender to purple with crescent shaped band above the nectary; nectary triangular-lunate; tetraploid.....*C. nitidus*
 - v. Longer internode; petals usually white, rarely lavender with a purplish blotch at mid petal and yellow near the nectary; nectary triangular-lunate.....*C. eurycarpus*
 - vi. Longer internode; petals generally purplish with an inverted V-shaped mark on the exterior; nectary depressed and lunate.....*C. greenei*
 - vii. Stem with short lower internode, bulbiferous; petals pink to purplish with a bracket-shaped mark above the nectary; nectary transversely oblong, slightly depressed*C. longebarbatus*

II. Section Mariposa

III. Section Cyclobothra

The botanical name means 'long bearded' and refers to the long petal hairs on the inner surface of the petals. The flowers are generally lavender to purple, but there are occasional pink ones.

Range and Habitat: The species grows from Shasta Co., California in the South along the eastern side of the Cascade Range all the way to southwest Washington state in Yakima Co. The range is a rough line from north to south, and not very extensive in width. The two areas of concentration of the stands are in the north and the south of the range, with large gaps in between. A disjunct population in Wheeler Co., Oregon contains a triploid variety (var. *peckii*) which reproduces solely by bulbils, not seed.

The habitat is in wet seeps and stream banks in an otherwise dry, leeward area. The plant grows in almost boggy conditions in much of its habitat, which is open and sunny in exposure. These areas are not merely channels for melting snow, but actual seeps and small streams, although some have dried up by late summer. It is almost strange to see such wet areas nearby the extremely dry sage deserts. Thus while rainfall in the area is low, the plant grows in very wet conditions, with water provided by snowmelt from the overflow of mountain streams. The streams are not riparian, not rushing rivers, but idle and gentle, with un-defined banks. The habitat looks like very wet, wide meadows, bordered by a ring of conifers and then by sage lands. Winters are frigid: to -20°F (about -30°C) or colder, USDA Zone 5-6. The growing season is from snowmelt, in mid to late spring, to flowering in late June to July. Summers can be hot, but are somewhat milder than low deserts due to altitude.

Botany: *Calochortus longebarbatus* was originally placed in section *Mariposa* by Purdy. Perhaps the large size of the flowers, their erect capsules or their more exposed habitat led him to this classification. Ownbey, however, placed it in section *Calochortus* along with similar looking plants. The ungrooved leaf, and more orbicular, winged seed capsule tie it to the fairy lanterns, cat's ears and star tulips. However, the seeds of the subsection in which *C. longebarbatus* has been placed, the *Nitidi*, are larger than those of the other Calochorti, with a more regular shape, a flat surface and a lighter color. They are intermediate in size between those of the other subsections of section

Calochortus and those of section *Mariposa*. Surprisingly, they are similar in appearance to those of section *Cyclobothra*. Perhaps both subsection *Nitidi* and the *Cyclobothras* are intermediate between the bulk of section *Calochortus* and section *Mariposa*. Be this as it may, Ownbey recognized this subsection as transitional between section *Calochortus* and section *Mariposa*. By classifying it last in section *Calochortus*, just before section *Mariposa*, its relation to the latter was emphasized.

Calochortus longebarbatus is distinguished from the other species of its subsection primarily by its bulbiferous habit and its short lower internode (the part of the stem between the leaves). In appearance it is very similar to *C. nitidus*, *C. greenei* and some color forms of *C. eurycarpus*. It resembles *C. persistens* less closely and is dissimilar in appearance to *C. howellii* and *C. umpquaensis*. It is smaller than *C. nitidus*, *C. greenei* and *C. eurycarpus*, however, although under cultivation the flowers grow larger than in the wild. Also, the markings on the flowers of each of these species vary: *C. eurycarpus* has a central blotch, *C. nitidus* a purple band, *C. greenei* an inverted V-shaped band and *C. longebarbatus* a bracket shaped mark with the open side facing down. Also, the habitats differ slightly: *C. nitidus* and *C. greenei* occupy grassy slopes, *C. eurycarpus*, fairly dry alpine meadows, while *C. longebarbatus* occupies very wet meadows at the leeward base of the mountains. Further, the range of *C. longebarbatus* lies to the south and west of those of *C. nitidus* and *C. eurycarpus* and to the east of *C. greenei*, although it may overlap that of the latter species.

History: This species was confused with the closely related *C. greenei* by the early botanists, up to and including S. Watson in an 1879 treatment. The same botanist separated it in 1882 and this specific ranking has only been challenged by Jepson since. There have, however, been differences between botanists over the characters which separate this species from the other *nitidi*, as well as the relation of the *nitidi* subsection to the major sections of the genus. Generally, the bulbiferous habit has been the least contested specific difference.

Horticulture: Surprisingly, this species has done well in the mild Bay Area without significant refrigeration. Considering the winters the plant is used to, with an average low of -5°F (about -20°C) during the winter, and even more frigid "cold snaps" of -20° or more, it is strange that it will flower without refrigeration here, but it does. The seeds generally require cold stratification to germinate, however. As it is a wet grower, it likes to be watered both in the autumn, prior to cold stratification, and abundantly after, in the spring. The bulbs like once a week watering or more, and tolerate summer water, although they also do well if they are dried out during their late summer dormancy. I have not tried this species in the ground, but it does well in UCD or even more humusy mixes. It flowers best with light fertilizer. Full sun is recommended except in the hottest locales.

Conservation: This is considered a rare and endangered species by the Cal. Native Plant Society, and may be threatened in Oregon and Washington. While some stands are vigorous and healthy, others have only one or two plants per stand. In western Modoc Co. in particular, the logging operations have silted up the streams upon which the plant is dependent for its water supply. Further, the use of public land for grazing has meant that cattle have stomped through the wet meadows of the plant's habitat, crushing the delicate flowers. Their hooves sink in the wet bogs and leave holes which break up and destroy the meadows. Although the plant is not in as bad shape as some other *Calochortus* species, such as *C. persistens*, it could be in more trouble if the wetlands on which it grows become developed further. Seeds of this species should be collected rarely, and only from stands known to be large and vigorous.

