

MARIPOSA
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MARIPOSA



THE CALOCHORTUS
SOCIETY NEWSLETTER

OCTOBER, 1991

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

I. ANNOUNCEMENTS

A. * * * FREE SEED OFFER * * *

It's planting time for the California spp., and once again we are offering free seeds of various *Calochortus* species to our members. As always, send us a SASE with your choices. Each member may have one California selection **AND** also one Mexican sp. There are four California spp. to choose from. For mild climates, we have *C. albus* (Sierran) and a bicolor form of *C. superbis* (lavender/white). For those of you in colder climates, the choices include *C. invenustus*, and *C. leichtlinii*. We will offer seeds of some Mexican spp. and bulbils of others. They should **ONLY be grown in summer**. These are subtropical species and will require winter protection in cold areas. Hardy to 25°F/-3°C, and should be stored **DRY** in winter. This may be the first time some of these spp. have ever been offered anywhere. Bulbils of the Mexican species should be treated like seed; we are offering bulbils of *C. cernuus*, *C. spatulatus* (both purplish, nodding), and *C. nigrescens* (almost black, nodding). Also, we are offering seeds of *C. fuscus* (dark red) and *C. pringlei* (dark red, with hairs) (from open pollinated plants; we cannot guarantee purity). Also, please specify a second choice as quantities may in some cases be limited.

B. In order to help further our mission to increase publicity about these species, Dr. Robert Weera has volunteered to put together a slide show for educational purposes. The slides would, ideally, include close-up photographs of each spp., as well as habitat shots. Some members have already given donations of slides for this project, including your editor who has contributed his shots of the Mexican species. Both questions and donations of slides should be addressed to:

Dr. Robert J. Weera, 721 South Dora, Ukiah, CA 95482

C. Dr. Weera has also discovered an interesting hybrid of *C. amabilis* x *tolmiei*, a delicately yellow fairy lantern which is intermediate between erect and nodding.

D. According to Bryan Ness, work has continued all summer on the update of the Jepson manual. Bryan is working on section *Calochortus* and Peggy Fiedler on section *Mariposa*.

I. Trips

[Or: Oh, what we don't do for our *Calochortuses*!]

In April, we took a trip that brought us through the Mojave in southeastern California. While we loved the beauty of the spring wildflowers, we were amazed by the full force of the desert winds. While we slept in our van, we heard what we thought were trucks behind us. When we looked out, we saw only the effects of strong winds against the creosotes.

What were we doing in the area? This was primarily a trip to see the habitat of *C. flexuosus*, although there were other stops along the way. One of them was to a fairly recent find of *C. kennedyi* in what was called "Iron Canyon." Consulting our trusty maps, we soon found the area. On paved roads, we went past some very rural areas that had seen boomtimes during mining operations that had ceased long ago.

Iron Canyon was arid and filled, understandably, with red rocks, showing off their iron ore. We had an altimeter, but it did not work in this canyon. We walked up the wash as far as we could, and then Hugh went on alone. He never found the elusive stand.

He was too busy hanging onto the crumbling walls of the canyon to notice if any was around. Slowly, he climbed down the sheer wall of the canyon toehold by toehold, watching anxiously where the rock

I HAVE MANY TO SHARE. OP I'LL HAVE YOU UP NEXT. SAR NOT WATER TAKEN E-ALBOM. BEST A.

DEAR G. COLLECT NOT TAKEN E-ALBOM. YOUR MURDER DOLORE LIKE C. VERA TRE! MAY ALSO BE CROSS BETWEEN THEM. I'LL HAVE YOU UP NEXT. SAR NOT WATER TAKEN E-ALBOM. BEST A.

crumbled as his feet left it. Once back on terra firma, we headed back to the van.

There had been no real road into Iron Canyon. We had followed one of the larger washes into the canyon. Now, we found we were stuck. The sandy soil was too soft--we couldn't get enough traction going in order to get out. Finally, Hugh was able to "dig" our way out by digging through the softer earth to the more compact below. Crossing our fingers, we tried once more to leave the inhospitable canyon.

This time, we were lucky. Once we were on our way, we didn't stop until we hit the paved road below. It was at this juncture that Hugh turned to me and said, "What we don't do for our *Calochortuses*!"

Believe me, it was good to get home.

III. Germination Tests--C. Baccus

(Cont'd. from last issue.)

[More information on germination trials from one of our eminent advisors, C. Baccus. Data includes representatives from each section, although not all species were used. Readers are still cautioned that some seed will germinate at later times than others, even those from the same batch.--Ed.]

Species	Cold Stratification ¹	Planted	Emerged	Days
<u>B. Section Mariposa</u>				
1. <i>Venusti</i> :				
<i>C. leichthlinii</i>	12/9/89-1/5/90	1/5/90	- 0 - (fungus)	
<i>C. luteus</i>	[not needed]	1/2/91	3/10/91	67
<i>C. palmeri</i>	[not needed]	12/23/89	2/16/90	60
<i>C. splendens</i>	[not needed]	12/23/89	1/10/90	20
<i>C. splendens</i>	[not needed]	1/20/90	2/8/90	20
<i>C. superbus</i>	[not needed]	2/5/90	2/25/90	20
<i>C. venustus</i>	[not needed]	1/12/91	2/14/91	33
<i>C. venustus</i>	[not needed]	1/6/91	2/25/91	40
2. <i>Macrocarpi</i> :				
<i>C. macrocarpa</i>	12/15/89-1/25/90	1/25/90	2/5/90	40 + 10
<i>C. macrocarpa</i>	12/6/89-1/25/90	1/25/90	- 0 -	40 + ?
<i>C. macrocarpa</i>	1/15/90-4/1/90	4/1/90	4/5/90	75 + 4
<i>C. macrocarpa</i>	1/15/90-3/8/90	3/8/90	3/18/90	55 + 10
3. <i>Segos</i> :				
<i>C. clavatus</i>	[not needed]	1/10/91	2/2/91	<30
<i>C. invenustus</i>	[not needed] ²	2/1/90	2/21/90	20
<i>C. kennedyi</i>	[not needed] ²	1/2/91	1/23/91	21
<i>C. nuttallii</i>	[not needed] ²	1/15/90	4/5/90	75
4. <i>Gunnisonianii</i> :				
<i>C. gunnisoni</i>	12/10/89-1/10/90	1/10/90	1/21/90	30 + 15
<i>C. gunnisoni</i>	12/10/89-1/10/90	1/10/90	?	30 + ?
<u>C. Section Cyclobothra</u>				
1. <i>Weedii</i> :				
<i>C. plummerae</i>	[not needed]	12/23/89	1/10/90	20
<i>C. plummerae</i>	[not needed]	1/10/91	2/10/91	31

<i>C. weedii</i>	[not needed]	1/2/91	2/2/91	31
<i>C. weedii</i>	[not needed]	1/10/91	2/2/91	<30
2. <i>Giesbreghtianii</i> :				
<i>C. venustus</i>	12/10/89-2/26/90	2/26/90	3/18/90	80 + 20
<i>C. venustus</i>	1/9/91-2/2/91	2/2/91	3/21/91	30 + 60
3. <i>Barbati</i> :				
<i>C. barbatus</i>	12/6/89-1/23/90	1/23/90	3/18/90?	50 + 28
["large-flowered"]				
<i>C. barbatus</i>	12/19/89-5/3/90	5/3/90	5/23/90	150 + 20
["small-flowered"]				
<i>C. barbatus</i>	12/6/89-5/4/90	5/4/90	5/13/90-6/23/90	150 + 30
<i>C. barbatus</i>	1/9/91-2/2/91	2/2/91	3/13/91	24 + 43
4. <i>Purpurei</i> :				
<i>C. hartwegii</i>	12/10/90-5/14/90	5/14/90	- 0 -	
<i>C. purpureus</i>	12/6/89-5/3/90	5/3/90	5/23/90	140 + 20
<i>C. purpureus</i>	12/6/89-1/15/90	1/15/90	3/18/90	40
<i>C. purpureus</i>	12/6/89-1/15/90	1/15/90	6/7/90	40 + 100

1. Cold Stratification means refrigeration under moist conditions. This treatment is not needed in temperate climates.

2. Some strains will require cold stratification, however.—Ed.

[Editor's Note: On *C. macrocarpus* and *C. purpureus*, Mr. Baccus experimented with both fresh seed and with year-old seed.]

IV. Horticultural History of *Calochortus*-8th Installment

Rockwell, F.F.: The Book of Bulbs. N.Y.: Macmillan, 1927. This is the final segment from this extensive article.

'Starting Growth Indoors' When the root systems of the earliest bulbs have sufficiently developed, the first pots or pans may be taken out of the rooting bed and brought indoors to begin top growth. It is just at this point that a mistake is often made by the beginner which will spoil the results of all the preliminary work that has been done. Do not place the bulbs from the rooting bed directly in full sunlight and in a high temperature. To do so will force the tops into growth so quickly that the bulbs will "come blind." Place them, rather, in a subdued light in a north window or behind a shade or screen, where the temperature will average only from 40 to 50 degrees. At first, water only gradually, increasing the amount as the growth begins to develop. They should be kept under these conditions until after the flower stalk has begun to shoot up and the bulbs are formed. Then they can be placed in full sunlight and given a temperature of from 50 to 60 degrees[°F]. Take care that the soil is kept evenly moist. To let the soil dry out, and then to overwater, may result in imperfect flowers or in "blind" growth. At this stage, additional plant food in the form of a top-dressing or liquid manure...may be given. Keep well ventilated to make sure that plenty of fresh air is supplied at all times. Remember that the bulbs cannot get out for a daily walk as you do! To be shut up continuously in a super-heated atmosphere with all the moisture drawn out of it by "modern" heating is as undesirable for plants as it is for humans. It is often noticed that bulbs as well as other house plants do better in the kitchen than in the other rooms of the house. The simple explanation of this is that there is more moisture in the atmosphere. It is an excellent plan to deep some large flat vessel, or one of the pans which are now made especially for attaching to radiators, and can be bought at small cost, near the bulbs and filled with water at all times.

After the buds begin to open, they will keep in perfect condition much longer if they can again be put in moderate light, or be somewhat shaded from direct sunshine in the window where they are growing, and given an abundance of fresh air and a lower temperature. This may easily be accomplished by giving them a little more ventilation at night, avoiding, of course, any risk of actual freezing, and also a direct draft of cold air upon the plants.

If the bulbs, after they have flowered, can be placed in the cellar or anywhere where they will get some light and will not freeze, the foliage will go on growing for some time, thus leaving the bulbs, when they do dry off, in much better



Calochortus ambiguus

from

Intermountain Flora by Cronquist, Holmgren, et al., Vol. #6: NY Bot. Gdn./ Columbia Univ. Press, 1977.

condition for planting outside in the garden than if they are taken out of the pots or pans immediately after flowering. They can be planted out of doors any time during the spring, and will start growth themselves in the early autumn....

HARDY BULBS FOR FORCING... *Calochortus* (Butterfly Tulip). These remarkably brilliantly colored flowers...are ideal for the cool greenhouse. Pot in September or October, root outside (Method Two)[described above-Ed.] and bring into cool temperature, with liberal watering. Except the "Globe" varieties, all should have full sun while growing. Dry thoroughly in full sun after foliage dies, and store in pots.

V. Conservation: *Calochortus striatus*

Geoff Burleigh, well known to many in southern California for his *Calochortus* show at the **CNPS**--Santa Monica Mountains Chapter, has been following the stands of endangered *Calochorti* for many years. In a recent letter to the editor, Mr. Burleigh advised us:

"... The *C. striatus* were scattered over a wide area--at least a square mile--many plants...This habitat will soon be destroyed by development unless immediate steps are taken to protect it. [Northern Los Angeles County] is growing very fast. Development has already extended to within 1/2 mile of this area..."

Calochortus striatus is on the "Watch List" of the **CNPS' Inventory**. We are urging members to write their local chapter of the **CNPS** to alert them to the plight of *C. striatus*. Please write them today!

VI. Species This Issue: *Calochortus ambiguus*

Range: A species native to the Southwest, it is found mostly in Arizona and the westernmost portions of New Mexico, although additional sightings have included the Pine Valley Mountains in Utah, and in Sonora, Mexico.

Botany: This species is one of two members of the subsection *Gunnisoniani*. The *Gunnisoniani* are in section *Mariposa* and like all in that section can be distinguished from section *Calochortus* by their grooved leaves, unwinged seed pods, larger and flatter seeds, and chromosome count. From section *Cyclobothra* the Mariposas are differentiated by their leaves, and membrane-like bulb coat. However, the chromosome number of the *Gunnisoniani* is not distinct from that of the *Cyclobothras*; unlike that of the other Mariposas. Whether this points to some previous common ancestor, or is coincidental, is not known at this time.

The chromosome number, nine, also distinguishes this subsection from the other Mariposas, which normally have seven to eight chromosomes. A further distinction is a circle of hair-like growths near the base of the inner petal.

C. ambiguus is differentiated from *C. gunnisoni* in its shorter, more rounded or oblong gland (for new members: the gland or nectary is a small area at the base of *Calochortus* petals which differs from species to species, and is thus often important in differentiating the various species. Its function is believed to be the emission of nectar for the attraction of pollinators.) Those of *C. gunnisoni* are more elongated. Also, the range of *C. ambiguus* is generally to the southwest of *C. gunnisoni*, in somewhat drier habitat, and it is generally more bulbiferous.

C. ambiguus is well named as its color is ambiguous. It is whitish as a rule, but varies to lavender and purple. A pure white flower is rare, however, for it is more likely to be grey-white or pink-white or pink-lavender-white or pink-lavender-gray-white, etc. It is not so much a rainbow as a subtle blend with hints and highlights of one color and then again another on the same plant, for a lovely and intriguing overall effect. Or there will be small patches and streaks of another color on a differing background color. The flower is bell-shaped, but upright with either pointed or rounded petals. There are often various *Mariposa*-like markings on the inner and outer surfaces of the petals, as well as contrasting colors on either side.

History: *Calochortus ambiguus* was named as a variety by Jones in 1912, but not elevated to specific rank until Ownbey's monograph in 1940.

Horticulture: Although it is from the arid Southwest, this species grows, generally speaking, in the wetter regions of Arizona. The wetter parts of Arizona are not bogs, however, but are moderate in rainfall totals. In short, the species receives from fifteen to thirty inches per year (about 35-70cm), less at lower altitudes. Its range includes both medium and high altitudes. Seeds from the latter areas will require cold stratification if grown in mild areas, while seeds from the medium altitudes may require it. The high altitude strains endure cold as low as -10° F (about -20° C), although typically they grow in areas with somewhat less frigid winters. The rain pattern in Arizona is generally autumn and spring rains, but *C. ambiguus* is a spring grower so the autumn rains may be superfluous. Its habitat is meadows in juniper, oak or pine forests.

This species may be treated like a California species from one of the colder climates, e.g., *C. leichlinii*. Like the latter it has a short spring growing season between the end of winter and the end of the spring rains. Unlike its California cousins it tolerates out-of-season rainfall more readily. On one occasion, a September storm turned one of its locales into a sea of mud as we passed by, but there was no growth: the bulbs were dormant. Yet it should be kept in mind that a relatively wet habitat in the West may be relatively dry by comparison with other areas, e.g., the Eastern U.S. In general, cold climate growers can leave the plant out all year, except in the coldest areas, so long as the plant is kept on the dry side during dormancy (July-January/March). The medium altitude strains do well in California, and will survive on normal rainfall. These strains tolerate high summer heat as well. The UC Davis mix (1/2 SPMoss 1/2 sand) with a complete bulb fertilizer has proven satisfactory; Mr. C. Baccus uses a 2/3 humus mix to grow the sp. Once a week watering is advised for the seeds until germination; less thereafter. The medium altitude strains are generally from drier areas, and so require less water after germination, about twice a month. These strains also prefer full sun, but like the shade of other low growing plants around the base, especially in very hot areas. In the wild this is provided by grasses. Large pots are advised. This species grows in clay soils in the wild, but those in high rainfall areas are advised to dig the bulbs during dormancy unless the soil has very rapid drainage. A three-four inch planting depth is sufficient.

High altitude strains (about 6000ft/2000M or more) will require at least some winter chilling both to germinate and to break dormancy in the late spring. Six weeks should prove sufficient. The seeds will require moist chilling, either in pots covered with ice, or in ziploc bags with moist vermiculite kept in a refrigerator at 32-40°F (about 0-5°C). The bulbs, however may be chilled dry, and can be planted out at the first sign of leaf growth on the top of the stem. It is better to store the bulbs in vermiculite or dry peat to prevent dessication during the storage period of dry cold storage to break bulb dormancy (in mild areas).