



*C. luteus*

# MARIPOSA

the newsletter of the *CALOCHORTUS SOCIETY*

c/o Robinett, P.O. Box 1306, Sebastopol, CA 95472 USA

## Seed Options

El Niño gave us a banner year for *Calochortus* seed production in nature. It may be a long time before we can offer a bonanza like this again! Members may choose among three options, detailed below. Each species offering will be 20+ seeds except where noted, and will include suggestions for cultivation. The only charge is \$1 for shipping (US\$ 2 overseas). Please remit shipping costs with your request for seeds.

### Option 1 - Globe Lily group

- C. albus* Coastal form - from San Mateo County at 300' - a "standard" Bay Area form, mostly white to some pale pink
- C. albus* "dwarf" Coast form - San Luis Obispo County with severe coastal exposure, 2000' - mature bulbs when well fed produce what looks like a "pile" of white globes tinged pink 6 to 8 inches high - 15 seeds only, as long as they last (total of 500 seeds available)
- C. albus* Sierra form - from Mariposa County east of Coulterville at 2000-2700' - a "standard" Sierra foothills form, pearly white, smaller flowers on a more branching plant, some with "red shoulders" (darker, more prominent glands showing through the backs of the petals)
- C. albus* var./form *rubellus* - the deep pink to wine red form from San Luis Obispo County, 1500'
- C. amabilis* - the more common yellow globe lily from the North Coast Ranges, Lake County, 2500'
- C. amoenus* - the two-toned, pink-and-lavender/pink globe lily from the southern Sierra foothills, Fresno County (Pine Flat Reservoir), 1000'
- C. pulchellus* - from Contra Costa County, below 800' - the "other yellow globe lily" - larger and slightly more greenish-yellow than *C. amabilis* - collected from two locations by us and by Hugh McDonald

### Option 2 - Mariposa group

- C. argillosus* - RBF-grown seeds from plants raised from seeds collected from the type locality - "Dos Picachos" - in San Benito County, the "central form" of *C. argillosus*, plants in this stand are mostly generously blushed purple, especially on the outsides of the petals
- C. flexuosus* - a desert, dry-habitat species (seeds collected in Utah by Hugh McDonald)
- C. leichtlinii* - from eastern Fresno County, 5000 to 6000'
- C. luteus* - Sonoma County, growing thickly on a north-facing slope south of the Russian River, 200'
- C. simulans* - from eastern San Luis Obispo County, 1500+', 15 seeds while they last (500 available)
- C. splendens* - the "northern form" from the Lake-Colusa County line, 1800'
- C. superbus* - from a pretty population with many pinks and lavenders, El Dorado County, 2200'
- C. vestae* standard form - mostly white, Mendocino County, north and east of Laytonville, 1900'
- C. vestae* colorful form - mostly pink and lavender, Trinity County, 2800-3200'

### → Bonus to ALL options

- C. venustus* - the fabled, brilliantly colored form from eastern Fresno County, 5500-6000', 40+ seeds

**Option 3 - "The Best of Both Worlds"** - each species 30+ seeds - see descriptions above*C. albus* "Coast form"*C. luteus**C. albus* "Sierra form"*C. superbis**C. amoenus**C. vestae* (a mixture of the two forms listed above)*C. argillosus**C. venustus***Reader Responses**

We received a couple of dozen responses to our request for feedback. We wish it had been more. But for those of you who answered, the following summarizes the top 10 responses, in the order shown --

1. More -- or at least the same -- emphasis on "species of the issue."
2. More -- and more current -- cultural information and experience.
3. Promote the "Readers' Forum" idea.
4. Less "travelogues."
5. More from Tom Patterson, or taxonomy, or other scientific information.
6. More on unusual forms (including their locations).
7. More "travelogues."
8. More about the Mexican species.
9. More on conservation.
10. Less on conservation.

Unless more people give us feedback otherwise, we plan to follow the top two-thirds of this list --

- A. "Species of the issue" will continue, and will receive the same or more emphasis as in the past.
- B. Combining 2 and 3, we hope to use the "Readers' Forum" to focus mostly on culture in different locations. (But see "E" below.)
- C. There will be fewer "travelogues."
- D. We will ask Tom Patterson and others to share their research results.
- E. We hope to incorporate "unusual forms and their locations" into the "Readers' Forum."

For those specific readers who particularly want more on the Mexican species (with which we have no experience) -- we've set your names aside, and we will try to find a good resource for you.

**"Do *Calochortus* require separation into individual pots to make them flower?"**

*From Joy Bishop, Lightwater, Surrey -- To summarize, Joy decided several years ago to separate the colors and forms of various *Calochortus* she was growing, and so planted some mature bulbs (raised from seed) she had into about 80 small 2x2 pots. The following year, her entire collection bloomed, and she was able to sort and pot various colors and forms together while they were in bloom. She subsequently heard a lecture on the value of packing bulb pots closely and thickly, but her own experience was that the next year the bulbs she had separated into individual pots bloomed very well, while those she had not continued their "usual sparse flowering." She tried separating some of the bulbs into individual pots a third year, but was not at home at bloom time. She believes the results were mixed, eliminating the possibility of a firm conclusion from her efforts. She wonders why this happened, and what the experience of others has been.*

*Joy does not mention in her letter to us what her practice is with regard to feeding her bulbs. There is an oft-quoted "myth" out there that species bulbs "mustn't" be fed. Nothing -- in our experience -- could be further from the truth. In nature they often grow in very poor soils, for the simple reason that their evolution into a geophyte -- which can be viewed as a nutrient-storing engine -- has enabled them to*



survive where other plants may not be able to survive. At our back yard "bulb farm," Jim routinely feeds bulbs with one-third to half-strength commercial liquid fertilizer once every two to three weeks. The bulbs seem to thrive on this. For those that are happy in our climate (250' of altitude, average rainfall in the low 30 inches -- though 72 inches in this El Niño year -- highs usually in the 90s and lows rarely below 28° F) this treatment leads to bloom typically beginning in their third year (occasionally in their second), and bloom far more often than not. We have to ask whether the act of transplanting the bulbs as described does not unwittingly increase available nutrients. If so, that is more likely the answer for why the increased bloom -- not the transplanting into tiny individual pots itself. In our experience, in areas where summer temperatures are frequently above 90° F, those high summer temperatures will "fry" and kill any bulbs put into pots so small. Would love to hear from readers about their experiences.

### Species of the issue - *Calochortus monophyllus*

Whatever taxonomic problems may be presented by other catsears (and there are problems), *C. monophyllus* is "easy" -- it is the only yellow one! Nonetheless, according to Vic Girard's research, there has been some confusion about its identity in the past. First published by Lindley in 1849 as *Cyclobothra monophylla*, it was republished -- and re-named -- by Bentham in 1857 (*Cyclobothra elegans* var. *luteus*), by Wood in 1868 (*Calochortus nitidus*), by Baker (*C. Benthami*) and separately by Regel (*C. pulchellus* var. *parviflorus*) in 1874, by Purdy & Bailey in 1914 (*C. Wallacei* or *C. Benthami* var. *Wallacei*), and finally by Alice Eastwood in 1934 (*C. maculatus*). In any event, in his 1940 monograph, Ownbey opted for the masculine form of Lindley's original name, *C. monophyllus*, to match the masculine-case genus name, *Calochortus*.

Flowers are close to an inch across, with two distinct forms -- those with prominent dark red-brown spots and those without; both forms are shown in our photographs. Petal color is consistently a pure golden yellow -- unless one finds oneself among hybrids (see below). Petal shapes vary from quite rounded to rather pointed. The entire plant is low -- rarely more than 3 or 4 inches high, with a single long, curving strap leaf from each bulb. Seed pods are virtually indistinguishable from many other catsears -- small, nodding, trilobed capsules, slightly winged, that split open septicidally to dehisce irregular, dark brown seeds. Dehiscence usually occurs three to five weeks after bloom; timing may depend more on whether there is a hot spell than other factors.

*C. monophyllus* occurs in a variety of habitats, from conifer woodlands to thin meadows to barren and steep road cuts, usually on poor soils such as red serpentine clays or volcanic soils. It sometimes can be found in full sun, though it generally prefers north-facing banks and open woods. Its occurrence in the foothills of the central and northern Sierras and southern Cascades signals its preference for areas of generous winter rains.

The new Jepson *Manual* gives the range as central and northern Sierra Nevada foothills and Cascade Range foothills, 400 to 1200 meters. Munz' *A California Flora* says 1200 to 3600 feet, "Shasta Co. to Tuolumne Co." The furthest south location we know is indeed in Tuolumne county, east of Columbia (about 38°5'N) where there are several good populations between 2500 and 3200 feet. Ownbey reports it a little further south, in the Big Oak Flat area (about 37°50'N). The furthest north we've seen it is in Shasta county, at about 1500 feet on private land north of Highway 299 (going northeast from Redding) near Ingot (about 40°40'N). Ownbey reports a location further north near Montgomery Creek (about 40°50'N). We understand that Frank Callahan has reported an Oregon location; but we were unable to reach him to get details.

There are fairly extensive areas in the northernmost portion of its range that have few access roads and are not thickly settled -- for example, between the several arms of Lake Shasta, or between Highway 299 and the Pit River, or along the California-Oregon border. This is somewhat true, though less so, of the southernmost

portion of its range. We can speculate how far the range might be extended north and south with further exploration. In the meantime, we can definitely extend the published altitude range both up and down. *C. monophyllus* occurs in vigorous stands down to at least 600 feet (about 180 meters) east of Chico; and above 4200 feet (about 1300 meters) along Highway 36 east of Red Bluff. The original Jepson Manual describes the occurrence of *C. monophyllus* as "frequent." The new Jepson Manual is silent on the subject. We may draw some inference about modern frequency from the fact that the California Native Plant Society's Inventory of Rare and Endangered Vascular Plants, 5th ed. (1994), does not even mention this species, though it does at least discuss 29 other species and vars. of *Calochortus*.

Interestingly, this species hybridizes freely with "*C. tolmiei*"-type catsears -- the common white to lavender-pink catsears -- where their ranges overlap in Butte, Tehama, and Shasta counties. Mixed populations -- including shades of cream and pale yellow and even copper or bronze tones -- can be seen north of Highway 32 and become fairly frequent in some areas between Highways 44 and 299. We have included on our color page some pictures of hybrid catsears, as well as one of an apparent albino found in a hybrid group.

*C. monophyllus* seems to be more difficult to grow than many of the "*C. tolmiei*" types, but by no means impossible. Jim uses a commercial soil mix to which he adds some sand and a lot of peat moss, and waters regularly during the growing season. He supplements our natural rainfall most years, since *C. monophyllus* occurs in areas which generally get more rainfall than we do. He dries the growing tubs back when the leaves start to yellow, and keeps them dry during the summer hot weather. He feeds the young bulbs about once a month with a balanced liquid fertilizer at full-strength, or twice a month at half-strength (both approaches appear to be effective). This is what seems to work well in Sonoma county, at 250 feet of altitude, within 8 miles of the ocean, with rainfall averages in the low 30's, and temperatures typically ranging from 28°F in winter to 95°F in summer. Jim finds this species fairly slow, requiring 4 to 5 years to reach blooming size.

## Readers' Forum --

**CAN YOU HELP THIS PROJECT ?** -- "[I am trying] to grow *Calochortus excavatus* for a restoration project in Bishop [from seed]. Could you kindly send me any [cultivation] information you have?" -- Karen Ferrell-Ingram, Rt 2, Box 352, Bishop, CA 93514. -- *We have no experience; can anyone out there help?*

☘ "I have a cabin only two miles from the beginning of Stump Springs Road and almost thought this delightful place was sort of a secret of my own. The color and petal variety here amazes me. ... This is also a wonderful road for other wildflowers ... (however) as I have visited the area over the years I have witnessed the spread of Scotch Broom." -- Peter Knapp, Long Beach

*We particularly notice other Liliaceae, since that is our especial interest, including Dichelostemma species, T. ixioides scabra (at the highest location we've ever seen it), and L. kelleyanum on what is supposed to be the "wrong" side of the Sierra spine. All this seems to continue up through Kaiser Pass. This year's seed offerings (see pp. 1-2) include C. venustus seeds collected at Stump Springs on 8/14 and 8/19 by reader Bill Pannell and by us on 8/25. Bill writes --*

☘ "I was surprised to see this road mentioned in the most recent newsletter. The colors of these flowers are truly spectacular, with deep clear purple and orange/red variations common. ... I've explored this area for many years and feel that the bloom and seed time were advanced by nearly a month this year." -- Bill Pannell, El Dorado Hills

*Yes-but!!!... Advanced in some places, delayed in others. Many thanks for the seeds you sent. We had already made our own seed collection trip to this location when your contribution arrived.*



**CALOCHORTUS MONOPHYLLUS -- and hybrids**



-- Photographs by Jim Robinett



✿ “(We) went to Hume Lake...to see colored *C. venustus*, and although there weren't as many, they do rival Stump Springs. ... My friend went there to see the *C. leichtlinii* that doesn't have the dark blotch above the gland (just yellow at the base with some dark hairs).” -- Ron Parsons, Burlingame, CA

*We haven't seen this form of C. leichtlinii before; hope to go looking for it next year.*

✿ “It would be interesting if you could add a distribution map of the species of the quarter, since you seem to have the capability of adding black-and-white illustrations. In the *vestae* case, it would have been nice to see pictures of the chromosomes, to contrast with those of *superbus*... Have you considered looking into developing an Internet site?” -- W. J. Frank.

*Some interesting ideas, but... Ownbey's monograph includes distribution maps for every species that are mostly pretty complete, and the original Jepson Manual and Munz' Flora both give ranges in terms of specific counties. Unfortunately, we have neither the resources (the equipment is extremely expensive) nor the expertise to extend chromosome studies beyond published works such as Cave's ("Chromosomes of the California Liliaceae," University of California Press, 1970). An Internet site is an attractive idea -- but to be blunt, we are already losing money on each issue, and the costs of website development are not zero, even when one can get a University or other sponsor. We have thought of writing a critique of Internet sites we've located that include pictures of Calochortus species -- as many are misidentified.*

✿ “I would like to use the Readers' Forum to find other members in Germany, mid-Europe or similar climate to share horticultural experiences.” -- Brigitte Fiebig, e-mail bfiebig@gwdg.de - FAX: 0551/393556

*We have other readers not only in Germany but other mid-European locations, and will forward mail to Brigitte, if you are unable to use e-mail or FAX.*

✿ “[Received] a ‘cook’s tour’ of Tom Patterson’s lab [in Madison, Wisconsin] and spent a couple of hours exploring his work. A very good explanation of reading the DNA and how the relationships of the different genera and specie are entered into the computer program and some of the final results. ... It looks like a rather time-consuming task...but all in all a rather exciting tour, and his thesis will probably be very pertinent to some of the material you set forth in your first issue.” -- Chuck Baccus, San Jose, CA

*We're hoping to persuade Tom to continue his contributions to the newsletter.*

✿ “Is anyone going to monitor the dry habitat species to see what effect, if any, this wet winter had on populations?” -- Jeanne Larson, Fresno, CA

*We did not travel as extensively as usual this year due to a serious family illness, so did not get into Southern California at all. But it was very clear to us that throughout Central and Northern California, the Calochortus bloom was spectacular this year. However, some of the earliest species were “rained out” of good seed production by late rains. Any comments from Southern Californians on how the more southern and desert species fared this year?*

✿ “This year we found an area of cream-colored *C. luteus* along Highway 175 in Lake county -- several hundred plants with not a yellow one in the bunch. ... [Also saw] literally thousands of *C. macrocarpus* in Asotin county, WA” -- Jack Guggolz, Cloverdale, CA

*We've seen lots of “mixed” populations of either hybrids or intergrade forms between *C. luteus* and *C. superbus* in Lake county --mixing citron yellows, whites, and pale-yellows-to-creams -- but never the kind of “pure” stand you describe. We've seen some good occurrences of *C. macrocarpus* between Mount Shasta and the Oregon border, but the stands in Washington state sound wonderful!*