



C. luteus

MARIPOSA

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In Memoriam — Stan Farwig

The genus *Calochortus* lost one of its most ardent champions when Stan Farwig died August 6th at age 74, after a short illness during which he was cared for at his home in Concord, California, by loving friends. Stan, together with his life-partner of 43 years, Vic Girard (who died in 1998), probably did as much if not more than anyone since Marion Ownbey to stir the interest of native plant enthusiasts and gardeners – and professional botanists – in the genus. They traveled widely throughout the western states, documenting their enterprise with extensive notes and photographs. They gathered seeds and developed one of the largest collections of blooming bulbs outside of academic botanical gardens and arboreta. They spent many hours reviewing the writings of others and integrating the ideas they found there with what they had seen in the field, wrote a classic article on *Calochortus* for an early issue of the magazine *Pacific Horticulture*, gave lectures and slide shows – their contributions were boundless, as was their enthusiasm. Their importance to the genus *Calochortus* can be measured by the fact that they were selected to write and publish the “first announcement of a new species” in the journal *Herbertia* when *C. raichei* was discovered in northern Sonoma county in the late 1980’s. They selflessly shared their knowledge of “where to find them” and “how to grow them,” as well as their own taxonomic speculations and conclusions. Their “back-yard” bulb collection (which concentrated especially on *Calochortus* and bulbs from South Africa), was a “must-see” stop for interested visitors to the Bay Area. Over the years since Vic’s death, the collection gradually has been transferred to their favorite institution, the UC-Santa Cruz Arboretum, where it is tended by horticulturist Brett Hall. Their slides will now go there as well. We are indebted for the enduring legacy of knowledge that Stan and Vic have left us.

Seed Available

Again this year most of our seed choices are in good quantities, though the number of species available is lower than last year’s list. The origins of each lot are given. Note that garden-grown seed is usually “tamer” and probably more likely to do well in pot or garden – especially if you live near the “source” garden. Helen Means resides in San Diego county less than a mile from the ocean at an altitude of about 200 feet; although she has the warmth of southern California, she is well within the fog belt. Diana Chapman is also close to the ocean near Eureka, California, many miles to the north. Hope Stubbs lives in Roseburg, Oregon, which is at about 1500 feet, exposed to inland heat and colder winter temperatures. Wild-collected seed usually offers greater genetic diversity, while there is usually a greater risk of hybrid seed from garden-grown sources. However, note that there may be hybrids in lots #9 and #15, even though they were wild-collected. The last column gives the approximate number of seeds available in each lot. Also note that Lot #18 is seed from a

rare species which bloomed prolifically in nature this year, and thus is a very unusual seed offer. Lot #1 is also "special" – seed from a population of catsears that range in color from a medium lavender to a rich purple – no "whites" at all! (A picture of typical flowers appears at the bottom of page 4.) Stan Farwig introduced Jim and me to these marvelous catsears. Those of us who have known about them have usually assumed they were a "color variant" of *C. tolmiei*. However, I found when I harvested them that the seeds were light tan, rather than dark purple-brown like *C. tolmiei*, so they may be related to *C. elegans* or perhaps *C. coeruleus* instead. I'm planning to take Frank Callahan to see them this coming spring, in the hope he will be able to clarify what they are.

Send your "wish list" for seeds, using the lot numbers shown. I will divide the seeds available among those requesting them, and will send you at least 12 seeds (and almost always more) of each lot you request – as long as supplies last! – with advice on how to cultivate them. Domestic members, please send a total of \$2 for mailing and packaging costs. Canadian and overseas members, please send a total of US\$4 to cover air mail shipping and packaging.

Lot #	Species / form	Seed Source	# Avail.
1	"purple catsear"	Collected by me 6/15/03, coastal bluffs in Humboldt county, CA, 1200' – species uncertain – seed is pale, so it is <u>not</u> a <i>C. tolmiei</i>	~ 300
2	<i>C. albus</i> "Sierra form"	Collected by Diana Chapman, in Butte county, CA, 1200'	~ 500
3	<i>C. albus</i> "rubellus form"	Collected by Brad Carter, early-mid July, San Luis Obispo county, CA, 1000'	~ 500
4	<i>C. amabilis</i>	Collected by Diana Chapman, in Lake county, CA, 2100'	~ 350
5	<i>C. catalinae</i>	Collected by Brad Carter, in Ventura county, CA, 2100'	~ 500
6	<i>C. catalinae</i>	Garden-grown seed from Diana Chapman, near Eureka, CA	~ 500
7	<i>C. luteus</i>	Garden-grown seed from Helen Means, in San Diego county, CA	180 sds
8	<i>C. lyallii</i>	Collected 7/2/03 by Brad Carter in Chelan county, WA, 2300'	~ 600
9	<i>C. monophyllus</i>	Collected 6/14/03 by me, Shasta county, CA, 2500' – possibility of hybrids with Lot # 15, which comes from less than a mile away	~ 500
10	<i>C. nitidus</i>	Garden-grown seed from Hope Stubbs, in Roseburg, OR	204 sds
11	<i>C. obispoensis</i>	Garden-grown seed from Diana Chapman, near Eureka, CA	~ 150
12	<i>C. palmeri</i> var. <i>munzii</i>	Collected mid-July by Brad Carter, in Riverside county, CA, 4400'	~ 400
13	<i>C. simulans</i>	Collected mid-July by Brad Carter, San Luis Obispo county, CA, 1500 - 2000'	~ 800
14	<i>C. splendens</i>	Garden-grown by Helen Means in coastal San Diego county, CA	~ 300
15	<i>C. tolmiei</i> "typical low white form"	Collected by me 6/14/03, in Shasta county, CA, 2400' – occurs in moderately open woodlands – there is a possible risk of hybrids with Lot # 9, which comes from less than a mile away	~ 750
16	<i>C. tolmiei</i> "tall white (Oregon) form"	Collected 6/13/03 by me, in Josephine county, OR, 1500' – grows on a hot, south-facing slope with little protection from the sun !	~ 400
17	<i>C. tolmiei</i> – the form once called " <i>C. maweanus</i> "	Collected by me 6/14/03, in Shasta county, CA, 2100' – mostly found in fairly deep shade; flowers are white to pale pink or pale lavender in color; leaves tend to be glaucous	~ 240
18	<i>C. weedii</i> var. <i>intermedius</i>	Collected by member Lou Beilharz from an inland canyon, Orange county, CA, estimated altitude 400'	~ 400

Species of the Issue – *Calochortus nitidus*

Background – If you are fortunate enough to have access to a copy of Marion Ownbey's 1940 "magnum opus" – "A Monograph of the Genus *Calochortus*" (in *Annals of the Missouri Botanic Garden*, Vol. 27, No. 4, pp. 371-561) – you will find on pp. 440-42 his discussion of the plant he there called "*Calochortus nitidus*." Among the six listed "synonyms" (previously published plant names he subsumed into this taxon) are "*C. eurycarpus*" and "*C. nitidus* var. *eurycarpus*". Ownbey described the flower as follows – "creamy-white (drying yellowish) to lavender, with a conspicuous red-purple blotch in the middle of each petal..." (p. 441). This is not much like the plant we know today as *C. nitidus*; but it is a good description of the plant we now call *C. eurycarpus*. To learn what Ownbey had to say about the plant we know today as *C. nitidus*, we have to turn backward to page 439 and read his description of "*C. douglasianus*" – "flowers erect, large and showy, purplish, with a deep purple crescent on each petal above the gland... sparingly invested with long flexuous hairs above the gland."

How did this confusion arise? In his extensive but unpublished study, Vic Girard wrote –

Apparently Douglas published two new *Calochortus* in the *Transactions of the Horticultural Society of London* No. 7 (1828). On page 271 and in Plate 9A he described a "*Calochortus nitidus*", and on page 278... [an otherwise unnamed] "*Calochortus* species." Ownbey, unable to see Douglas' original [herbarium] sheets, assumed that Douglas' *C. nitidus* was the same taxon as [the one] later described by Watson (1871) as "*C. eurycarpus*"; and that Douglas' "*Calochortus* species" was identical to Schultes' (1829) "*C. douglasianus*"... This error entered into [Ownbey's] monograph. Subsequently [in 1969], after seeing Douglas' sheets, he corrected himself. Ownbey's monograph should be changed – "*Calochortus douglasianus*" to *Calochortus nitidus*, and "*Calochortus nitidus*" to *Calochortus eurycarpus*. [The words in brackets have been added by me for clarity.—Ed.]

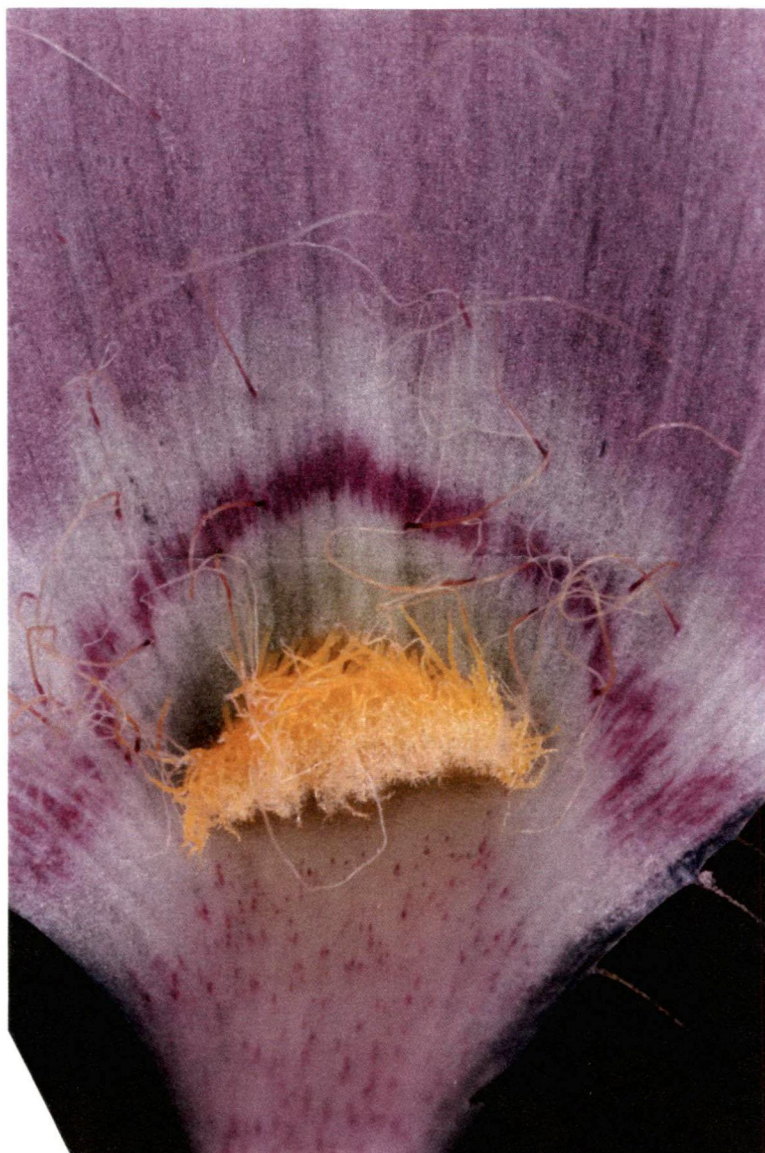
Unfortunately, I do not have access to either Douglas' 1828 descriptions, or the 1829 work by Schultes, but I do not doubt Vic's explanation. "Douglas" is, of course, David Douglas, the great Scottish naturalist whose extensive explorations of the North American West from Northern California to British Columbia for the Hudson's Bay Company in 1824-27 resulted in his name being attached to many western plants – *Iris douglasiana*, *Lupinus douglasii*, *Pinus douglasii*, and *Viola douglasii* are just a few examples.

Ownbey's error was carried over into a number of subsequent works, including Morton Peck's *A Manual of the Higher Plants of Oregon* (both in the 1st edition, 1953, and the 2nd edition, 1961, where it is listed on p. 235). There is in fact a long list of published descriptions under the name *C. nitidus* – some of which appear to be of that plant, and some of which appear to be of what we now know as *C. eurycarpus*. The confusion was finally straightened out in 1969 by the publication of the monumental work by C. Leo Hitchcock, Arthur Cronquist, Marion Ownbey, and J. W. Thompson, *Vascular Plants of the Pacific Northwest*, Part I (Seattle: University of Washington Press), where Ownbey noted –

The correct application of the name [*C. nitidus*] was cleared up by an examination of the original material collected by Douglas and still preserved in an identifiable condition in the herbaria of the Royal Botanic Gardens at Kew and the British Museum. (p. 775)

Description, Habitat, and Range – After essentially repeating his earlier description (but now correctly assigning it to *C. nitidus*) of a large and showy purplish flower, with a deep purple crescent on each petal above the gland, Ownbey in 1969 went on to add –

Calochortus nitidus –



– *C. nitidus* photos by John Erwin; "purple catsear" photo by Jim Robinett

"*Calochortus nitidus* is tetraploid and much like a giant *C. longebarbatus*. It lacks, however, the characteristic basal bulblet of the latter species... It has been suggested that it might have arisen by hybridization between the diploids *C. eurycarpus* and *C. longebarbatus*, followed by doubling of the chromosome number. This attractive hypothesis lacks experimental proof. The two diploid species have been crossed, but the resulting F₁ hybrid did not closely resemble *C. nitidus*. It is still possible that this is the origin of *C. nitidus*, but the hypothesis is less likely."

Tom Patterson's DNA research provides an interesting addition here. His initial, incomplete analysis of chloroplast DNA segments for 74 taxa indeed suggested that *C. nitidus* and *C. eurycarpus* might well be "sisters" or closest relatives, while *C. longebarbatus* seemed to be far removed. The reduced but completed analysis of 28 taxa did not include a single one of these three, however; and it is important to remember that an incomplete run may give inaccurate results, simply because it is incomplete. When Patterson focused exclusively on Section CALOCHORTUS, using segments of nuclear DNA, *C. nitidus* was placed as "sister" to a presumed ancestor-plant of both *C. eurycarpus* and *C. longebarbatus*, thus lending some credence to Ownbey's "attractive hypothesis" – as well as, in my mind, support for Patterson's DNA research that is based on gross plant morphology. Remember that, in his thesis, Patterson noted the value of morphology upholding the conclusions drawn from DNA analysis.

In 1940, Ownbey gave this description of the habitat and distribution of the plant all authors now agree is *C. nitidus* – "In low meadows, along creeks, in southeastern Washington and adjacent Idaho". Let me quote again from Ownbey, this time writing in Hitchcock *et al.*, 1969, with regard to the preferred habitat and range of *C. nitidus* –

In low meadows; eastern border of the Palouse Prairie in Whitman county, Washington, and Latah county, Idaho, the Salmon-Clearwater Divide (from about Grangeville, Idaho, to the Snake River) and in the Seven Devils Mountains above Riggins. A record from Yakima county [in south-central] Washington is based on a specimen which is probably mislabeled as to locality. June-July.

This last, the Yakima county location, had been accepted by Ownbey in 1940, but the site is described as "sand plains, north of the Rattlesnake Mountains" – not very similar to "low meadows" or "along creeks." No doubt Ownbey's later judgment that this was a mislabeling error is correct. Ownbey's 1940 list of sites offers only two elevations – one at about 2300 and one at about 2600 feet. However, in the book published by the North American Rock Garden Society, *Bulbs of North America* (Timber Press, 2001), Frank Callahan states the current altitude range of *C. nitidus* is 5000 to 7000 feet (see "Risk" below, regarding the habitat it apparently has lost in the state of Washington). Frank also reports there are two locations in Oregon: on Jim Creek Ridge, in Wallowa county, just across the Snake River from Idaho; and a "very disjunct population" in Jackson county, in southwestern Oregon.

Risk – Again, I'll quote Ownbey as he wrote in Hitchcock *et al.* (1969). "Except along the eastern border of its range, *C. nitidus* grows in potential farm land. As a consequence, it has become one of the rarest of our species of *Calochortus*. In the last 25 years, perhaps half of its populations – none very large – have been destroyed." – a warning published 34 years ago. In the ARGS book *Bulbs of North America*, released in 2001, Frank Callahan wrote: "This 'tulip' once ranged in the lowlands of southeastern Washington, but its habitat there has been entirely destroyed by grain farming and grazing, and we have been unable to locate any surviving populations in Washington. We did, however, find plants east of Moscow, Idaho, south into the Snake River and Salmon River canyons..." [emphasis added.–Ed.]

Habitat destruction from agriculture in southeastern Washington probably accounts for the variance in published altitude ranges noted above. In fact, it is formally listed as endangered by the state of Idaho. But Frank reports there are 50+ known sites in Idaho, numbering from 100's to 2,500+ in size. In a personal

communication, however, he tells me that the very disjunct population in Jackson county, in southwestern Oregon, which is on Bureau of Land Management property, is being endangered by off-road vehicle use. BLM has declined to take protection measures, on the grounds that it is a "grandfathered" recreational area.

Cultivation – In the early 1990's, Jim Robinett received a donation of *C. nitidus* seed from Dr. Roscoe Watson, a retired professor who still lives in Moscow, Idaho, and who had established "The Mariposa Foundation for Conservation." Dr. Watson had collected the seed from meadows on his own land. After a few false starts, Jim found he was able to grow *C. nitidus* with pretty good success. He began with at least four weeks of cold stratification, then planted the seed in his "standard well-draining bulb mix" – 4 parts of high-quality potting soil mix, plus 1 part each of horticultural sand, peat moss, Vermiculite®, and Perlite®; plus a generous sprinkling of bone meal – and kept the flat well watered until our Sonoma county rains stopped. His first bloomers appeared four years later, and he experienced no difficulty with keeping the bulbs going; in fact, we were able to market some of them the last several years the Robinett Bulb Farm was in operation. The seed offered in this year's exchange are from Hope Stubbs' garden plants in Roseburg, Oregon, also grown from Dr. Watson's seed. If you decide to give them a try, may you enjoy the results – though I would guess that trying to grow them in southern California would be rather challenging.

Readers forum

- ✱ From Finn Larsen, Trondheim, Norway – "Again we have had a hot, dry summer here, temperature up to 34°C [86°F–Ed.]. Unusual, but it seems to be a more normal standard for the future. Many of my *Calochortus* species don't like this, other plants too."

I would be interested in hearing from other readers about how they are dealing with garden difficulties from "unusual" weather, as well as whether they have seen signs of stress in wild populations from the widely accepted phenomenon of "global warming".

- ✱ From Mia Molvray, Oxnard, CA – "I planted seeds of *C. catalinae*, *C. plummerae*, and *C. clavatus* in early August about 1/4 inch deep in chaparral-type soil and have been keeping them moist. Some of the seeds are somewhat visible, and I can see that they've turned green, but they've been that way for almost two weeks and yet they don't seem to be sprouting. Is there anything I can do to encourage them?"

Your seeds may have been damaged by moist heat, given the early planting date. Most Calochortus don't "like" moist heat, because it promotes soil pathogens that cause them to rot. As a general rule, it is best not to give them water until winter rains have set in and all danger of moist heat is past. For your area, that would be late November or early December. Many people prefer to cultivate Calochortus in containers, using a well-draining mix, so they can control conditions more closely. They use containers 6 to 8 inches deep, so the bulblets don't have to be disturbed for several years, when they have "hardened" enough to tolerate transplanting. Some people do their germinating in a refrigerator within moist paper toweling, starting 3 to 6 weeks before appropriate planting time, then pot the seeds when the weather is cool. In any case, it is important to stop watering the seedlings (or mature plants) as soon as the foliage starts to yellow.

- ✱ From Gordon Fowler, Whitefield, Manchester – "Our U.S. trip this year was more or less concentrated on the Rockies, visiting Colorado, Utah, and Wyoming in late July and the first two weeks of August. Hence too late to see many *Calochortus*, yet too soon to collect any matured seeds. Indeed, the only species we saw in flower was *C. gunnisoni*, these to be found over a wide range: Snowy Mountains, WY, Mt. Bross, CO, Guanella Pass, CO, and near Horseshoe Mountain, Fairplay, CO."

These are all fairly high-altitude spots. C. gunnisoni – a wide-ranging species – can be seen earlier at lower elevations. The location list provided us by Gwen and Phil Phillips (Vol. XII, Nos. 3+4, April 2001) gives several mid-July sites. Jim and I found it blooming along the lower Miller Fork of the Big Thompson River in Colorado, in early July. Ownbey's monograph even lists locations that bloom in mid and late June.