

C. splendens

MARIPOSA

the newsletter of the *CALOCHORTUS SOCIETY*

Vol. XIII, No. 1 (July 2001)

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Greetings ... SEND SEEDS !!

The potential for seed collection was not very promising in the north this year. Rains were significantly below normal here; and partial recovery in late spring came not at the best time, because it negatively affected both flowering and seed production. Nevertheless, *C. howellii* had a surprisingly good blooming in the Illinois River drainage, and I am hoping to collect some seed of it. Also, a trip to Southern California early this month yielded good amounts of *C. weedii* var. *weedii*, *C. concolor*, *C. palmeri* var. *munzii*, and the southern form of *C. splendens* (aka *C. davidsonianus*). In addition, the rare *C. dunnii* apparently had an unusually large blooming this year, and I collected a very few seeds of it. If you have other seeds to add to the list, **please send them by September 15th** for the October issue listing. I encourage the use of a padded or “bubbled” envelope or a small box, to protect the seed from damage in the mail – and I promise that this year seeds **will** be sent to those who request them.

Species of the Issue – *Calochortus greenei* and *Calochortus persistens*

Background – With thanks to Stan Farwig and Frank Callahan for their comments. I can begin no better than by quoting from Vic Girard’s unpublished text:

Greene, on his first, and memorable, field work in Siskiyou county [California] in June and July 1876, discovered three new *Calochorti*: *C. greenei*, *C. monanthus*, and *C. persistens*. Of the three new species, all supplied to Sereno Watson at the Gray Herbarium at Harvard, only one was published. ... [Watson] hopelessly confused *C. greenei* and *C. persistens* and...ignored *C. monanthus* altogether.

Watson published what he called “*C. greenei*” in 1879, in the *Proceedings of the American Academy of Sciences*, but the description given, though mixed, was essentially that of *C. persistens*. Greene wrote to Watson twice during the spring of 1881 begging him to correct the confusion. If Watson ever responded, his reply is either buried in archives somewhere, or altogether lost.

Also lost forever may be the third species Greene found, *C. monanthus*, which he located along the Shasta River north of Mount Shasta. Now known only from his herbarium specimens, it was an apparently single-flowered (thus the name) mariposa and the only member of subsection VENUSTI to occur in that part of California. *C. monanthus* was described by Ownbey as having a pinkish bell-shaped flower, with a dark red inverted V-shaped spot on each petal above the gland. The gland was “oblong, not depressed,” and there were “a few flexuous hairs” near it. Regrettably, *C. monanthus* remained unpublished until 1940, when Ownbey included it in his comprehensive monograph. Even more regrettably, all efforts to find it in

recent years have been unsuccessful, and most botanists assume it is now extinct. Nevertheless, it did exist, for Greene supplied specimens to the Missouri Botanical Garden Herbarium (this one is considered the “type” specimen); as well as to the Field Museum Herbarium in Chicago, the Gray Herbarium at Harvard, and Herbarium of the Academy of Natural Sciences in Philadelphia.

Ownbey also gained credit for finally clarifying the confusion between *C. greenei* and *C. persistens*, when he separated the latter as a “novum species” in his 1940 monograph. He placed both of them in Section I. CALOCHORTUS (formerly EUCALOCHORTUS), Subsection NITIDI, the members of which are a somewhat odd assortment. Ownbey included *C. eurycarpus*, *C. howellii*, *C. longebarbatus*, *C. lyallii*, and *C. nitidus* in the NITIDI, together with *C. greenei* and *C. persistens*. Two species discovered since 1940, *C. coxii* and *C. umpquaensis*, tentatively have been added to the NITIDI by some authors.

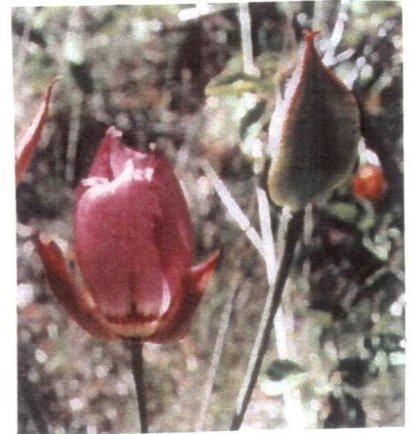
Description of *C. persistens* – *C. greenei* and *C. persistens* cannot be confused in the field. They are quite different, both in flower and in fruit. *C. persistens* was originally known from a single southeast-facing ridge west of Yreka, California, where it grows in duff under open pine woodlands. Recently, however, Frank Callahan found a second site, near the summit of Bald Mountain (Jackson county, Oregon). Its flowers are, to my eyes, far better described as pink rather than lavender, with spreading petals and sepals shorter than the petals. It seems to be never more than about 6 inches tall and usually less, thus at first glance resembling a “catsear.” But its flowers are much larger than the “true catsears” (that is, Subsection ELEGANTI – *C. apiculatus*, *C. coeruleus*, *C. elegans*, *C. monophyllus*, *C. subalpinus*, *C. tolmiei*, and *C. westonii*). It has a distinctive patch of long yellow hairs above its depressed transverse gland (Ownbey says “more or less lunate”), and dark reddish or purplish anthers. The 3-winged nodding capsule is partially enclosed by the long-persisting dried perianth segments, from which it gets its name, and the seed is light in color. Interestingly, its bulbs could be obtained in the trade for some years from Carl Purdy, though he sold it as “*C. greenei*.” Ownbey notes that he himself had grown it from this source.

Description of *C. greenei* – *C. greenei* is found in thinly grassed meadows, flat or sloped; if sloped, then usually northwest-to-north-facing. It is a much more vigorous plant than *C. persistens*. It typically produces its first non-spreading or “cup-shaped” flower (similar in size to the flower of *C. persistens*) at some 8 to 12 inches high, with more mature plants reaching up to two feet high and having as many as 5 flowers. The exteriors of its erect petals are definitely lavender or purplish, rather than pinkish. The inner surfaces are much lighter in color, with a thick scattering of long white hairs which often change to pale yellow toward their bases; and the anthers are white or pale lavender in color. The sepals tend to be green at the bases and purplish toward the tips and are noticeably shorter than the petals. The glands are lunate and deeply depressed, and there is a dark purple crescent or chevron on each petal above the gland. Both the glands and the chevrons are clearly visible through the backs of the petals. The 3-winged capsule is erect, the seeds light in color. The overall effect of plant and flower is one of vigor and sturdiness.

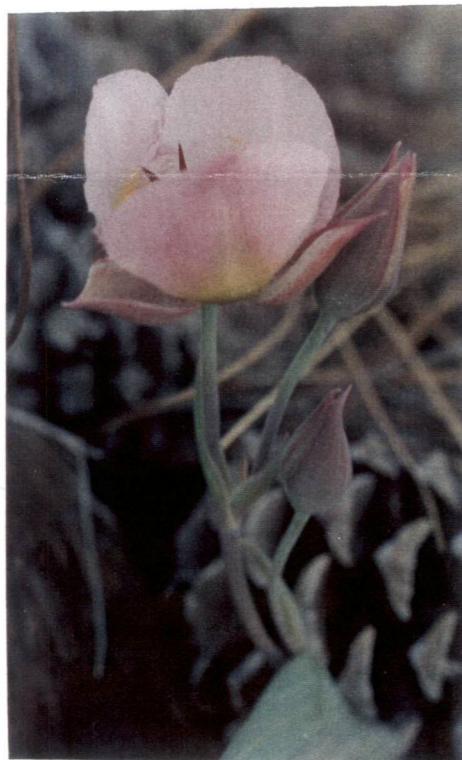
Occurrences, habitats, and climate – Jim and I found *C. greenei* in several locations straddling the California-Oregon border. The best stands we saw were on sloping, thinly grassed meadows barely in Oregon and just off Highway I-5, along the old highway. But we also saw them (sometimes scattered) in flat meadows along Copco Road, which goes east from Henley toward Irongate Reservoir. Other sites have been reported nearby. *C. persistens* is known only from the sites previously described.

Both *C. greenei* and *C. persistens* bloom rather late in the year, during the second half of June or early July. This seems all the more remarkable when the local climate is considered. Uplands in this area get

Calochortus greenei –



Calochortus persistens –



– Photographs by Jim Robinett

enough winter precipitation to sustain grassy meadows and woodlands as well as scrub, so this is not a desert. But by bloomtime for both these plants, the grasses are entirely dry and yellow and the temperature is often very hot – 100°F or more. Frank Callahan comments that the areas where *C. greenei* grows have soils that are not serpentinous, but rather clays of volcanic origin that retain copious amounts of water and have a high shrink/swell factor. Even in late spring, the *C. greenei* sites are often too “mucky” for easy walking. The several years Jim and I made a springtime check on how the species was doing, we would find our shoes (and the tires of our vehicle) rapidly becoming weighed down with a load of sticky mud. At bloomtime, when the habitat appears to be completely dry, if you dug down, you might well find the soil at the depth the bulbs are growing still slightly damp to the touch.

Risk of extirpation – The two areas where *C. persistens* grows are both sparsely populated, and the climate not very attractive – cold and windy with some snow in winter, hot and dry in summer. To the south of the Yreka site, the lowest lands are irrigated and used to grow hay to sustain nearby livestock operations. The site itself lies entirely within the Klamath National Forest and is “improved” only by a few dirt access roads and a small transmitter tower for a local radio station. The Bald Mountain site, southeast of Medford, is near the boundary of the Rogue River National Forest, and again, there are only a few dirt access roads in the area.

There’s been some effort to promote recreational development on some of the private lands where *C. greenei* grows (for example, “R” Ranch), but again, the climate is cold-windy-snowy in winter, and hot-dry in summer, and this has probably served to limit its success. Nevertheless, given the lesson of *C. monanthus*, it would be a mistake to assume that either species is altogether “safe.”

The California Native Plant Society notes fewer than 20 occurrences of *C. greenei* within the state. It has placed this species on CNPS List 1B – “Plants Rare, Threatened, or Endangered in California and Elsewhere,” and has given it a “R-E-D” code of “3-2-2” (**R**arity = “distributed in one to several highly restricted occurrences,” **E**ndangerment = “endangered in a portion of its range,” **D**istribution = “rare outside California” (*CNPS Inventory*, 5th ed., 1994). In Oregon *C. greenei* has been proposed for state listing as a “rare and endangered” species (according to the beautifully illustrated volume by Eastman, *Rare and Endangered Plants of Oregon*, 1990).

As for *C. persistens*, it too is on CNPS List 1B, “R-E-D” code “3-3-3” (**R**arity = as above, **E**ndangerment = “endangered throughout its range,” **D**istribution = “endemic to California.”) Clearly, the last category – “endemic to California” – was chosen without knowledge of the Oregon site Frank discovered; the correct CNPS “R-E-D” code should be “3-3-2.” The Oregon site for *C. persistens* was also unknown to Eastman, and his volume does not include it as a rare and endangered species in Oregon.

Cultivation – Jim did not do very well growing *C. greenei* from seed, though he tried more than once. It seemed to germinate readily enough, but most of the bulblets did not endure past their first or second year. He concluded that our Sonoma County climate, 8 air miles from the ocean, was probably too mild, especially in summer, for them to do well. If any readers have done better with them, I’d be happy to pass on their suggestions in a future **Readers Forum**. We never collected seeds of *C. persistens*, so Jim did not try to grow it. However, Stan Farwig and Vic Girard succeeded in raising *C. persistens* to blooming in Concord (Contra Costa county), which is further inland and hotter in summer than our Sonoma county location. They treated it as a “winter-bound” species, i.e., a plant requiring a prolonged cold and dry

period to thrive, coming into growth in late winter or early spring, when the ground in its native habitat thaws. Stan speculates that *C. greenei* may require the same treatment – which Jim was unable to give it in Sonoma county.

Afterword – A new subsection?

Frank Callahan (who first published *C. coxii* with Ray Godfrey) and others have suggested that a new subsection should be created for the three closely allied species *C. coxii*, *C. howellii*, and *C. umpquaensis*. They seem to be in a position intermediate between the NITIDI and the ELEGANTI, with some characteristics of each. *C. greenei* seems definitely to belong in the NITIDI. What intrigues me is whether or not *C. persistens* should be moved to such a new subsection if it were created.

Ownbey states categorically that the “nodding capsule [of *C. persistens*] separates it from the remainder of the subsection NITIDI, and suggests affinity with the subsection ELEGANTI, but on all other characters it is best placed with the former subsection.” However, some resemblance to the Oregon endemic *C. coxii* (a species of course unknown to Ownbey) seems apparent to my eyes, though the flowers of *C. persistens* are considerably larger than those of *C. coxii*. Both have apiculate anthers (with a small broad point at the apex) and light-colored seed with a roughened coat – as do *C. howellii* and *C. umpquaensis*.

The remarkable similarities between the Oregon endemics *C. howellii* and *C. umpquaensis* deserve mention as well. These two species appear virtually identical in flower, but their occurrences, habitats, bloomtimes, and seed capsules are quite different. Both grow in climates that become very hot in summer. *C. umpquaensis* occurs in the upper Umpqua River drainage (along Little River, a tributary of the North Umpqua River), above and on the face of steep, gravelly, gray, serpentine banks with coniferous woodlands above. It can also be found at Callahan Meadows, some twenty air miles south of the Little River locations. Frank Callahan discovered this latter site in 1989, and mapped it in its entirety in a report to the U.S. Forest Service Tiller Ranger District. I have here reproduced a map showing the relative distributions of *C. umpquaensis* and *C. howellii* from the announcement of *C. umpquaensis* (published by N. A. Fredricks, in *Systematic Botany* Vol. 14, No. 1, 1989), with Frank’s addition of the Callahan Meadows site for *C. umpquaensis* drawn in by hand. (The lightly outlined areas running from southwest to northeast on the map represent the areas of serpentine.)

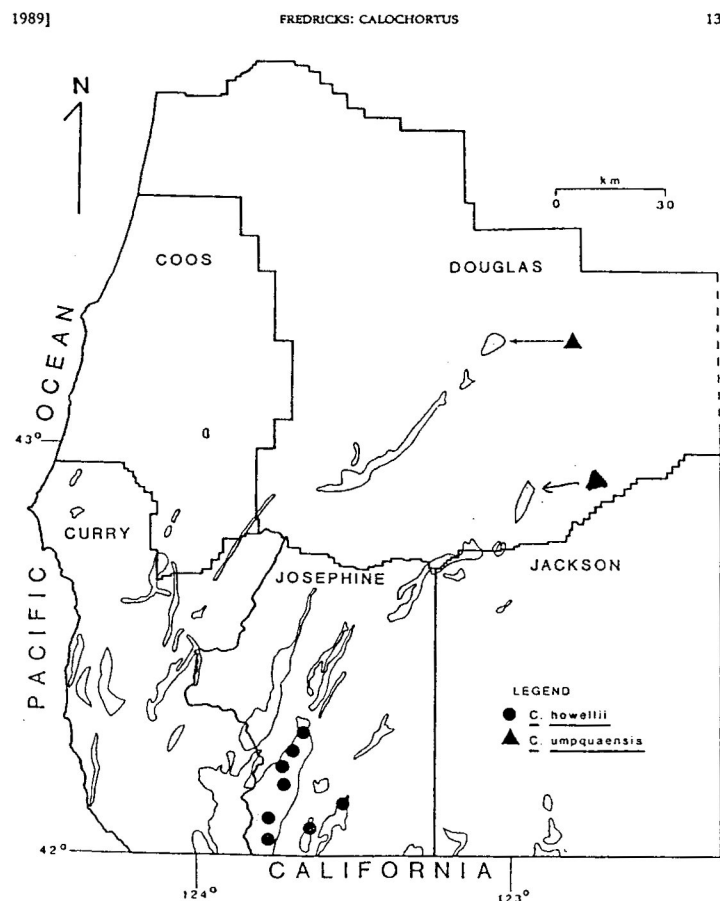


FIG. 5. Distribution of *Calochortus howellii* and *C. umpquaensis* with serpentine areas delineated.

Interestingly, the Callahan Meadows form tends to exhibit deep burgundy flower centers, while the Little River populations have dark purple centers (more like *C. howellii*). *C. umpquaensis* blooms in May and has nodding capsules like the ELEGANTI.

C. howellii, on the other hand, is found exclusively in the Illinois River drainage, in relatively flat, rocky, usually reddish serpentinous clays supporting (among other plants) manzanita scrub and thin grasses. It blooms in late June or early July and has small, erect, onion-bulb-shaped capsules (somewhat similar to those of *C. eurycarpus*, *C. nitidis*, *C. longebarbatus*, and *C. longebarbatus* var. *peckii*). Other differences between *C. howellii* and *C. umpquaensis* can be identified, but these are the most apparent.

In sum those *Calochorti* narrowly endemic to the region variously known as “the Siskiyou Mountains,” or more broadly “the Klamath Ranges” – portions of Shasta, Trinity, Siskiyou, and Del Norte counties in California, and of Curry, Coos, Douglas, Josephine, and Jackson counties in Oregon – provide us with interesting botanical issues. The Siskiyou/Klamaths, which comprise the greatest concentration of serpentinous or ultramafic outcrops in North America, are geologically very similar to the foothill and mid-altitude areas of the Sierra Nevada Mountains. They are generally regarded to have been broken away from the Sierra Nevadas and shoved nearly a hundred miles to the west by forces unknown but suspected of being enormous volcanic activity many eons ago. It is not surprising that surface movements on such a scale could lead to botanical oddities. We need only remind ourselves of *C. syntrophus*, which appears to be limited to a narrow, relict soil series lying between the Klamath/Siskiyou and the Sierras that somehow survived this massive displacement.

Readers' Forum

❁ *First, I want to acknowledge the readers who sent their expressions of sympathy about Jim's death. Many shared their own memories of him, or wrote about how their native bulb gardens were enhanced by the results of his special skills at preserving the Calochorti and the other genera of North American West Coast bulbs he grew. Thank you so much – your thoughts are deeply appreciated. Many readers also encouraged me to continue as editor of the newsletter, at least for now, and as this issue shows, I have decided to do that.*

❁ Chuck Baccus, San Jose, California – “I am just taking the last data on the germination testing on the seed from 1999 and starting to put together a report for the newsletter. I found the discussion on *C. argillosus* interesting, since I too misidentified it at the Farm Hill site many years ago. There were extensive populations a few years ago along the freeway and inside the park, but deer took most of the seedheads. This site is generally very colorful. It can be entered from the west side of I-280 at the Woodside exit, but it is easier to park at the Farm Hill exit going up the hill east on the right side after the Cal-Trans yard, and pass through the private land to the site. This is a serpentine area which usually goes through successive flowering from March to June. This year I was only able to find a single *C. luteus* in bloom, and the area which is usually profuse was bare. *C. argillosus* wasn't around at all. There is also a large group of the *Brodiaea* complex here. Overall it is a very lovely spot to visit during the spring blooming season.”

Sounds like another case of the “good years, bad years” phenomenon. Jim and I too found myriads of C. luteus in this area in some years. Bloomtime in southwestern Oregon was also largely discouraging this year, as noted earlier. The germination report will be very welcome for a future newsletter.