



*C. luteus*

# MARIPOSA

the newsletter of the *CALOCHORTUS SOCIETY*

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

## Seeds Available

We want to especially thank several members for their contributions of seeds – Lottie Jenvey for seeds from her Bay Area garden, Bob Werra for seeds from his Mendocino County garden, Jeff Lohman for collections from southern California, Bill Bade for a pod from a form of *C. kennedyi* he has kept going in his Berkeley garden. In addition, we have contributed some seeds from our own garden, plus a few interesting collections we were able to make in northern California and Oregon. Members wanting seeds should please send us their “wish list” of the items they want from the following list, using the lot numbers shown below. The column headed “Availability” lists the approximate total number of seeds available in each lot. In a few cases, the numbers of seeds are very limited. We will divide the available seeds among those requesting them, and will send you at least 8 seeds (and usually more) of each lot you request – as long as the seeds last! Domestic members, please send \$1 to cover shipping costs; overseas members send US\$2, please.

Lot #	Species	Comments	Availability
1	<i>C. albus</i> “Sierra form”	A late collection from the canyon of the Yuba River, Nevada county, 7/30/99, at 1200 feet.	280 seeds total
2	<i>C. albus</i> (form unspecified)	1999 collection from Bob Werra’s garden, Ukiah, Mendocino county.	100 seeds total
3	<i>C. amabilis</i>	Another late collection from the Eel River canyon, Humboldt county, 7/9/99, at 200 feet. This is the latest blooming form of this species we know.	400 seeds total
4	<i>C. amabilis</i>	1999 garden seeds from Bob Werra.	120 seeds
5	<i>C. argillosus</i>	From Bob Werra’s garden, 1999.	150 seeds
6	<i>C. argillosus</i>	Our 1999 garden seeds from plants grown from “type locality” seeds, San Benito county.	Unlimited
7	<i>C. catalinae</i>	Collected by Jeff Lohman in Trabuco canyon, Orange county, July 1998.	800 seeds total
8	<i>C. catalinae</i>	Seeds from Lottie Jenvey’s garden in Mountain View, Santa Clara county, 1999 – a maximum of 3 packets of seeds only.	24 seeds total
9	<i>C. davidsonianus</i>	This is the name often used for the southern form of <i>C. splendens</i> – collected by Jeff Lohman in San Marcos, San Diego county, August 1998.	1000 seeds total
10	<i>C. howellii</i>	This is a listed species in Oregon, but we made a small collection from a large population growing along 8 Dollar Road in Josephine county, Oregon, 8/15/99.	500 seeds total

(Continued next page)

Lot #	Species	Comments	Availability
11	<i>C. kennedyi</i>	Collected by Jeff Lohman at Cactus Flat (along Highway 18, the road from Lucerne Valley to Big Bear Lake), San Bernardino county, July 1998.	1500 seeds total
12	<i>C. kennedyi</i>	1999 seeds from a single pod from Bill Bade's garden in Berkeley.	150 seeds
13	<i>C. luteus</i>	1999 garden seeds from Lottie Jenvey, Mountain View.	300 seeds
14	<i>C. luteus</i>	Our 1999 garden seeds, from Sonoma county-based stock; risk of hybrids with <i>C. superbus</i> .	Unlimited
15	<i>C. nitidis</i>	From Lottie Jenvey's 1999 garden.	130 seeds
16	<i>C. nudus</i>	Collected along Highway 89, Siskiyou county, 8/2/99, 3900 feet.	600 seeds
17	<i>C. plummerae</i>	Seeds from Lottie's 1999 garden.	800 seeds
18	<i>C. splendens</i>	1999 seeds from Lottie Jenvey's garden in Santa Clara county.	800 seeds
19	<i>C. splendens</i>	1999 seeds from Bob Werra's garden - a maximum of 10 packets.	80 seeds
20	<i>C. superbus</i>	Our 1999 garden seeds, from stock based on El Dorado county and Mariposa county seeds; may include some pastels, but there is risk of hybrids with <i>C. luteus</i> .	Unlimited
21	<i>C. superbus</i>	1999 garden seeds from Bob Werra, Mendocino county.	100 seeds
22	<i>C. syntrophus</i>	This new mariposa-type species was discovered and published by Frank Callahan in 1995. However, the California Native Plant Society has refused to recognize it, dismissing it as a form of <i>C. superbus</i> . We agree with Frank, and with Stan Farwig and Vic Girard, that it is clearly different from that species. It is a very narrow endemic, and a very limited population (perhaps 200 blooming-size plants at most). However, it had a good year in 1999, and we decided to collect some seed for members, in the hope of saving this species before it disappears as a result of local property development and lack of official protection. From south of the Pit River in Shasta county, along Cove Road, at about 1700 feet, collected 8/2/99, from 20 separate plants.	600 seeds total
23	<i>C. umbellatus</i>	1999 seeds from Bob Werra's garden.	150 seeds
24	<i>C. uniflorus</i>	1999 seeds from both Bob and Lottie - a maximum of 11 packets.	88 seeds
25	<i>C. venustus</i> "reds"	Generous quantities from Lottie Jenvey's 1999 garden.	2000 seeds total
26	<i>C. venustus</i> "white?"	1999 seeds from Bob Werra. Bob doesn't say whether the seed parents were 2-spot form, but we assume so.	150 seeds total
27	<i>C. venustus</i> "reds and whites"	1999 seeds from Lottie Jenvey.	200 seeds total
28	<i>C. venustus</i>	From Lottie's 1999 garden - color not specified.	600 seeds
29	<i>C. vestae</i>	From Bob Werra's garden, 1999 seeds.	150 seeds
30	<i>C. vestae</i>	Our 1999 garden seeds from Peak Road-based stock, Trinity county; should include pastels.	Unlimited
31	<i>C. weedii</i>	From Bob Werra's 1999 garden - a maximum of 7 packets.	60 seeds

As noted above, seeds from a given lot will be divided among all those who request them, so long as we are able to give each person requesting that lot at least 8 seeds from that lot. Again our thanks to members who contributed seeds. We hope to see the practice of seed contributions from members continue in future years.

## Range Extensions

Frank Callahan has sent us information on range extensions for two *Calochortus* species in Jackson county, Oregon. On 7/16/99 he located a small population (16 plants) of *C. leichtlinii* on the northeast slope of Henry Mountain at 5920 feet. The same date he found a moderate population (about 100) of *C. longebarbatus* ssp. *longebarbatus* in an open meadow of vernal clays opening northeast off Johnson Creek, at 3900 feet. Both were reported by Frank to the Botany Division of the Medford, Oregon, office of the Bureau of Land Management, as they represent range extensions for each species, as well as being additions to the list of *Calochortus* species found in Jackson county.

## Species of the Issue – *C. clavatus* and its vars. / subspecies

In his seminal monograph, Marion Ownbey put *C. clavatus* in Section MARIPOSA, Subsection NUTTALLIANI; other members of this subsection include *C. kennedyi*, *C. nuttallii*, and *C. aureus*. The first two have, like *C. clavatus*, chromosome numbers of  $2n=16$ ; *C. aureus* has  $2n=32$ . This is why Stan Farwig pointed out that *C. clavatus* cannot hybridize with *C. luteus* or other members of Subsection VENUSTI, all of which have chromosome numbers that are multiples of 7 rather than 8. [To complete the reader's picture of Section MARIPOSA, Subsection MACROCARPI (*C. macrocarpus*) also has  $2n=14$ , while Subsection GUNNISONIANI (*C. gunnisoni*) has  $2n=18$ .] In addition to chromosome numbers that are multiples of 8, Subsection NUTTALLIANI members share similar seed capsules, which are larger than those of the VENUSTI in both height and width, and vertically striped green or green-brown alternating with cream or light tan. The seeds tend to be round, white or pale in color, and slightly "puffy" (which may have evolved as protection against frost).

Sereno Watson first described *C. clavatus* in 1879. Its name is derived from the description given of the hairs on the surface of each petal as "clavate" or "club-shaped." In his unpublished manuscript on the genus *Calochortus*, Vic Girard noted that "club-shaped" was not very descriptive of the hairs, and suggested "mace-like" – "that is, a stalk abruptly terminated by a sphere" – or better still, since the hairs are not rigid, "a length of thread ending in a stout knot." *C. clavatus* is perhaps most commonly known in California as "the other yellow mariposa," other than *C. luteus*. Its color tends to be "on the gold side" of yellow, whereas *C. luteus* tends to be "on the lemon side." Its profile is strikingly different from *C. luteus*, because the gland on each petal is very depressed (as illustrated in one of our photos). It is often a quite vigorous plant, with a "zig-zag" stem and several flowering branches.

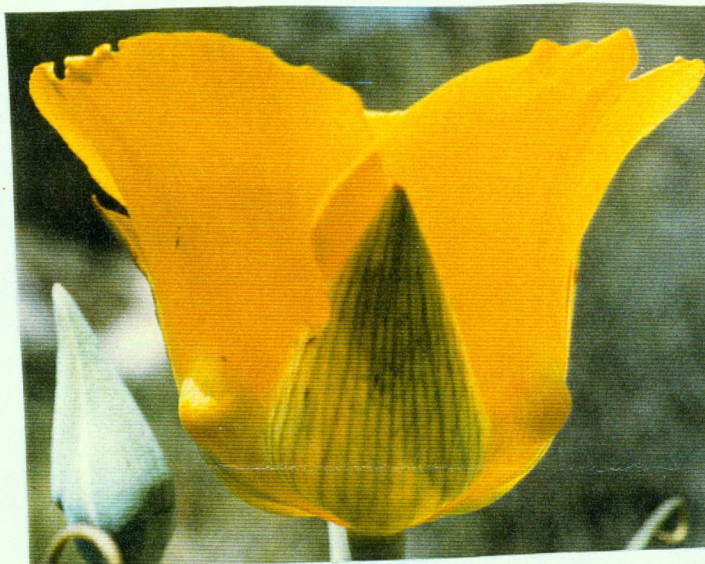
**Distribution** – *C. clavatus* occurs over a quite wide range of central and southern California, but its locations tend to be well separated from each other. Including all subspecies, Ownbey cites occurrences in the Sierra Nevada mountains in El Dorado county (var. *avius*), and in the South Coast ranges from western Stanislaus county in the north to Los Angeles county in the south. Leaving aside var. *avius* for the moment, the places we have seen it include Griswold Canyon (San Benito county); on Pozo Road and on Cuesta Ridge (San Luis Obispo county); in Bates Canyon, on Figueroa Mountain, and on the north side of Refugio Pass (all Santa Barbara county); along Route 126 east of Fillmore (Ventura county); and along Mulholland Drive in Los Angeles county – as well as briefly spotted from Highway I-5 in Los Angeles county! We have driven Del Puerto Canyon in Stanislaus county "at the right time," but we have not seen it there. However, we can add to Ownbey's list the far western corner of Fresno county in the Panoche Hills, though we have seen it only in bud there, as the BLM access road is gated and locked at bloom time because of fire danger.

**Forms** – Vic Girard wrote: "As might be expected with such a widespread and often disjunct population, the species is highly variable ... there seems ample reason to view it as a complex in need of finer organization." We can certainly confirm this variability, and have tried to choose photographs which reflect it. In Griswold



*Calochortus clavatus* –

Griswold Canyon form, from above ... and in profile



→  
var.  
avicus



↑ north of Refugio Pass



← “var. recurvifolius” (?)

Cuesta Ridge form ↓



(Photographs by Jim Robinett)



Canyon, the petals are virtually unmarked, providing a uniform and striking backdrop to the bright maroon-red anthers. On Cuesta Ridge, most flowers are heavily marked in red-brown, are often blushed red-brown on the outside, and the anthers are red-brown to greenish-gold. Along Pozo Road, the petals are marked with a thin, wavy line of red-brown and the anthers are pale brown. In Bates Canyon, flowers range from unmarked to moderately marked, have some outside "blushing," and the anthers are a very pale lavender or beige. On Figueroa Mountain, most petals are lightly to moderately "penciled" in red-brown, and the anthers are cream-colored. On the north side of Refugio Pass, petals have a short wavy red-brown line, and the anthers are vertically striated in slate-blue and cream. Along Mulholland Drive, the petals have only minimal red-brown penciling, and the anthers are cream-colored but turn to lavender as they open and release pollen.

*C. clavatus* is usually quite vigorous, a tall, branching plant, with flowers up to 3 inches (8 cm) across. The plants in lower Bates Canyon are especially tall – one was almost 4 feet (12 dm) high, and after blooming its topmost flower developed a huge pod 8 inches (20 cm) long. At Cuesta Ridge, on the other hand, the plants are directly exposed to forceful coastal winds almost daily (one might even say, "gales"), and even mature plants with multiple flowers are usually less than 1 foot (3 dm) high. However, the largest plant we ever saw was a *C. clavatus* var. *avius* in the El Dorado National Forest (El Dorado county), along Weber Mill Road, following a devastating 1994 fire in the forest. That plant was well over 3 feet tall, with two thumb-sized stems – probably from a huge bulb in the process of dividing – and had 47 flowers, many more than 4 inches (10 cm) across! It was and remains by far the biggest mariposa we have ever seen.

**Vars. and subspecies** – The vars. and subspecies of *C. clavatus* have been treated differently by different authors. Willis Linn Jepson elevated **var. *avius*** in 1923. For many years the only herbarium specimen known had been provided by Carl Purdy in the 1890's, and var. *avius* was believed to be quite rare. It was then "rediscovered" several times, first by a conscientious objector incarcerated in the area during World War II, then in 1978 by Stan Farwig following herbarium notes. Stan located another small stand the following year, and in 1983 conducted Forest Service personnel to the two sites at their request. During the mid-80's, 8 more stands were found, bringing the total known population to 150 plants in 10 different stands. Stan and Vic revisited the area in 1992 and found some sites destroyed by development. And so matters stood until the summer of 1995. In 1940 Ownbey rejected var. *avius* as not distinct, as did Philip Munz in his 1959 *Flora of California*. However, Munz subsequently accepted var. *avius* in his 1968 *Supplement*.

Ownbey did separate and elevate **var. *gracilis*** in 1940, though distinguished it only by size: "Smaller than the species in every way." Its range was limited to northern Los Angeles county. This separation of var. *gracilis* was accepted by Munz in 1959. Robert Hoover separated **var. *pallidus*** in 1964, distinguishing it primarily for being lighter in color. Its occurrence was given as the "La Panza Range to the Temblor and Caliente Ranges." Var. *pallidus* too was accepted by Munz, in his 1968 *Supplement*. Hoover also separated **var. *recurvifolius*** in 1964, as "A very local dwarfed variant found 1.8 miles north of Arroyo de la Cruz" (coastal San Luis Obispo county), and noted that the plants "when cultivated retain their vegetative peculiarities [i.e., their small size—*Eds.*] indefinitely." Again, this separation was accepted in Munz in his 1968 *Supplement*. Finally, all four vars. were accepted as subspecies by Fiedler and Ness in the new *Jepson Manual* (1993) – plus, of course, **var. *clavatus*** as the primary subspecies.

So we have seemingly multiple vars. or subspecies of a species that is itself highly variable. In the case of var. *pallidus*, we have seen a number of different stands of *C. clavatus* in the La Panza Range (Pozo Road), and do not believe their color sufficiently different from other occurrences to justify separation. With regard to var. *gracilis*, Vic Girard has written: "Comparable variation in size ... may be found in other species (*C. monophyllus* and *tolmiei* come readily to mind) with no need evident to grant them formal status." We agree. We believe the separation of var. *recurvifolius* is also problematic. It may have been extirpated from its only known site by a "range improvement plan" that obliterated the southernmost location of *C. uniflorus*. But



collections had been made by the University of California Botanical Garden at Berkeley, and we have grown what is supposed to be var. *recurvifolius* from seed distributed by Wayne Roderick. The plants are somewhat below norm in height for *C. clavatus* in our garden, and the flowers are strikingly marked (see photos). But we see little to distinguish this plant from the form found on Cuesta Ridge (see photos), which is also short and strikingly marked. And it is known that Ownbey examined plants from the Arroyo de la Cruz and did not see fit to separate them.

This leaves us with var. *avius*, which Jepson distinguished by two characteristics: "sepals equal to or exceeding petals, the gland in a deep pocket" as opposed to "sepals 2/3 of the petals and gland in a shallow pocket." Vic Girard has pointed out that the relative length of sepal and petal is not consistent, and the depth of the gland pocket is variable from one population to the next and even within each population. But other legitimate differences do exist. First, var. *avius* is completely disjunct, occurring in the Sierra Nevada mountains, whereas all other *C. clavatus* are found in the South Coast Ranges. They are hundreds of miles apart, separated by the low-elevation, hot Great Valley, where no form of *C. clavatus* is found. Second, although the upper end of their altitude ranges are similar (5000 feet for var. *clavatus*, and 5100 feet for var. *avius*), var. *clavatus* has been reported in bloom from early April to late June, depending on location, while var. *avius* blooms from late June to late July. Third, as pointed out by Vic Girard, the habitat of var. *clavatus* "is almost exclusively harsh, dry hillside with full southern or western exposure.... [while] var. *avius* is today a woodland plant, often growing in dense forest." We would add that it might be more correct to say that var. *avius* has survived in a woodland setting, perhaps despite being overrun by forest. Var. *avius* is beautifully marked and blushed in red-brown, with rosy-brown anthers (see photos).

After the huge and devastating fall 1994 fire in El Dorado National Forest, *C. clavatus* var. *avius* – though previously believed to be extremely rare – was found blooming by the thousands the following summer. The largest stand was estimated to be more than 20,000 plants, and many other locations numbered hundreds or even thousands. New stands were located south as well as north of the American River, within the fire zone. The results were spectacular, with so many large, bright yellow mariposas blooming thickly under the blackened tree stumps. We were privileged to visit many sites in the company of the Forest Service botanist, who was cataloging all occurrences for Forest Service records, and who oversaw our collection of a little seed. As South Africans long ago learned, fire is often followed by a massive blooming of bulbs, particularly if there are also good rains. The same phenomenon occurred at Cuesta Ridge after a 1994 fire, when *C. clavatus* had a massive blooming, although the plants were still quite short. Again, *C. superbus* bloomed magnificently along Highway 299 east of Redding the summer after the Round Valley/Montgomery Creek fire. With large quantities of ash as fertilizer, and good rains, bulbs do amazing things!

**Cultivation** – On the whole, Jim has found *C. clavatus* quite difficult in Sonoma county. Our climate (30+ inches of rain annually) is too damp. The foliage tends to develop fungal infections during our extremely long, cool, wet Spring weather. The only forms he has brought to bloom from seed are from very coastal locations, plus var. *avius*. He has done best with a very rocky mixture, including a lot of sand, with a red lava rock mulch. Even his successes have required five to six years to reach blooming size. In a dryer climate, he would recommend soils containing rocky or gravelly clay for moisture retention.

**Readers' Forum** – We regret that with the long list of seeds available, we do not have room for a "Readers' Forum" this issue. Instead, please note our change of address in the box below.

**Change of Address** – Effective 1/1/2000, *Mariposa* will have a new address –

**The Calochortus Society, P. O. Box 1993, Brookings, OR 97415 USA**