C. splendens

MARIPOSA

the newsletter of the ***CALOCHORTUS SOCIETY***
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"A New Leaf..."

With this issue, *Mariposa* is undergoing a transition, from the dedication and hours of library research, miles of travel, and "TLC" of Hugh and Karin, to those of Jim and Georgie. We want to measure up to *Mariposa*'s past, but also to contribute to its future. To this end, we begin by asking you, the members and readers, to let us know your preferences. What do you want more of? Less of? Different? The same? What would you like us to keep? To dismiss? To shift in focus or emphasis?

Our ideas -- and please give us feedback about these ideas -- include the following:

a. Continue the "species of the issue" feature, but consider focusing on that individual species to an even greater degree, including botanical history, gross morphology, variability, keying/separation from other closest members of the genus, habitats both typical and unusual, geographical distribution, threats -- plus horticultural considerations, as well as a page of color photographs. In short, about half of any issue would be given over to the selected species of that issue. (Use this issue as an example of the sort of emphasis we propose to give.)

b. Focus on current rather than past horticultural experience -- in our case, in Sonoma County, California -- but also the experience of anyone else willing to share it (though they need to provide information regarding their local rainfall patterns, temperatures, media used, etc., as well). Obviously, this would depend on the willingness of readers to contribute. See "**Reader Forum**," page 6.

c. Review some of the taxonomic problems within the genus *Calochortus* -- for example, there is the problem of separating *elegans, coeruleus, tolmiei,* and the various (no pun intended) varieties from each other. We would like to invite contributions in this area from academic scholars familiar with the genus, but also seek the wisdom of the many years of field experience from people like Stan Farwig and Vic Girard. Partly we would like to try to find a balance between academic research and field experience -- but at the same time acknowledge that evolution is a process, dynamic and on-going, and that "perfect" separation of species from each other is often not possible.

d. Continue to address conservation issues -- which species are truly rare (as opposed to merely "resting this year"), and what is their current risk of extirpation? When is a "rare" species simply "evolving away" -- and how far should efforts to "save" it go? Are any particularly significant populations of otherwise common species at risk? Why? What's happening out there in the "real world"?

As you can see, we have more questions than answers. We believe these are all issues of interest for anyone who feels drawn to a particular plant genus. But this newsletter is too small to be "all things to all people," and we need your help in choosing *Mariposa*'s emphasis and point of view. Please let us know what **you** would prefer. We'll try to summarize the responses we receive in the next issue.

Seeds for 1998...

We do expect to offer seeds to *Mariposa* readers this year, with specifics to be announced in the October issue. We hope to offer at least three choices -- (1) a globe-lily group (*albus* of several types and vars., *amabilis, amoenus, pulchellus*); (2) a mariposa group (*venustus, superbus, luteus, clavatus*, and maybe *simulans*); and a mixed group (some of each plus ?). But there will be a change from previous years. Seed offerings in the recent past have relied more on garden-grown or pot-cultured seeds. We expect to put a greater emphasis on habitat-collected seeds. There are several reasons for this.

First, we do not have the garden/pot resources to produce quantities of seed comparable to what is available in the field in a "good year." Second, habitat-generated seed is often more vigorous or viable than garden or pot-grown seed. Third, in garden/pots it is often difficult to control for hybridization. Fourth, while garden/pot seed offers "pre-selection" (as it were) for strains or races that will do well (or perhaps just survive) in the garden, such seed does not "preserve" the species for exactly that reason -- it represents a "pre-selected" and sometimes pretty narrow niche within a species, of strains or races tolerant of garden conditions. We'd rather distribute habitat-collected seeds and hope that someone somewhere will do well with them. Fifth, opting for field or habitat collection often allows us to select among several races for a few that are especially colorful or otherwise morphologically interesting.

We are fortunate to have traveled fairly extensively for the last fifteen years in what is called the "California Floristic Province" -- within which so many of the *Calochortus* grow. We have been blessed to discover good populations of a number of species -- even some dubbed "uncommon" or "rare" -- and as a result know that from time to time, in a "good year," we can collect moderate quantities of seeds for distribution to Calochortus Society members with little or no damage to the gene pool of the population. (That's potentially another topic for *Mariposa* -- what exactly is a "gene pool," and why is it important? Let us know if you are interested in this question; if there is interest, we will find someone to discuss it.)

Taxonomic Problems I -- the *Venusti*

Some of the *Venusti* are clearly distinct from each other, even when they are in close geographic proximity. For example, *venustus* is unlikely to be confused with the *luteus* that grow "cheek by jowl" with it on the slopes of Mount Hamilton in Santa Clara County, or along County Road J-1 (Little Panoche Road) in San Benito County. (There are other locations where they may have been confused, however.) But taxonomic problems do exist within the group. As one such problem -- when exactly does a *luteus* cease to be a *luteus* and become a *superbus*?

Vic Girard has devoted much time to the review of botanical writings on *Calochortus.* He and Stan Farwig have also done extensive fieldwork. Their joint efforts enable us to report the following: *luteus* was originally published in 1833 (Douglas *ex* Lindley). Remarkably -- for it is surely almost (or at least?) as frequent a plant as *luteus* -- *superbus* was not published as a separate species in its own right until ninety-nine years later, in 1932 (by John Thomas Howell). The morphological similarities -- and differences -- between the two are sometimes so striking -- and so confusing -- that for many years *superbus* was identified as simply a var. of *luteus* -- or of *venustus*! Ownbey's 1940 treatise does not offer much help, because he opted to ignore the variability (as we have observed it in the field) in gland shape (as well as other characteristics) within both *luteus* and *superbus.* There are significant morphological reasons (including variations in flower shape, petal markings, and chromosome counts, as well as other attributes) to question where the yellow mariposas leave off and the white ones begin, whether talking

about the eastern foothills of the North Coast Ranges, the western foothills of the Sierras, or the Southern Cascade foothills. It is even possible that the yellow mariposas of the North Coast Ranges and the Cascade and Sierra foothills may not be exactly the same as the yellow mariposas that grow in the Coast Ranges south of the Sacramento River! There is interesting academic research from UC Davis supporting the notion of the Sacramento River Delta as a major and significant divider between similar but different species. Ownbey, frustratingly (or in frustration?), reduced many herbarium specimens to the designation "*luteus* × *superbus*". (By the way, we think that relying on herbarium specimens can make for serious problems -- and we've asked Vic and Stan to write a piece for a future newsletter about that.)

Our own experience includes mariposa populations in Lake and Mendocino Counties that range from white to yellow through shades of cream, with various gland shapes, where flowers that grow within one or two inches of each other are marked and gland-shaped identically -- but have petals of different colors. We've seen the same phenomenon in Colusa County and in Butte County. There are locations on both sides of the Central Valley along Highway 36 where, somewhere on the way from 1000 to 1500 feet, after any number of stands of mostly yellow flowers with occasional white ones, the yellow flowers suddenly cease, and all are white. We've seen something similar in Calaveras County. We've seen populations of what otherwise appear to be *superbus* in Mariposa and Tulare Counties that lack the yellow oculation around the petal "eyespot" -- or in eastern Tehama County that lack the "eyespot" within the yellow oculation! And then there are the mariposas in Tulare County along J-21 (Dry Creek Road) whose coloration is like *superbus* but whose glands are -- at best -- described as a sort of "wavy line" across the lower portion of the petal. Where do they belong ? So where does one leave off and the other begin? We may never know -- but we're not going to stop asking !

Species of the Issue -- *Calochortus vestae*

Botanical history -- This species was originally published by Carl Purdy as *vesta* in 1895, then by Bailey in 1900 and again by Purdy in 1901. Abrams (1923) described it as the "larger flowered variation [though he meant of *venustus*] of the north Coast Ranges, marked with a broad reddish or dark brown band across the middle, instead of with an eyespot." (Thanks to Vic Girard for this citation.) In 1940 Ownbey confirmed the species, distinguishing *vestae* from "*superbus*, its nearest ally, by its larger size, more strongly bulbiferous habit, and particularly by its doubly lunate gland. The petal-markings in the two species are occasionally identical, but for the most part, *C. Vestae* has a much larger blotch which sometimes extends entirely across the petal." (We would, by the way, disagree that the "petal-markings" are identical, since the "oculations" are distinctly bright yellow in *superbus* and pale yellow in *vestae*.)

Continuing from Ownbey, "Cytologically, *C. Vestae* is a tetraploid (2n = 28), but its differences do not seem to be entirely due to the doubling of the chromosome complement." The tetraploid character of *vestae* was supported by the work of Beal (1939) who reported diploid numbers of 14 (Newton collection) or 20/21 (Purdy and Ownbey collections); but was questioned by Cave (1970).

Gross morphology -- variability -- keying -- In our experience, the flowers of *vestae* are indeed usually larger than those of most other mariposas. Whether this is due to tetraploidy, we don't know; but their relatively larger size is noticeable. The common name "Goddess Mariposa" seems very *a propos*. The gland is usually rust-colored and usually shaped rather like a rounded, inverted "W." Basic petal color varies from almost always a creamy white in the southernmost portions of its range; through petals often blushed pink in central locations; to frankly lavenders, pinks, and at least a few purples and magentas in narrow groups of the northern populations. Some more northerly forms are striking for including flowers with blood-red petal markings; other flowers in the same population may have similar markings, but in the more typical "henna" or red-brown color. All authors report *vestae*'s distinguishing attribute of petal

markings above the gland often broadened or "smeared" across the petal (not up and down the petal, as is the case with many forms of *venustus)*. In fruit, in the field, *vestae*'s pods are shaped similarly to but often slightly "fatter" than those of *luteus* or *superbus*. The pods are "silvery" in color while still green, with contrasting darker stripes at the three outer angles. Once the pods are mature and split open, their only distinguishing characteristic is their usually larger size, though the range of pod sizes overlaps with those of *superbus* and *luteus*. The seed itself is often slightly greenish in color, even when fully ripe (otherwise pale tan), and tends to be slightly rounder than *luteus* or *superbus* seeds.

Habitats and distribution -- Arthur Kruckeberg's fascinating study of "serpentine-loving" plants of the North American West Coast identifies *vestae* as a member of the group he calls "serpentine indicator" plants. In our experience, it grows in grassy meadows -- often thinly grassy, which usually means ultramafic (serpentinous) conditions in the North Coast Ranges -- in heavy clay soils, usually in full sun, but in higher rainfall areas. *Vestae* seems to occur in locations where serpentine intrudes or else predominates. We've seen them as low as 600 feet and as high as 3500 feet.

The southernmost occurrence we know is in the Armstrong Redwoods State Reserve in Sonoma County (about 38°33′N) at about 1000′, although it has been reported as far south as the town of Windsor in Sonoma County (about 38°32′N). The lowest locations we know are along the southern shore of Lake Sonoma (about 600′) and Pope Valley and Snell Valley in northern Napa county (about 700′). (Stan Farwig and Vic Girard report occurrences of yellow *vestae* in Pope Valley.) *Vestae* grows above 3000′ in a number of locations in northern Mendocino, southern Humboldt, and southwestern Trinity Counties. The northernmost location we know is in southeast Humboldt County along Alderpoint Road (perhaps 40°15′N) at about 1200′. The most colorful population we have seen grows spottily (thanks, perhaps, to the many cows on this open rangeland), along Peak Road, which runs southeast out of Alderpoint into Trinity County. The population which has flowers with blood-red petal markings -- and includes many plants in pastel lavenders and pinks -- is in Trinity County, in an open and obviously serpentinous meadow south of Kettenpom on Lake Mountain Road. *Vestae* may occur further inland or further north, but roads (and therefore access) become somewhat more rare east and north of Alderpoint.

Threats to *vestae* -- The biggest threat to this *Calochortus* species may be overgrazing, from too many cows being pastured on too-thin meadows. This appears especially to be the case along Peak Road. In Snell Valley (Lake County), the small area where they occur has just this year been fenced off and cows turned into the meadow. In all probability, the *vestae* will not long survive (neither will the *Fritillaria purdyi* that also grow there). We've seen threat from mowing in Lake County, where some *vestae*-filled meadows along the highway are being mowed too early in the year for seed to be mature, probably to reduce the risk of grass fires. Fortunately, there remains a relatively large and untouched population along Bell Springs Road in a sparsely populated area of Mendocino County. It is not the most colorful, nor the most interestingly marked. But it seems reasonable to expect the species to survive there for some time.

Horticulture -- In Sonoma County at 250 feet of altitude, *vestae* is one of the easiest of the mariposas to grow. We are about eight air miles from the ocean and have a fairly mild climate -- usually no more than 20 nights of (light) frost per year, and average rainfall of 32 or 33 inches. However, our *vestae* bulbs survived our "big freeze" (5 nights at 17° F, with daytime temperatures below 32° F) of several years back just fine. Jim uses a soil mix that retains water well but is also well drained, and he provides plenty of extra water, especially in dryer years. He finds that seed should be planted in late fall for early spring germination and growth. (Others of the mariposas can be planted in late winter for spring germination, but *vestae* seems to need more "cool" time -- not surprising for one of the more "northern" mariposas.) *Vestae* multiplies quickly for him by offsets and will often bloom in its third year from seed. It should be an excellent bulb for cooler, wetter climates, but may be difficult in hotter, dryer locations.

(Please see pictures next page)

CALOCHORTUS VESTAE

Photographs -- Jim Robinett.

Readers' Forum

[We'd like to see this become a significant part of every ***Mariposa*** issue.]

> From Nancy Gilbert, Oregon House, CA (Butte Co.) -- *"We were near Wilbur Hot Springs [near the Lake/Colusa County line area, on Walker Ridge] looking recently and found about 30 of what look like* C. splendens, *but I think it is too far north; very lovely, tall plants, about 2-2.5 feet tall, soft lavender-pink with deep purple bases inside petals and white hairs. Growing right among* C. luteus. *Any thoughts on the identity?"*

C. splendens has been identified in several "unusually" northern locations, including the one you saw. It occurs at both the southern end and the northern end of the BLM road on Walker Ridge above Bear Valley. The northernmost location we know is along Fouts Springs Road, in Colusa County just short of the Glenn County line. There is disagreement among botanists about what may or may not be a distinct southern form, some say a tetraploid, growing from Santa Barbara to San Diego Counties; this southern form has been called *"C. davidsonianus"* by some authors.

> From Geoff Burleigh, San Fernando, CA (Los Angeles Co.) -- *"May 19 [we] went to the Antelope Valley to revisit* C. striatus *[north of Lancaster, west of Sierra Highway]. We found a very good display of plants, just coming into full bloom. They seemed to be a little taller than usual. Some, growing through the brush, were 2.5 to 3 feet tall. It was a very rewarding trip."*

We've also seen *striatus* growing in low spots north of Lancaster, both east and west of Sierra Highway. There is a lot of development going on in that area, which is scary, because the required habitat of *striatus* is so narrow (low wet places in the desert). We also have noted that in a "good" year, Cals may "outdo" themselves in terms of height, strength, and seed production. We've always figured that it's a case of "Mother" (Nature, that is) doing her thing, trying to take care of her pet flowers. Recently we've had an inquiry regarding a developer wanting to establish a mitigation with *striatus* in that area; we suspect that mitigation is very difficult, given the species' very specific requirements (low wet places in the desert).

> From Colin Jennings, Highbury, South Australia -- *"I would [like to] write something for the Newsletter about raising* Calochortus *from seed here in South Australia in conditions very similar to those of the coastal areas of Southern California. ... I have taken some to flowering stage [and] believe that I have managed to crack the 'code' for at least some of them under our conditions."*

We are sure our Southern California subscribers would be especially interested to see what you have to recommend. So ... how soon will you send us something for the newsletter?

> From Michael Mace, San Jose, CA -- *"Big Stumps Road...is mentioned in a Website that has some of the most stunning* C. venustus *pictures I've ever seen...do you [know where it is]?"*

Oh yes ... This wonderful place is misnamed on the Internet -- perhaps we should all be thankful for that? -- we know it as "Stump Springs Road." It's northeast of Fresno, very much off the beaten track. The *venustus* there are fabulous. We tend to be protective of the location, in an effort to try to continue to preserve this unique population. Ordinarily, July 4th weekend is a very good time to go see them. But this year, who knows ? -- El Niño has screwed up blooming times up and down the state. Maybe next year ??? Also, we're thinking about doing a piece summarizing and reviewing / critiquing Cal pictures on the Internet. There are a LOT of misidentified pictures out there !! Is anyone interested in a commentary?