C. venustus "2-spot form"

MARIPOSA

the newsletter of the ***CALOCHORTUS SOCIETY***
c/o Robinett, P. O. Box 1993, Brookings, OR 97415 USA

PLEASE NOTE OUR NEW ADDRESS –

Effective 1/1/2000, the address of the Calochortus Society is changed (as above) to –

P. O. Box 1993, Brookings, OR 97415 USA

Species of the issue – *Calochortus albus* revisited

Calochortus albus was the very first species discussed by Hugh McDonald, the founding editor of this newsletter. That was eleven years ago. We believe it is a subject worth revisiting, given the great variety of forms found in this species.

As Hugh noted, *C. albus* was among the earliest members of the genus to be discovered – in 1833 by David Douglas, probably near Monterey – and published – by Bentham in 1834. It also was described in the works of Wood (1868), Baker (1874), Bailey (1900), Purdy (1900), Parish (1902), Jepson (1921), and Abrams (1923). It is differentiated from the other "fairy lanterns" *(C. amabilis, C. amoenus, C. pulchellus,* and *C. raichei)* by color, by details of the structure of its glands, and by the amount of "hairs" or processes on the inner surface of its petals. It is also unique among the "fairy lanterns" for having a number of quite distinctive forms or "races," which led some botanists to describe and name various subspecies – *C. albus* var. *paniculata* (Baker in 1874, after Lindley in 1834 – probably the Sierra or Southern California form); and *C. albus* var. *rubellus* (Greene in 1893 – for a rose-colored form found on the Monterey peninsula). Still others assigned entirely new names to various forms – *C. Englerianus* was published by the Berlin Botanical Garden in 1899; and *C. lanternus* was described in 1924 in the Bulletin of the Southern California Academy of Science. However, in his definitive 1940 monograph, Marion Ownbey reduced all these to synonymy with *C. albus,* and this classification scheme has been accepted by all subsequent taxonomists.

Given the distinctiveness of the different forms of *C. albus,* we have elected to describe each separately.

The "Sierra form" – This is a fairly consistent and rather floristic form of *C. albus,* producing many moderately small, quite rounded flowers on noticeably branching plants, and occurring commonly in the Sierra Nevada foothills, from Butte county in the north, to Madera county in the south. The flowers are usually pearly-white, although there are locations where the flowers have "pink shoulders" from unusually dark red glands on the inner petal surfaces "showing through" to the outer petal surfaces. Populations with

"pink shoulders" may be found along Concow Road east of Paradise in central Butte county, along Lower Laporte Road southeast of Oroville in southern Butte county, and – many miles away – along Dogtown Road east of Coulterville in Mariposa county. The more standard pearly-white form occurs in a great many places and often in remarkably thick stands. One wonderful area is along Highway 49 south of the canyon of the Middle Fork of the American River, with thousands of blooming plants in a good year as you climb up the Georgetown Divide. We've seen the Sierra form at elevations ranging from lows of 300 feet along Honey Run Road going east from Chico in Butte county, and at about 500 feet along Peoria Road east of Marysville in Yuba county; to about 2600 feet along Yankee Hill Road east of Columbia in Tuolumne county, and about 3000 feet on Dogtown Road in Mariposa county. The new ***Jepson Manual*** gives an upper range limit of 2000 meters (6600 feet) for *C. albus,* but we have not seen the Sierra form anywhere near that high.

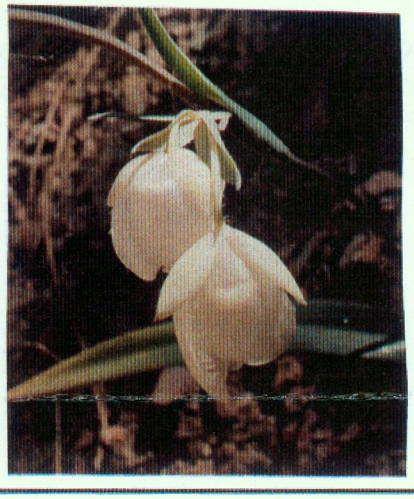
Generally, the Sierra form of *C. albus* grows on north or northeast-facing slopes in open woodlands, affording it protection from the hot sun of summer afternoons. However, the higher locations are sometimes more open – the Yankee Hill population being one example. Like all *C. albus* forms, it prefers fairly steep banks, or else extremely gravelly, well-draining soils, to give it the good drainage it needs to prevent bulb rot. In some locations (the canyon of the Middle Fork of the American River, for example) it can be found growing on rocky cliff faces with little evidence of surface soils, the bulbs presumably taking hold in cracks in the rocks. Given its requirement of some protection from the sun, it is not very likely that this plant ever grew in the Great Valley, though extensive settlement and agricultural development make that statement a hypothesis rather than a fact.

The "Southern California form" – Entirely disjunct from the Sierra form, though closely resembling it, is the Southern California form of *C. albus.* Reportedly, it was once widespread and easy to find, but human settlement and development have made it less common. Like the Sierra form, it is well branched, with round, pearly-white flowers, but the flowers are consistently smaller and the plants tend to be shorter than the Sierra form. We've seen it near Guatay (3500 feet) and south of Julian (at 4000 to 4500 feet) in San Diego county; along Sulphur Mountain Road in Ventura county (1200 feet); at Nojoqui Falls in Santa Barbara county (about 1000 feet); on lower See Canyon Road in San Luis Obispo county (300 feet); and at a "sport" location at the north end of the Indians Road above Arroyo Seco in Monterey county (about 1200 feet). We've not encountered it in Los Angeles county, although Ownbey lists many sites, including Malibu, Topanga Canyon, San Dimas Canyon, and the Claremont area; hopefully there are places where it still can be found. We will be glad to publish any information members send us about Los Angeles county locations. Every place we have seen it, the Southern California form was growing in good shade on north or northeast-facing banks.

The "Coast form" – This form of *C. albus* is, in our experience, the most variable. It may be white, or blushed more or less pink, or sometimes blushed green, on moderate-sized plants, with flowers a little larger and less rounded than the Sierra form. The flowers have been described as "top-heavy," i.e., wider at the top than the bottom. As in all forms, the sepals curl closely over the petals. It occurs in the Santa Cruz Mountains and South Coast Ranges from south of the Golden Gate to Santa Barbara county, where a white to slightly pink form can be found along Refugio Pass Road both north and south of the crest (1000 to 2200 feet). It is also reported from northern Los Angeles county and from Santa Cruz and Santa Rosa Islands. We've also seen it in a quite pink form at the south end of the Indians Road in Monterey county (about 1200 feet). It can be found in a number of Bay Area locations – examples are along lower Alpine Road in San Mateo county, where it may be white, blushed pink, or even blushed green; along Redwood

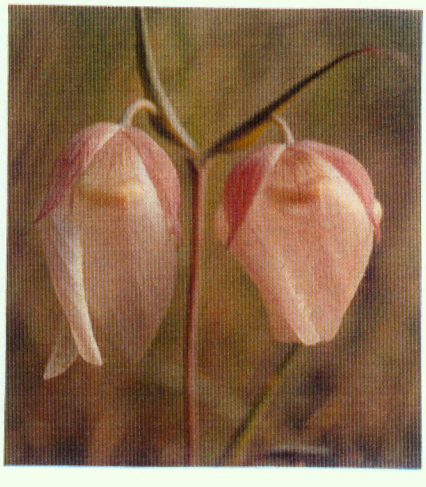
CALOCHORTUS ALBUS –

– Sierra form –

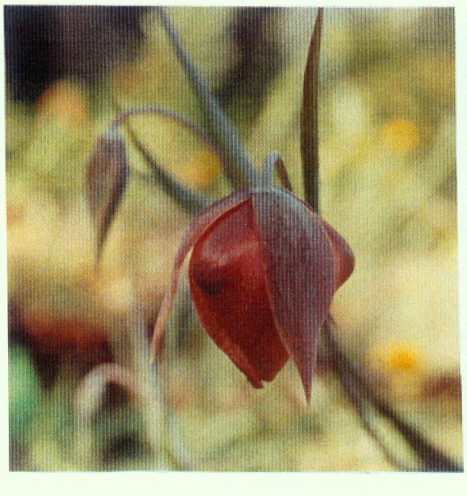


– Southern California form

Coastal form at its pinkest – dwarf Coastal form – at Parkfield Grade



C. albus "form *rubellus*"



– Photographs by Jim Robinett

Road in Alameda county, where it is white or white blushed pink; along lower Mount Hamilton Road in Santa Clara county; and in the San Antonio Valley near the Alameda-Santa Clara county line, in both places mostly white. All these Bay Area locations are below 2000 feet.

Odd versions of the Coast form also can be found. Some distinctly dwarf types exist, most of them growing at or very near the ocean. In Santa Barbara county, one such group occurs on the road up Corralitos Canyon to Point Sal State Beach (at about 600 feet). In San Luis Obispo county, dwarf plants can be found at Arroyo de la Cruz a short walk inland from Highway 1 (at 100 to 200 feet). In Monterey county, rather pinkish dwarf plants grow at about 2500 feet on Fremont Peak – and just across the road, there are full-height plants. The dwarf plants are in an odd, seemingly ashy soil, which may be responsible for the dwarfism in this case. The most spectacular dwarf plants we've seen are on Cuesta Ridge just north of San Luis Obispo, at about 2000 feet. This ridge is fully exposed to coastal gales, which probably accounts for development of plants of such short stature. In any event, like coastal-dwarf versions of many other plants, these have flowers (white) that are larger than average, on plants less than four inches tall, and as a result, the flowers may actually rest on the ground. After the Cuesta Ridge fire several years ago, with fertilization from ash and good rains, they gave the appearance of small piles of little white balls on the ground, the underlying structure of the plants being completely hidden by the many flowers. Stan Farwig and Vic Girard found that in their garden in Contra Costa county seeds from here developed into plants that retained their dwarfism.

Finally, there is the oddest *C. albus* we have ever seen – not a dwarf at all, but rather, extra-tall. This form has very large (1.5 inches or more), rather dusky pink flowers, on dark, mostly unbranched stems – quite different from the typical Coast form. It can be found along Parkfield Grade which runs north out of Parkfield over the Gavilan Ranges. The ridgetop serves as a border between far western Fresno county and southeastern Monterey county, and the plant occurs on both sides – at about 2300 feet on the south side, shaded by manzanita scrub and scattered digger pines, and at about 2800 feet on the north side in a more open habitat.

"Form *rubellus*" – or should it be *"C. albus* var. *rubellus"*? – No treatment of *C. albus* can be complete without discussion of "form *rubellus*." The name *"C. albus* var. *rubellus*" was first published in 1893 by Greene, referring specifically to plants of "rose-color" from Pacific Grove in Monterey county. Ownbey in 1940 subsumed it into *C. albus.* Ownbey's entire comment on the subject was as follows: "In the Coast Range plants there is a tendency for the petals to be flushed with rose. This tendency finds its extreme expression in the variety *rubellus* of Greene, which, because of numerous intermediates, cannot be maintained as taxonomically distinct."

But after seeing plants of much darker color in San Luis Obispo county, Stan Farwig and Vic Girard came to a very different conclusion. In his unpublished investigation of the genus *Calochortus* Vic wrote: "Why in the vast range of this taxon (from Alameda/Contra Costa to San Diego counties) is variety *rubellus* only found in Monterey and northern San Luis Obispo counties? If the color of variety *rubellus* is merely an 'extreme expression' of the often pink-flushed coastal *C. albus,* variety *rubellus* should be expected throughout its statewide range. ... True 'intermediates' do not really exist. No true spectrum is in play here, for we have pure solid whites, whites with various pink flushing, red, and ruby red. ... In the Sierra form, the flowers of *C. albus* are generally smaller and oval, those from the Coastal Ranges larger and top-shaped. Variety *rubellus* tends to have the smaller more oval shape of the Sierra form. If variety *rubellus* is merely an 'extreme expression' of *C. albus,* why does it have a different shape as well?"

It is a difficult question. On the one hand, we acknowledge the differences in size and shape noted by Farwig and Girard. It is also interesting to us that form *rubellus* seems to grow in the deepest shade we have seen for any form of *C. albus*. On the other hand, we have seen plants we would consider to be "intermediate" in color at the edges of the population. Wayne Roderick reported that this form failed to retain its deep color for him when under cultivation in Contra Costa county. Oddly, that has NOT been the experience of Farwig and Girard, whose garden is very few miles away. Nor has it been our experience in Sonoma county. In both the latter cases, only habitat-collected seed from the heart of the form *rubellus* population was used, and we have always avoided cultivated seed, for fear of unintentional crossings with lighter colored plants.

At the least, this is a spectacular version of the Coast form, ranging from very dark rose to wine-red (see photos). Found mostly in the hills west of Paso Robles in northern San Luis Obispo county, the plants with richest coloration appear to be centered along York Mountain Road, but they also can be found along Santa Rosa Creek Road and other roads in the area, at altitudes usually between 1200 and 1800 feet. Vic Girard also reported its occurrence in Monterey county, but we have not seen it that far north. Plants at the edges of the York Mountain population seem to have lighter colored flowers, moderate rose in color but darker than the typical blushed-pink colors of the Coast form, eventually "fading" into the typical pink blush; and plants at other locations seem usually to be mixed with plants having rose or even much lighter colored flowers. One possible explanation might be a single highly successful and vigorous mutation in flower color which over time has radiated outward from a single (York Mountain) location, with intermediates between the mutant and the standard Coast form where they are contiguous. Surely other possible explanations exist. In any case, the form *rubellus* issue is for us simply one of the many examples we have encountered of Mother Nature's resistance to the "pigeon-hole" approach to taxonomic classification, that of trying to fit everything into "neat little boxes."

One final "sidebar" – Hugh McDonald has written us that he found the Sierra location where *C. albus* meets *C. amoenus.* They grew within inches of each other, with no sign of hybridization.

Cultivation – Given an average rainfall in our Sonoma county location four to five times that in its natural range, we have not tried to grow the Southern California form of *C. albus,* and we have not been successful in collecting seed from the odd Parkfield Grade form. All other forms seem to be content when offered about the same conditions, with perhaps a bit more water for the more northern Sierra form seeds. For us they have responded reasonably well to fall sowing in light, well draining mixes, good watering during their growing season, then drying back when the leaves begin to yellow. Jim has been able to bloom some *C. albus* in their third year, though four years is perhaps more common. We must add that it is a source of great pleasure to us that form *rubellus* has proved no more difficult than other *C. albus* forms, as they provide a spectacular show in the garden !

Readers' Forum

Most of our correspondence this issue is from overseas. We're delighted to see such wide interest in the genus Calochortus!

From Mr. Colin Jennings, Highbury, South Australia – I have managed to get quite a range of species via seed lists from the various garden societies I belong to and from several specialist seed suppliers both in the USA and the UK. So far the germination rate has been very high and the seedlings have

managed to survive the second and in some cases the third season after germination. I have not had a lot of success with flowering to date. Maybe the plants have been grown in a too shaded area – perhaps next year I shall try them in a more exposed area, similar to that in which many of our Australian semi-desert plants seem to survive, along with the South African *Moræas, Gladiolus,* and *Babianas*. Although our recent trip to Oregon and Washington was not our first to these states, it was the first time that we had been able to travel to the high desert areas and to the interior, and seeing this country at close hand gave us some idea of the conditions under which many of the drier climate plants have to grow. You can get so much out of books, but it does not compare with being there "in the flesh," so to speak.

We grow both Babianas *and species* Gladiolus *under the same conditions as* Calochortus*, and yes, many do best in full sun – especially the mariposas. Even species growing naturally in open woods will do well with full morning sun, seeming to need only a little protection from the hot afternoon sun at most. Colin has promised to send us a piece on growing* Calochortus *in the Adelaide area for use in the newsletter, by the way, and we look forward to printing it as soon as we have it from him.*

❀ *From Mr. Finn Larsen, Trondheim, Norway* – I should be pleased to try a few more seeds. Not sure what would prove hardy or growable here, but your seeds germinated very well last year, and as we had a somewhat dry summer, the seedlings look most promising. Our winter temperatures are not too low around here, but the winter season is somewhat long and sometimes with much snow, though rarely so in the past few years.

We have found that all but the truly desert species (such as C. kennedyi*) do not mind extra moisture; some in fact thrive on extra water, especially the more northern species or the few "wet-growers" (such as* C. nudus *or* C. uniflorus*). From what we have seen in the field, snow may offer an advantage, in that it insulates the ground, and therefore the bulbs, against the worst freezes. We suspect readers will be very interested in your results, so please keep us informed.*

❀ *From Mr. Fred Bundy, Hensall nr Goole, UK* – Last year's seeds all germinated and are doing great. I'm looking forward to good results again this year.

Again, we are really pleased to see interest in Calochortus *all over the world. Our subscription list includes Canada, The Netherlands, and Germany, as well as England/UK, Norway, Australia, and the United States. Readers are always interested in the experiences and techniques of others.*

❀ *From Mr. Chuck Baccus, San Jose, California* – The seeds I'm requesting will be used mainly for the on-going germination testing. This is why I like to stick to wild-collected samples. I may write something for a future issue, but there's a lot of data to enter. This year I am starting a soil test using all the data gathered from past newsletters plus my own mixes. I will attempt to formulate a couple of mixes for potted stock as well as a growing medium for box culture and seed germination. Besides various basic materials I have plans to utilize a number of fertilizer mediums for short as well as long-term plantings. Perhaps I can do an article on this as well. Also, I am producing some seed now which I may be able to donate in the future, and since most are from enclosed beds I am fairly confident of non-hybrids.

We'll be delighted to print whatever you have to offer us for the newsletter. So don't hesitate to send us whatever you have time to write – the readers will appreciate it – as well as any seeds you can provide.