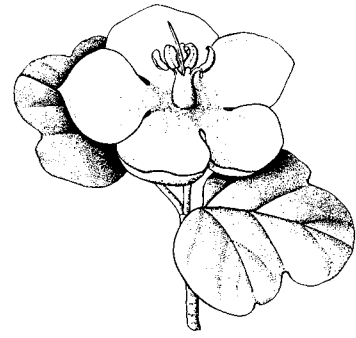


July 1976

# FREMONTIA

A Journal of the California Native Plant Society



# California Native Plant Society

## Dedicated to the Preservation of the California Native Flora

The California Native Plant Society is an organization of laymen and professionals united by an interest in the plants of California. It is open to all. Its principal aims are to preserve the native flora and to add to the knowledge of members and the public at large. It seeks to accomplish the former goal in a number of ways: by undertaking a census of rare, endangered, and extinct plants throughout the State; by acting to save endangered areas through publicity, persuasion, and, on occasion, legal action; by providing expert testimony to governmental bodies; and by supporting financially and otherwise the establishment of native plant preserves. Its educational work includes: publication of a quarterly journal, *Fremontia*, and a periodic *Bulletin*; assistance to teachers and school projects; meetings and field trips and other activities of local chapters throughout the State. Non-members are welcome to attend meetings and field trips.

The work of the Society is done by volunteers. Money is provided by the dues of members and by funds raised by chapter plant sales. Additional donations, bequests, and memorial gifts from friends of the Society can assist greatly in carrying forward the work of the Society.

Dues include subscriptions to *Fremontia* and the *Bulletin*.

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## FREMONTIA

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### MATERIALS FOR PUBLICATION

Members and others are invited to submit material for publication in *Fremontia* and the *Bulletin*. All time-value material should be addressed to the *Bulletin*. *Fremontia* is a journal for laymen about California plants. It hopes to be both readable and scientifically accurate. Technical botanical articles should be directed to other more scholarly journals. Please double-space copy, using wide margins and fresh typewriter ribbon, on 8½-by-11 paper, and include name, address, and phone number on the MS. As a general rule, in the interest of consistency, botanical nomenclature will conform to Munz, *A California Flora*. Please identify each plant referred to by its botanical name and, if there is one, by its common name. Photographs should be black-and-white glossy prints, preferably 8-by-10 size or accompanied by negatives.

### THE COVER:

Labrador tea, *Ledum glandulosum*, a white-flowered evergreen shrub, member of the same family as manzanitas and rhododendrons, is found in the Sierra and the northern Coast Ranges. It was photographed in Butterfly Valley by J. Fraser Muirhead, whose picture-story appears in this issue.

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# NATIVE PLANT RESERVES AT FORT ORD

by James R. Griffin

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Maritime central California supports a mosaic of grassland, coast live oak (*Quercus agrifolia*) woodland, and various forms of non-chaparral scrub. The uplands are usually formed from shale, sandstone, or other hard rocks. But locally chaparral and scrubby live oak thickets intrude into the grass-woodland-scrub pattern, often on low rolling hills of poorly consolidated sand deposits. Before ranch and suburban development such coastal chaparral dominated the sandy landscapes near Prunedale in Monterey County; Nipomo in San Luis Obispo County; Orcutt in Santa Barbara County, and similar places. Although these drab-looking brush patches with foggy, windy summers rate low on some people's esthetic scale, they often rank high in botanical values — particularly for ceanothus and manzanita enthusiasts.

One large and unusual example of coastal chaparral and dwarf coast live oak thickets used to stretch between the Monterey Peninsula and the Salinas River in Monterey County. Unfortunately, this region has now been severely disturbed. The Monterey Airport and the adjacent industrial park were carved out of the most diverse and botanically valuable part of the chaparral. The cities of Seaside, Del Rey Oaks, and Marina plus the urban portions of Fort Ord have also removed large chunks of this vegetation. Significant examples of intact coastal chaparral remain only on the undeveloped portions of Fort Ord. Fortunately, not only do sizeable chaparral communities survive between centers of military activity but also a series of small tracts are given administrative protection as native plant reserves by the U.S. Army. As long as there is no overriding military need for these small tracts, they will be preserved.

The prime mover in establishing these reserves was CNPS Fellow Beatrice Howitt. Early in 1967 she encouraged Fort Ord's Commanding Officer, General Robert G. Fergusson, to set aside some "protected areas." Although these reserves are not yet clearly marked in the field, they have been firmly established in master plans of the Post Engineer and are currently designated as areas "1" to "9" on official maps. Since 1967 several generals have come and gone, but the Army's interest in protecting some examples of Fort Ord vegetation continues. I am currently working with their staff to identify more clearly boundaries of the present reserves and to establish several additional areas.

These reserves are not available for casual visits by the public; but arrangements for research by qualified scientists or formal field trips by groups such as CNPS can be made with the Land Management Branch, Office of the Director of Facilities Engineering, Fort Ord, Ca 93941.

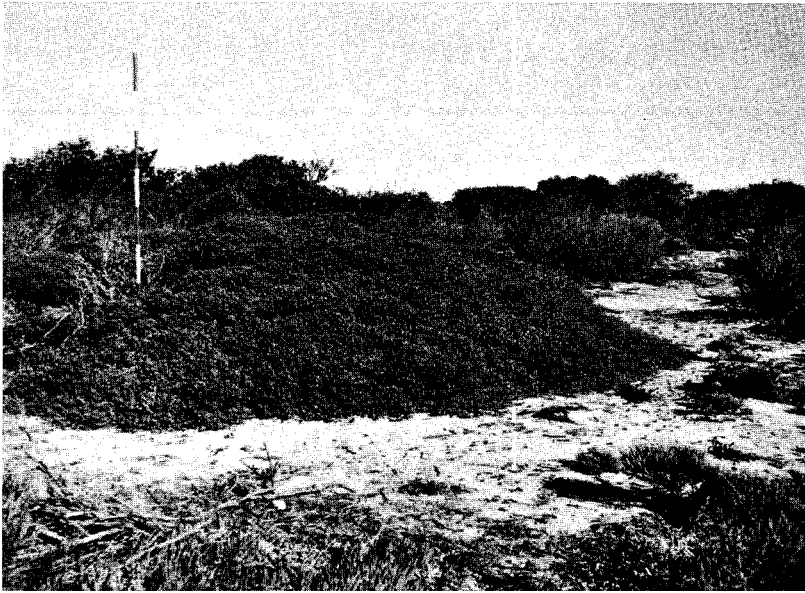
With the passing of the Federal Endangered Species Act of 1973 these reserves achieved greater administrative significance. At least six species on the CNPS and Smithsonian Institution's official rare plant lists grow within Fort Ord boundaries. Four rare species are well represented on the present reserves. Additional reserves are planned to cover the other two species.

Countless thousands of army trainees would be amazed to learn that they had associated with so many rare and wonderful plants during their brief tours of duty here. If they recall Fort Ord vegetation at all, it is probably with unkind thoughts about crawling through poison oak (*Rhus diversiloba*). Nevertheless, native plant values in the Fort Ord region are remarkable, and endangered species as well as plant community examples will probably be far better protected on the military lands than on the surrounding subdivisions. These reserves are far from ideal "natural areas," but they should be strongly encouraged.

## Geologic and Geographic Setting

During mid-Pleistocene glacial times ancestors of the Salinas River dumped up to 200 feet of sand onto the Fort Ord area. Subsequent weathering of iron compounds in these "Aromas" sand deposits stained the sand a reddish-orange color. Later during drastic changes in ocean levels actively moving dunes formed along the shore of Monterey Bay. Up to forty feet of buff-colored dune sand blew inland over the older rust-colored river sands. The result of all this climatic and geologic turmoil was a large and rather sterile sand patch near the mouth of a foggy, windy valley.

The chaparral and sand are isolated on all sides. Monterey Bay lies to the northwest. To the southwest, Monterey pine (*Pinus radiata*) forests thrive on shale and granitic soils of the Monterey Peninsula. Few pines extend down onto the deep sands. Only a handful of non-planted Monterey pines can be found in Fort Ord now, and even planted pines



Sandmat manzanita (*Arctostaphylos pumila*) in the coastal chaparral. Photograph by the author.

have difficulty on the wind-swept slopes facing the bay. On the southeastern fringe of Fort Ord true grassland covers clay-pan soils on older “Paso Robles” sandstone, but grassland is not well developed on the poorly consolidated sand deposits. This Fort Ord grassland, which receives moderate sheep grazing in the spring, supports some of the more extensive purple needlegrass (*Stipa pulchra*) bunchgrass stands to be found in the south Coast Ranges. To the northeast the chaparral used to be bounded by grassland and marshes at the mouth of the Salinas Valley. The alluvial plain of the Salinas River is now intensively cultivated for artichokes, lettuce, and other vegetables.

Several widely distributed chaparral species, e.g., chamise (*Adenostoma fasciculatum*), coffeeberry (*Rhamnus californica*), and toyon (*Heteromeles arbutifolia*) are scattered about. Coastal sage scrub species such as California sagebrush (*Artemisia californica*) and black sage (*Salvia mellifera*) are well represented. But the real character of the Fort Ord chaparral is provided by a group of taxonomically difficult manzanitas. The comments below summarize my manzanita observations and loosely follow some suggestions by Philip V. Wells and Roman Gankin. However, I make no pretense of being a manzanita authority.

## Manzanitas

*Arctostaphylos tomentosa*. All the sprouting manzanitas in the Fort Ord region belong to shaggy-barked manzanita (*A. tomentosa*) in its broadest

sense. This burl-forming group is scattered along the south Coast Ranges and the California Islands. Morphological variation — and the confusion of published names — in this group is appalling. Basically, these are tall shrubs with stomates on the lower sides of the leaves, burls at the base of the trunks, and varying degrees of persistent shreddy bark. Around the Monterey Airport and western Fort Ord *A. tomentosa* shrubs look just like those of the Monterey Peninsula pine forests. The branches have lots of shreddy bark; leaves are often fuzzy on the bottom; and twigs may or may not have long glandular hairs. Plants with glandular hairs could be called form *trichoclada* of the typical subspecies. Good examples of both *tomentosa* and *trichoclada* forms grow together on Reserve 1.

Further inland near Reserve 5 the shreddy bark is less persistent and more of the branches are smooth. Some plants have subcordate leaves. Others are distinctly white tomentose with longer hairs and could be keyed-out to subspecies *crinita* which is a Santa Cruz Mountain form of this group. Still further east near Reserve 8 many shrubs have smooth bark, glabrous leaves, and glandular hairs; but a few plants remain typical *tomentosa*. The smooth-bark, glabrous-leaf form could be called subspecies *crustacea*. These *crustacea* shrubs look very similar to some forms of Eastwood manzanita (*A. glandulosa*) which are common in the Santa Lucia Range inland from Fort Ord. However, *A. glandulosa* has stomates on both sides of the leaves and *crustacea* has stomates predominately on the bottom. This whole mess of shaggy-barked manzanitas offers great raw material for students of plant evolution — and nomenclatural chaos for the botanical layman.

*Arctostaphylos montereyensis*, or Toro manzanita, is a CNPS rare and endangered species. It is a tall, non-sprouting shrub with stomates on both sides of the leaves. Many Fort Ord plants seem to have been isolated from relatives elsewhere along the coast long enough to be a little “different” and to prompt separate names. In the case of Toro manzanita it is related to the rare Bolinas manzanita (*A. virgata*) in Marin County. Toro manzanita might be viewed as the southern extreme of the hairy manzanita (*A. columbiana*) group to which *A. virgata* belongs. The type specimen of *A. montereyensis* came from the only shrub to be found near the Monterey Airport. This bush still survives there amid the devastation of dirt-bike raceways and garbage piles. About a mile away on Reserve 1 I noticed another single shrub. On the eastern portion of Fort Ord *A. montereyensis* is scattered in several canyons. Probably the tallest individuals in the species occur on Reserve 8 where several plants

approach twenty feet in height. These manzanita "trees" are dying of old age, and in this case the next fire will rejuvenate the population although some impressive individuals will be lost. The remainder of the Toro manzanita distribution is in the Toro Regional Park area between Fort Ord and Pine Canyon. I coined the common name for this species from its distribution in the Toro area because "Monterey manzanita" is used for *A. hookeri*.

*Arctostaphylos hookeri*, called Monterey manzanita, is a low-growing, non-sprouting shrub with bright green foliage. It is more common on the Monterey Peninsula and Aromas sand deposits near Prunedale than on Fort Ord. But around Reserve 5 young stands of this attractive species have replaced the shrubs destroyed in a 1967 fire. Although Monterey manzanita is usually considered a low species, on Reserve 4 some unusually vigorous individuals reach eight feet in height. Except for their height, these plants seem to be quite typical of *A. hookeri*. Monterey manzanita is closely related to the rare Hearst's manzanita (*A. hearstiorum*) in San Luis Obispo County and the rare Presidio manzanita (*A. ravenii*) which grows on army land in San Francisco. Monterey manzanita is also related to the San Francisco manzanita (*A. franciscana*) now totally extinct in the wild.

Sandmat manzanita (*Arctostaphylos pumila*) is a CNPS rare and endangered species, forming broad, low mounds in the more open portions of the sand hills. Although an old collection from Carmel exists, this species probably seldom grew off of the sands. Sandmat manzanita has suffered greatly from the development of Seaside and Marina. Now almost all of the remaining, less endangered populations are within Fort Ord. The centers of old sandmat manzanita colonies tend to die back, and this species is not as desirable horticulturally as Monterey manzanita.

## Ceanothus Species

Monterey ceanothus (*Ceanothus rigidus*) is a CNPS rare and endangered species. Probably the best remaining populations grow on Fort Ord where in spots it is common enough to add splashes of bright blue color to the chaparral in the spring. Good examples of Monterey ceanothus grow on Reserve 3 along with lesser numbers of cropleaf ceanothus (*C. dentatus*). Monterey ceanothus is closely related to members of the *C. cuneatus-ramulosus* group in coastal San Luis Obispo and Santa Barbara counties.

Both cropleaf ceanothus and blue brush (*C. thyrsiflorus*) grow on Reserve 5. Since the 1967 burn there, a classic example of a hybrid swarm between these

two species has developed along with the recovery of both parental species.

Coast whitethorn (*Ceanothus incanus*) is commonly scattered down through the Coast Ranges into the Santa Cruz Mountains. Individual shrubs have been reported on the Monterey Peninsula and the Santa Lucia Range, but the southernmost population of this species may be on Reserve 6. Here several dozen plants are sprinkled into the local chaparral along a dry creek bottom. One can easily speculate that these plants got left behind during migrations forced by climatic changes in the past.

## Three Endangered Species

*Haplopappus eastwoodae*, a shrubby composite, is a CNPS rare and endangered species. Most old collections of this low shrub came from dunes near the bay and were concentrated near railway stops on the route to Monterey, e.g., the old Del Monte Station. However the species can no longer be found on any Monterey Bay or Carmel Bay dunes. For years the only population I knew of was on a sandy spot within the Gowen cypress (*Cupressus goveniana*) groves in Del Monte Forest. Vern Yadon has since directed me to plants growing on sand at the Monterey Airport. While investigating all the Fort Ord reserves, I found *H. eastwoodae* scattered on three reserves. I have also found it on a sandy spot in Toro Regional Park. I now suspect that the main habitat — at least the most resistant habitat — for Eastwood's haplopappus was not the dunes but further inland in openings in the chaparral as on the Fort Ord reserves.

Coast wallflower (*Erysimum ammophilum*) is a CNPS rare and endangered species. The Monterey Bay population of this species used to be scattered along the dunes between the Salinas River and Monterey. A few coast wallflowers survive in Monterey near the city's sewer treatment plant. Many plants still grow on the Marina dunes, but they are all endangered to some degree. The Fort Ord portion of the distribution is difficult to assess. Mostly it is either disturbed and covered with Hottentot-fig (*Carpobrotus edulis*) or lies within a series of heavily used firing ranges where plant exploration is "discouraged." Perhaps some scrap of intact dune habitat can be found near the firing ranges. The revamping of Highway 1 as a freeway through the Fort Ord and Marina dunes destroyed much coast wallflower habitat, and only limited stands grow inland from the freeway. Several plants grow on Reserve 2, but desirable habitat should be closer to the beach. Coast wallflower is closely related to Ben Lomond wallflower (*E. teretifolium*) which

grows on special sand deposits in the Santa Cruz Mountains.

Seaside bird's-beak (*Cordylanthus littoralis* spp. *littoralis*) is a CNPS rare and endangered species. This herb was apparently scattered in several sandy areas around Monterey Bay in times past. Now one highly endangered colony is known near the Monterey Airport; a second, somewhat less typical population, grows in eastern Ford Ord. Perhaps a new reserve can be established there.

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## NATIVES FOR YOUR GARDEN

by Marjorie G. Schmidt

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### Southern Monkey-flower (*Diplacus longiflorus*)

**Family:** Scrophulariaceae

**Other names:** Bush monkey-flower, sticky monkey-flower. Munz does not recognize *Diplacus*, using *Mimulus* for entire group. Horticulturally *Diplacus* is used for shrubby species.

**Habit:** The southern monkey-flower is a branched, semi-shrubby plant, evergreen, from two to four feet high.

**Foliage:** The stems are leafy with light green, lanceolate to oblong leaves, the margins often revolute and the surface glandular-hairy. The leaves are one to three inches long.

**Flowers:** The flowers are tubular and two-lipped, the lips notched or lobed, and spreading. The color

varies from orange-yellow to deep orange, pale buff to almost white, with two orange ridges on the lower throat.

**Fruit:** The seed vessel is a slender capsule surrounded by a papery calyx and contains generous quantities of fine seed.

**Distribution:** *Diplacus longiflorus* is common on dry, rocky slopes of the southern foothills, from San Luis Obispo to San Diego counties, inland to the San Jacinto Mountains and the Kern River region.

**Culture:** All *diplacus* may be propagated from seed as well as from cuttings. The fine seed should be dusted as thinly as possible over a flat or pot of friable soil, pressed in and shaded until germination. After the formation of the second or third pair of leaves, a small block of seedlings can be cut out, separated and replanted in two inch pots. In mild climates it is best to plant seed in summer, setting the young plants into their permanent quarters by late autumn for flowers by the following spring or early summer. If the tip growth is pinched out when the plants are young they will become more bushy.

Early in their gardening history, *diplacus* were grown as bedding plants, treated as annuals, the young plants set into loamy soil and watered regularly during their flowering period. Under this system they were lightly pruned in late summer and the watering continued for a second crop of flowers. This obliging group of plants is perhaps even more satisfactory grown in lean-to-gravelly and well-drained soil, with a minimum of moisture. They should never have overhead watering as this causes collapse of the flowers. When grown in semi-dry borders *diplacus* should be cut to within a few inches of the ground in late autumn to remove spent flowers as well as to induce vigorous growth for the coming season. Fertilizer is used at some of the botanic gardens, but granular or powdered forms should not touch the leaves as this has caused the death of young plants in at least one instance.

Propagation of *diplacus* may also be from soft-wood cuttings taken in spring when they seem to root most readily. This will preserve superior color strains and give specific colors for use in garden combinations.

**Hardiness:** In my experience the species and hybrid *diplacus* from warm foothill regions are not completely cold hardy in my present mountain garden where late spring frosts can be expected. Plants which I brought from Los Gatos merely "exist," appearing in late April, producing a few flowers, and then go into early dormancy. It has been suggested that *Diplacus longiflorus* ssp. *calycinus*,