

# Plant Species Evaluation Form

## *Calochortus syntrophus* Callahan

### CALLAHAN'S MARIPOSA-LILY

**Family:** Liliaceae  
(CNPS 2017)

**PLANTS Symbol:** CASY7  
(USDA 2017)

**Calif. Endemic:** Yes  
(CNPS 2017)

**Synonyms/Other Names:** No synonyms or other names are known to have been used for this taxon.

**Identification Issues:** *Calochortus* spp. are considered difficult to key (Fiedler 2017).

Variation in petal shape, gland shape, and pubescence is noteworthy and useful for identification (Fiedler and Zebell 2017).

#### **Taxonomy:**

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Species In Genus: +- 67 species: western North America, Central America; many cultivated.

Etymology: (Greek: beautiful grass) Note: Bulbs of some eaten by Native Americans. Many taxa variable, difficult to key.

[Genus Description] Habit: Bulb coat generally membranous, occasionally fibrous. Stem: scapose or leafy, generally erect, generally branched, bulblets in axils of lower leaves or 0. Leaf: generally linear to lanceolate; basal leaf 1, persistent or not; cauline leaves 0--several, occasionally appearing basal, generally smaller upward, withering or not. Inflorescence: often +- umbel-like; flowers 2--many; bracts 0--several, generally opposite, often paired. Flower: perianth +- closed, spheric to oblong, or open, bell-shaped or +- rotate; sepals generally < petals, generally +- lanceolate (ovate), generally +- glabrous; petals generally widely wedge-shaped, occasionally clawed, generally hairy adaxially, nectary near base; stamens 6, filaments +- flat, often dilated at base, anthers generally attached at base or appearing so; style 1, stigmas 3. Fruit: capsule, septical; oblong or linear, generally 3-angled or -winged, chambers 3. Seed: many in 2 rows per chamber, flat, generally +- tan or +- yellow, translucent, or irregular dark brown, often net-like.

[Species Description] Habit: Plant +- glaucous. Stem: 40--60 cm, stout, bulblets present. Leaf: basal 20--30+ cm, channeled, generally persistent; cauline occasionally appearing basal, 15 cm, reduced upward. Inflorescence: +- umbel-like; flowers 1--5, erect; bracts 5--20 cm.

Flower: perianth bell-shaped, parts centrally dark-blotched; sepals 20--40 mm, lanceolate, long-tapered; petals 30--50 mm, obovate to wedge-shaped, white, margins fringed, basal part yellow; sparsely short-orange-hairy near nectary, nectary not depressed, +- elliptic to crescent-shaped, densely orange-short-hairy; filaments generally +- 8 mm, dilated at base, anthers +- = filaments, lance-linear, white. Fruit: erect, 6--7 cm, linear, angled. Several occurrences, including two on Lassen NF, have all yellow tepals (J. Kierstead pers. comm. 2021).

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**Status:**

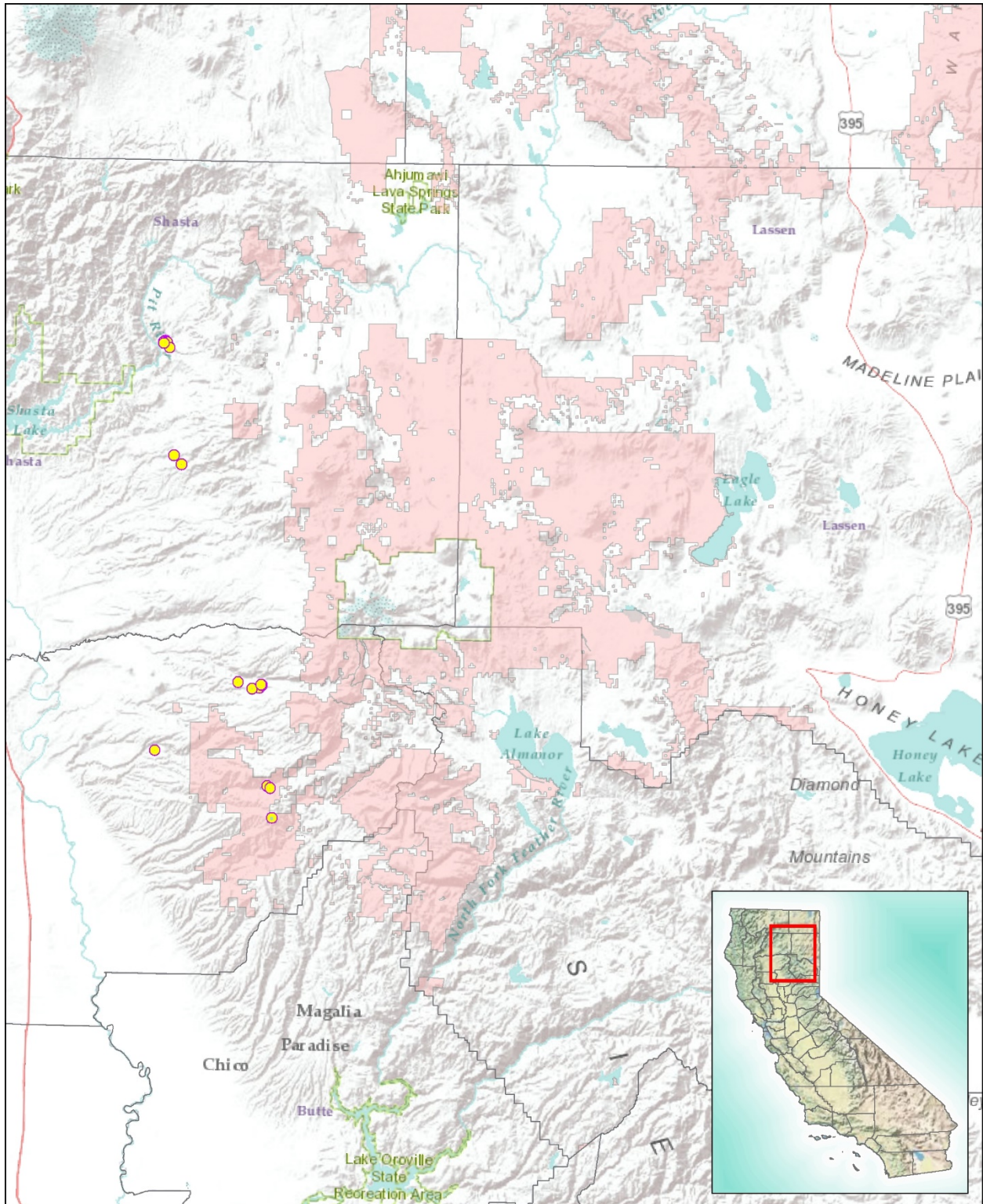
Note: Federally recognized Endangered, Threatened, Proposed, or Candidate species under the Endangered Species Act are omitted as they do not meet the definition of a Species of Conservation Concern (FSH 1909.12 § 12.52).

State Listing	G-rank	S-rank	CRPR	R5 FSS	NFP SM	CA BLM
CA: Not listed NV: Not listed OR: Not listed	G1	CA: S1 NV: Not listed OR: Not listed	1B.1	Not listed	Not listed	Not listed
NPPA: Not listed	SWAP: Strategy Species	NNHP: Not listed	NNPS: Not listed	ORBIC: Not listed	OCS: Not listed	IUCN: Not listed

Expanded abbreviations and citations: State Listing=California Endangered Species Act Listing (CDFW 2017b), Nevada Division of Forestry Fully Protected Plant Species: NAC 527 (NDF 2012), Oregon Department of Agriculture Listed Plants (ODA 2014); G-rank=Global Conservation Status Ranks (CDFW 2017a; NatureServe 2017); S-rank=Subnational (state or province-level) Conservation Status Ranks (CDFW 2017a; NatureServe 2017; NNHP 2017; ORBIC 2016); CRPR=California Rare Plant Rank (CNPS 2017); R5 FSS=USDA Forest Service Region 5 Regional Forester Sensitive Plant Species List (USDA 2013); NFP SM=Forest Service and Bureau of Land Management Northwest Forest Plan Survey and Manage Species (USDA 2001); CA BLM=California Bureau of Land Management Designated Sensitive Species (BLM 2010); NPPA=Native Plant Protection Act Status (CDFW 2017b); SWAP=California State Wildlife Action Plan Status (CDFW 2015); NNHP=Nevada Natural Heritage Program Status (NNHP 2017); NNPS=Nevada Native Plant Society Status (NNHP 2017); ORBIC=Oregon Biological Information Center Status (ORBIC 2016); OCS=Oregon Conservation Strategy Species (ODFW 2016); IUCN=International Union for Conservation of Nature Red List Status (IUCN 2017).

**Distribution:** *Calochortus syntrophus* is entirely restricted to interior regions of northern California. It occupies territory in both Shasta and Tehama counties, spanning a region between the eastern Klamath Mountains and the southern Cascade Range (CNDDDB 2017; CNPS 2017; Jepson Flora Project 2017). Two of the ten (2/10) documented occurrences are within the boundaries of the Lassen National Forest (Tehama County). Six of the ten (6/10) occurrences are within five miles of National Forest System lands, and are either on private property or on land with unknown ownership (CNDDDB 2017).

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**Basemap Sources:** Main map: Esri, DeLorme, USGS, NOAA, NPS. California inset map: © 2013 National Geographic Society, i-cubed.

## **Locations within California:**

(Note: Record numbers indicate sites that contain an individual, population, or groups of populations located within ¼ mile of each other (per the California Natural Diversity Database (CNDDDB) definition of Element Occurrences in California). Official Element Occurrence (EO) numbers for plants in California are determined solely by the CNDDDB and are included within the Reference (Source) column for CNDDDB data. Duplicate records from the same site are given the same record number and included in red. The Population Info column includes total number of individuals and total number and size of populations/sub-populations when provided. Elevations in meters from source were converted to feet. If not provided in original source, Land Manager information was obtained using the California Protected Areas Database (CPAD 2016) and Quad information was obtained using 24K Quads, SDE Feature Class (CDFG 2013). All other information is directly from the Reference (Source) column unless additional citation is given.)

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## Distribution on National Forest System (NFS) lands:

(Please see Reference column of Locations table above for references pertaining to Record Numbers indicated on NFS lands.)

National Forest System (NFS) lands	Record #s (from Locations table above)	CNDDDB EOs	Non-CNDDDB Records	Recent (seen in past 20 yrs.)	Historic (not seen in past 20 yrs.)	Most Recent Obs.	EOs/ Recs. (5 mile buffer)	Total Records on NFS lands
Angeles:	-	-	-	-	-	-	-	0
Cleveland:	-	-	-	-	-	-	-	0
Eldorado:	-	-	-	-	-	-	-	0
Inyo:	-	-	-	-	-	-	-	0
Klamath:	-	-	-	-	-	-	-	0
Lake Tahoe Basin MU:	-	-	-	-	-	-	-	0
Lassen:	4,5	2	0	2	0	23-May-12	6	2
Los Padres:	-	-	-	-	-	-	-	0
Mendocino:	-	-	-	-	-	-	-	0
Modoc:	-	-	-	-	-	-	-	0
Plumas:	-	-	-	-	-	-	-	0
San Bernardino:	-	-	-	-	-	-	-	0
Sequoia:	-	-	-	-	-	-	-	0
Shasta-Trinity:	-	-	-	-	-	-	-	0
Sierra:	-	-	-	-	-	-	-	0
Six Rivers:	-	-	-	-	-	-	-	0
Stanislaus:	-	-	-	-	-	-	-	0
Tahoe:	-	-	-	-	-	-	-	0
<b>Totals:</b>	N/A	2	0	2	0	N/A	6	2

**Demographic and Population Trends:** Over 400 individual plants have been observed from ten records between 1993 and 2013. Three of the ten (3/10) records indicate an unknown number of plants associated with their occurrence observations. One occurrence (EO 2) had a decrease from 100 plants in 1996, to 12 plants in 2001. Three occurrences (EO 3, 4, 5) each had between 70-80 plants at their respective observation sites. Element occurrence 8 (EO 8) had eight plants associated with its record. Two occurrences (EO 9 and 10) each had 35 plants associated with their observations (CNDDDB 2017).

**Life History:** *Calochortus syntrophus* is an herbaceous perennial, bulb forming monocot. This species has a prominent, open, and trimerous perianth with broad petals (mariposa-type). It emerges and blooms during the months of May and June (CNPS 2017). *Calochortus* taxa are regarded as generalist species that are visited by an assortment of pollinators. Mariposa-type species are visited by the greatest diversity of pollinators (Dilley et al. 2000). Pollen of *Calochortus* spp. are often collected by bees, and beetles are known to feed on glands at the base of petals (Dilley et al. 2000). *Calochortus* spp. are slow growing. Population persistence is of great importance to conservation of this species. Reproductive output is reliant upon the long term establishment of populations (Fiedler et al. 1998). *Calochortus* spp. are seasonally dormant and can remain dormant during the growing season. When conducting surveys, it is important to consider that visible population size does not always equate to actual population size (Miller et al. 2004).

**Diversity:** The genus *Calochortus* Pursh contains roughly 67 species and is primarily distributed in western North America. Certain taxa can be found in Central America, but a bulk of the diversity is located to the north, in areas with a temperate climate. Patterson and Givnish (2003) inferred that *Calochortus* arose roughly 7 million years ago in the Coast Ranges of California. Clades within their phylogeny demonstrate a considerable degree of geographic structure, indicating local adaptation to distinct growing conditions. They concluded that the geographic structure and clustered species distribution is due to limited dispersal as a function of many taxa having heavy seeds and fruit that lack adaptations to long-distance dispersal.

There are four prominent floral syndromes among species in the genus *Calochortus* Pursh (fairy lantern, star tulip, cat's ear, and mariposa). *Calochortus syntrophus* is a taxon that demonstrates the mariposa-type floral syndrome. Taxa with the mariposa floral syndrome form the most phylogenetically cohesive group within the genus (Patterson and Givnish 2003), and is inferred as the ancestral condition for this particular genus. Field biologists report a yellow-flower and white-flower form (Sanger et al. pers. comm. 2017; D. Taylor pers. comm. 2017).

**Habitat:** *Calochortus syntrophus* is largely a woodland species, but is also known to occur in vernal mesic grasslands in foothill and valley regions (CNPS 2017). Records indicate it is also found along the forest edge, and openings in mixed conifer forests (CNDDDB 2017). Many records indicate that *C. syntrophus* associates with *Quercus douglasii*, *Q. kelloggii*, *Pinus ponderosa*, *Calocedrus decurrens*, *Arctostaphylos patula*, *A. viscida*, *Chlorogalum pomeridianum*, *Elymus elymoides*, *Festuca idahoensis*, *Stipa lemmonii*, *Ceanothus cuneatus*, *Calochortus monophylus*, *Cercocarpus betuloides*, *Clarkia* spp., *Fremontodendron californicum* and other geophytes like *Triteleia hyacinthina*, *Odontostomum hartwegii*, and *Perideridia californica*.

**Habitat Status or Trend:** The habitat status or trends for *Calochortus syntrophus* are currently unknown.

**Capacity for the Species to Disperse:** *Calochortus* spp. have relatively heavy seeds that are unconducive to long-distance dispersal. Restricted dispersal is considered a contributor to local adaptation, group wide species richness, and evolution *in situ* (Patterson & Givnish 2004).

**Threats:** Considerable horticultural interest exists among species in the genus *Calochortus*. Rare taxa like *C. syntrophus* are subject to collecting (CNPS 2017). *Calochortus* spp. are long living and slow growing herbaceous perennials that rely on persistent populations for seedling recruitment. Vertebrate herbivores threaten these species that rely on long term establishment and high survival rates for reproductive output (Fiedler et al. 1998). Logging, road construction, and public access are also documented as threats (CNDDDB 2017).

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**Persons Contacted:**

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**Reviewer(s) and Date:**

David Magney, Rare Plant Program Manager, California Native Plant Society, (916) 447-2677 ext. 205, [dmagney@cnps.org](mailto:dmagney@cnps.org), September 12, 2017.

Julie Ann Kierstead, USDA Forest Service Region 5 Ecosystem Planning, October 19, 2021.

**Formatting:** Form is set up as 508 compliant. Please use the “styles” if further formatting is necessary.

**Purpose:** This is to maintain the best available science on a species that could be used by the Forest Service in a variety of functions. Specifically, there would be additional steps and evaluations to determine whether or not this species would be considered a Species of Conservation Concern under the 2012 Planning Rule or a Sensitive Species under the 1982 Planning Rule.

**Additional Considerations at the Forest Level:** Habitat amount and juxtaposition of both the species and habitat locations.