

CANDIDATE ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME: *Calochortus persistens*

COMMON NAME: Siskiyou mariposa lily

LEAD REGION: Region 1

INFORMATION CURRENT AS OF: February 2003

STATUS/ACTION:

New candidate

Continuing candidate

Non-petitioned

Petitioned - Date petition received: September 10, 2001

90-day positive - FR date: \_\_\_\_\_

12-month warranted but precluded - FR date: \_\_\_\_\_

Is the petition requesting a reclassification of a listed species?

Listing priority change

Former LP: \_\_\_\_\_

New LP: \_\_\_\_\_

Latest Date species first became a Candidate: June 13, 2002

Candidate removal: Former LP: \_\_\_\_\_

A - Taxon more abundant or widespread than previously believed or not subject to a degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.

F - Range is no longer a U.S. territory.

I - Insufficient information on biological vulnerability and threats to support listing.

M - Taxon mistakenly included in past notice of review.

N - Taxon may not meet the Act's definition of "species."

X - Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Flowering Plant; Family: Liliaceae

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: California and Oregon

CURRENT STATES/ COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE:  
Siskiyou County, California

LEAD REGION CONTACT: Diane Elam (CNO), 916-414-6464; Scott McCarthy (RO), 503-231-6131

LEAD FIELD OFFICE CONTACT: Yreka Fish and Wildlife Office, Nadine R. Kanim, 530-842-5763

BIOLOGICAL INFORMATION:

*Calochortus persistens* (Siskiyou mariposa lily) is a narrow endemic that is restricted to two disjunct ridge tops in the Klamath-Siskiyou Range on the California-Oregon border. Two historical populations are known: the type locality on Gunsight-Humbug Ridge west of Yreka, Siskiyou County, California, and the Bald Mountain site west of Ashland, Jackson County, Oregon. In California, this species is currently found at nine separate sites on approximately 10 hectares (ha) [24 acres (ac)] of Klamath National Forest and privately owned lands that stretch for 6 kilometers (4 miles) along the Gunsight-Humbug Ridge. The Oregon population was described in 1998, as five plants in an area of a few square feet (Klamath-Siskiyou Wildlands Center 2001).

In California, *C. persistens* occurs at elevations of 1,310 meters (m) [4,300 feet (ft)] to 1,847 m (6,060 ft) on ridgeline rock outcrops and talus where the soils are shallow, dry, rocky, and acidic (Knorr 1987; Klamath-Siskiyou Wildlands Center 2001). These soils are well drained early in the season after snow melt. *Calochortus persistens* plants are found in greater numbers on north-facing slopes and are not found very far down off the ridge (Knorr 1987). Soils on Gunsight-Humbug ridge are of metamorphic origin and belong to the Jayar Family/Woodseye Family Association (Knorr 1987; Klamath-Siskiyou Wildlands Center 2001). In Oregon, *C. persistens* is found at 1,585 m (5,200 ft) in McMullin Rock Outcrop Complex soils.

*Calochortus persistens* plants occur in openings where there is little vegetative cover and the litter layer is shallow or absent. Dominant shrubs are *Cercocarpus ledifolius* (curl-leaf mountain mahogany) and *Cercocarpus betuloides*. *Berberis aquifolium* var. *repens* (Oregon-grape), is another associate that can sometimes be dominant. Other common shrub species in the vegetative community are: *Lupinus albifrons* var. *collinus*, *Quercus garryana* var. *breweri*; *Prunus emarginata* (bitter cherry), *Chrysothamnus nauseosus* (rubber rabbitbrush), *Ceanothus integerrimus* (deer brush), and *Garrya* sp. (silk tassel bush) (Knorr 1987; Knapp 1996). Downslope from this open shrubby vegetative community where *C. persistens* occurs, is mixed coniferous forest, dominated by *Pinus ponderosa* (ponderosa pine), *Pseudotsuga menziesii* (Douglas-fir), and *Calocedrus decurrens* (incense cedar).

A 1982 census resulted in a California population estimate of 3,455 plants in nine separate occurrences. In 1987, 1,140 plants were counted in eight separate locations. In June 1995, all known California locations were surveyed resulting in an estimate of 3,000 plants. In 2002, Knapp reported that she had seen four *C. persistens* plants at the Oregon site (Barbara Knapp, pers. comm., 2002). These are the first plants reported from that area since the population was discovered in 1998 (Klamath-Siskiyou Wildlands Center 2001).

#### THREATS:

##### A. The present or threatened destruction, modification, or curtailment of its habitat or range.

Major threats include the introduction of exotic weeds and grasses; fire suppression resulting in increased fuel loading and shading and competition by native and non-native species; fragmentation by roads, fire breaks, tree plantations, and radio-tower facilities; maintenance and construction around radio towers and a telephone relay station located on Gunsight Peak and Mahogany Point; and soil disturbance and exotic species introduction as a result of heavy recreational use (Knorr 1987; Knapp 1995; Knapp 1996; Klamath-Siskiyou Wildlands Center

2001). *Isatis tinctoria* (dyer's woad), a germination inhibitor (Young and Evans 1971), is now found throughout the California population (Klamath-Siskiyou Wildlands Center 2001). U.S. Forest Service (Forest Service) staff report that dyer's woad affects 90 percent of the known *C. persistens* habitat in California (Klamath National Forest 2001). A biennial, with a deep taproot, dyer's woad forms dense rosettes in infested areas. Dyer's woad is thought to prevent *C. persistens* seedling establishment by competing for space, water, and nutrients. Both Forest Service staff (Service, in litt., 2001) and Klamath-Siskiyou Wildlands Center (2001) cite competition with dyer's woad as a significant and chronic threat to the survival of *C. persistens*.

The Gunsight-Humbug Ridge has one of the highest rates of lightning strikes and small fire ignitions on the Klamath National Forest (Knapp 1996). The last large fire in the area was the 1955 Haystack Fire. Fire suppression has resulted in shading and competition by native species including curl-leaf mountain mahogany and Oregon grape (Knapp 1995). Conifers appear to be encroaching as well (Knapp 1996). In addition to reducing habitat suitability through shading and competition, fire suppression may have resulted in an increased fuel load that could result in complete destruction of habitat, should a high-intensity fire occur.

Direct destruction of plants and habitat has occurred as a result of site maintenance around the Gunsight Peak radio installation in Spring 2000 (Klamath-Siskiyou Wildlands Center 2001) and snow plowing to replace a power pole in the winter of 1999/2000 (Klamath National Forest 2001). Road grading and controlled burning may also result in direct destruction of habitat (Klamath National Forest 2001; Klamath-Siskiyou Wildlands Center 2001).

No private property development proposals in the area of the nine *C. persistens* occurrences are on file with the Siskiyou County Planning Department. However, one private property owner has indicated an interest in erection of cell towers on potential *C. persistens* habitat (Service, in litt., 2001). None of the private property owners contacted in 2001 had immediate plans for development in the area.

#### B. Overutilization for commercial, recreational, scientific, or educational purposes.

Knapp (1995) lists bulb collection as an occasional threat to this species. In 1979 and 1982, the Klamath National Forest reported that there was some evidence that *C. persistens* bulbs may have been removed on Federal lands (Knorr 1987). At present, horticultural theft is not known to be a significant threat to the California population (Julie Knorr, Forest Service, pers. comm., 2002).

#### C. Disease or predation.

Deer, rodent, and insect herbivory is common and causes significant losses to leaves, buds, flowers, and fruits (Knorr 1987; Knapp 1996; Klamath-Siskiyou Wildlands Center 2001). In a 1995 to 2000 demographic study, no seeds matured in 4 out of 6 years, due in large part to predation on reproductive structures (Klamath-Siskiyou Wildlands Center 2001).

#### D. The inadequacy of existing regulatory mechanisms.

*Calochortus persistens* was listed in July, 1982, by the State of California Fish and Game Commission as a rare species under the California Native Plant Protection Act (CNPPA)

(Chapter 10, section 1901 et seq., California Fish and Game Code, and Title 14, California Code of Regulations 670.2). The CNPPA prohibits the taking, possessing, or selling of plants listed under this act, though there are exceptions to these prohibitions. In the past, the CNPPA has not provided adequate protection for plants listed under this statute from the impacts of habitat modification, land use changes, or invasion of habitat by exotic species.

The Klamath National Forest has issued “Botanical Investigation and Management Guidelines for *Calochortus persistens*” (Knorr 1987) and has designated 40 ha (100 acres) as Special Habitat for *C. persistens* (Klamath National Forest 1994). While the management goals set forth in the Klamath National Forest Land and Resource Management Plan must be implemented, at the time *C. persistens* was added to the candidate list, there were no funds directly allocated to specific projects to reduce or eliminate dyer’s woad (S. Stresser, Forest Service, pers. comm., 2002). In their petition to list this species, Klamath-Siskiyou Wildlands Center (2001) cited the fact that the management guidelines had not been implemented as one of the threats to survival for this species. Existing regulatory mechanisms have not protected *C. persistens* from existing threats and are inadequate to ensure this species’ survival and recovery.

E. Other natural or manmade factors affecting its continued existence.

Unpublished data show that there has been no successful reproduction of *C. persistens* in the last 5 years (Klamath-Siskiyou Wildlands Center 2001). The reproductive rate based on conditions from 1995 to 1996 was high compared to those averaged over the period from 1995 to 2001 (Knapp undated). However, even during the period from 1995 to 1996, when the reproductive rate appeared to be relatively high, only 20 percent of buds produced in transects matured to distribute seeds (Knapp 1996). There is no evidence of asexual reproduction by bulbils or bulblets and plants don’t begin to flower until 8 to 10 years of age (Klamath-Siskiyou Wildlands Center 2001).

The combination of restricted range, the effective loss (4 plants remain) of one of two disjunct populations, poor competitive ability, short seed dispersal distance, slow growth rates, and low or absent seed production and competition from exotic plants threaten the continued existence of this species.

FOR RESUBMITTED PETITIONS:

- a. Is listing still warranted? Y
- b. To date, has publication of a proposal to list been precluded by other higher priority listing actions? Y
- c. Is a proposal to list the species as threatened or endangered in preparation? N
- d. If the answer to c. above is no, provide an explanation of why the action is still precluded: Since publication of the 2002 CNOR, the publication of a proposed rule to list this species has been precluded by other higher priority listing actions, and based on work scheduled we expect that will remain the case for the remainder of Fiscal Year 2004. Almost the entire national listing budget has been consumed by work on various listing actions taken to comply with court orders and court-approved settlement agreements, emergency listing, and essential litigation-related, administrative, and program management functions. We will continue to monitor the status of *C. persistens* as new information becomes available. This review will determine if a change in status is warranted, including

the need to make prompt use of emergency listing procedures

#### LAND OWNERSHIP:

Of the nine known occurrences in California, seven are entirely located on the Scott River/Oak Knoll District of the Klamath National Forest. Two other occurrences are located on both Federal and private lands (Klamath National Forest 2001). The Oregon population occurs entirely within the Ashland Resource Area, Medford District of the Bureau of Land Management (Klamath-Siskiyou Wildlands Center 2001).

#### PRELISTING:

In 1982, Klamath National Forest issued its "Botanical Investigation and Management Guidelines for *Calochortus persistens*" (Knorr 1987). These guidelines prohibit new ground-disturbing activities within 100 m (330 ft) of the Gunsight-Humbug Ridge, restrict vehicles to existing roads, prohibit the use of heavy equipment to maintain fuel breaks, prohibit implementation of activities before a Klamath National Forest botanist is consulted, require installation of a deer-proof fence around a 0.8 ha (2 ac) area, and require monitoring of *C. persistens* populations. The Klamath National Forest Land and Resource Management Plan established a 40 ha (100 ac) Special Habitat Management Area for this species where currently known and newly discovered *C. persistens* habitat must be managed to maintain a viable population and where non-native species must be reduced or eliminated. The Klamath National Forest has conducted population surveys and funded a 1-year demographic study on this species. In 1990, Forest Service staff attempted a small dyer's woad removal project. Results of this test showed that hand removal is too time consuming and effort-intensive to be a viable eradication option (J. Knorr, pers. comm., 2002). The Klamath National Forest and Service have begun work to develop a conservation strategy for this species.

#### REFERENCES:

- Klamath National Forest. 2001. Letter to Mr. Phil Detrich, U.S. Fish and Wildlife Service, Yreka, California. 2 pp.+ attachments.
- Klamath-Siskiyou Wildlands Center, Oregon Natural Resources Council, and B. Knapp. 2001. Formal petition to list the Siskiyou mariposa lily endangered under the Endangered Species Act. Ashland, Oregon. 20 pp.+ appendices.
- Knapp, B. 1995. Demographic monitoring of *Calochortus persistens* and *Calochortus greenii*: a proposal to the U.S.F.S. Klamath National Forest. Unpublished manuscript. 11 pp.
- Knapp, B. 1996. Demographic monitoring of *Calochortus persistens*: report to the U.S.F.S. Klamath National Forest on work completed by November 30, 1995. Unpublished manuscript. 14 pp.+ appendices.
- Knapp, B. (Undated). Demographic monitoring of *Calochortus persistens*: report to the U.S.F.S. Klamath National Forest on work completed in 1996. Unpublished manuscript. 9 pp.+ appendices.

Knorr, J. 1987. Calochortus persistens habitat inventory and status investigation. Klamath National Forest, July 27, 1987, unpublished manuscript. 5 pp.+ appendices.

U.S. Department of Agriculture, Forest Service. 1994. Klamath National Forest Land and Resource Management Plan.

U.S. Fish and Wildlife Service. 2001. Memorandum to John Nuss, Endangered Species Listing Branch, Portland, Oregon. 2 pp.+ attachment.

Young, J. and R. Evans. 1971. Germination of dyers woad. *Weed Science* 19:76-78.

LISTING PRIORITY (\* after number)

THREAT
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Magnitude	Immediacy	Taxonomy	Priority
High	Imminent	Monotypic genus	1
		Species	2*
		Subspecies/population	3
	Non-imminent	Monotypic genus	4
		Species	5
		Subspecies/population	6
Moderate to Low	Imminent	Monotypic genus	7
		Species	8
		Subspecies/population	9
	Non-imminent	Monotypic genus	10
		Species	11
		Subspecies/population	12

**Rationale for listing priority number:**

*Magnitude:* The exotic weed, Dyer's woad (*Isatis tinctoria*) is a germination inhibitor and has infested 90 to 100 percent of the known *Calochortus persistens* habitat in California. Therefore, the magnitude of this threat is high.

*Immediacy:* One of two known disjunct populations is represented by only four plants. Unpublished results from a 1995 to 2001 demographic study indicate that the California population of *Calochortus persistens* has not successfully reproduced in the last 5 years. Therefore, the threats are imminent.

APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes to the candidate list, including listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all additions of species to the candidate list, removal of candidates, and listing priority changes.

Approve: Steve Thompson March 6, 2003  
Regional Director, Fish and Wildlife Service Date

Concur: Steve Williams April 5, 2004  
Director, Fish and Wildlife Service Date

Do not concur: \_\_\_\_\_  
Director, Fish and Wildlife Service Date

Director's Remarks:

\_\_\_\_\_  
\_\_\_\_\_

Date of annual review: February 2003  
Conducted by: John Hamilton

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_