Species: *Silene suksdorfii* B. L. Rob., Cascade alpine campion

Photo Source: Calphotos 2021

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Status

Table 1 summarizes the current status of this species or subspecies/variety by various ranking entities and defines the meaning of the status.

Table 1. Current status of Cascade alpine campion		
Entity	**Status**	**Status Definition**
NatureServe CA[a]	G4, S3	G4: Apparently Secure — Uncommon but not rare; some cause for long-term concern due to declines or other factors.

		S3: Vulnerable — Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the nation or state/province.
California Rare Plant Rank[b]	2B.3	2B: Rare and endangered in California, more common elsewhere. 0.3: Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known). This taxon was added to the *CNPS Inventory of Rare and Endangered Plants of California* in 1988 and has undergone no changes since 2001 (CNPS 2021).
California State Listing[c]	Not listed	
USDA Forest Service[d]	Not listed	
USDI FWS[e]	Not listed	
USDI BLM[f]	Not listed	
NatureServe OR[g]	G4, S4, HP List 4	G4: Apparently secure, uncommon but not rare. S4: Not rare in Oregon and apparently secure, but with cause for long-term concern, usually with more than 100 occurrences. List 4: contains taxa that are of conservation concern but currently do not meet the criteria for being considered threatened or endangered. This includes taxa that are very rare but are currently secure, as well as taxa that are declining in numbers or habitat but are still too abundant to be proposed as threatened or endangered.
Oregon State Listing[h]	Not listed	
NatureServe NV[i]	Not present	
Nevada State Listing[j]	Not present	

[a] California Natural Diversity Database, California Dept. of Fish & Wildlife [CNDDB 2021, 2021a]
[b] California Native Plant Society [CNPSz 2021]
[c] California Department of Fish and Wildlife [CDFW 2020]
[d] US Forest Service Region 5 Forester's List [USDA 2013] and Pacific NW Survey and Manage [USDA & BLM 2014]
[e] US Department of Interior Fish and Wildlife Service [USFWS 2021]
[f] US Department of Interior Bureau of Land Management [BLM 2020]
[g] Oregon Biodiversity Information Center [ORBIC 2019]
[h] Oregon Department of Agriculture [ODA 2018]
[i] Nevada Natural Heritage Program [NNHP 2020]
[j] Nevada Division of Forestry [NDF 2012]
Note: Individual State Heritage Programs (CNDDB, ORBIC, NNHP) represent NatureServe and contain more up-to-date ranks for their state than NatureServe Explorer.

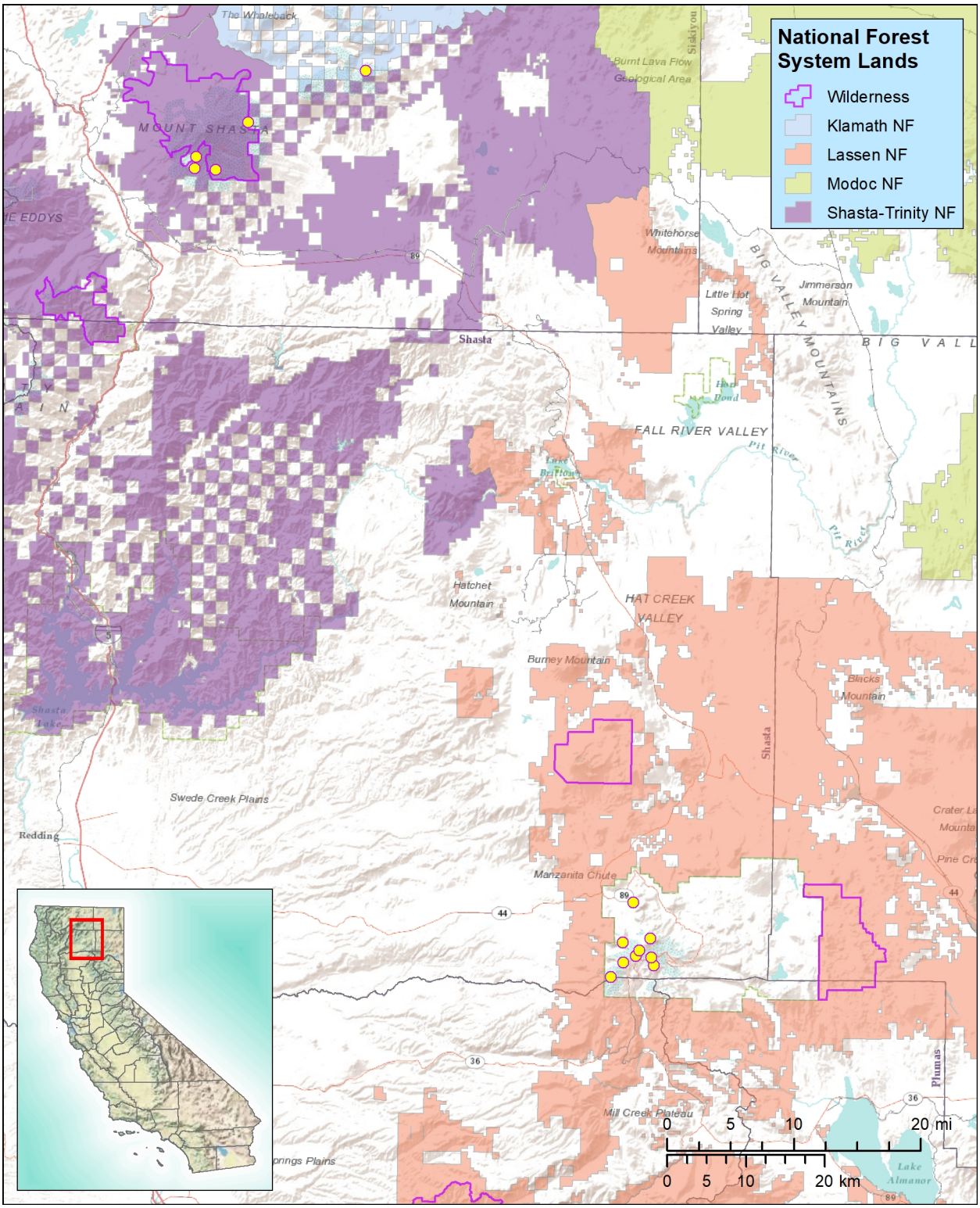
Distribution, abundance, and population trend on the planning unit[1]

Table 2 summarizes the distribution and frequency of this species or subspecies/variety within National Forest System Lands in California. Table 4 in Appendix 1 lists all known occurrences of this species or subspecies/variety within California. Individual occurrences are defined as sites that contain an individual, population, or groups of populations of the plant that are located more than 1/4 (0.25) of a mile apart from each other as defined by the CNDDB.

Table 2. Known Occurrence Frequency of Cascade alpine campion within the Planning Area (NRIS, CNDDB, Calflora/CCH databases)

National Forest System (NFS) lands in California	Record #s (from Table 4)	CNDDB EOs	Non-CNDDB Records	Recent (seen in past 20 years)	Historical (not seen in past 20 years)	Most Recent Obs. Date	Total Records on NFS lands
Shasta-Trinity:	6, 7, 10	3	0	1	2	14-Aug-2013	3
Totals:	N/A	3	0	1	2	N/A	3

[1] 1909.12 Chapter 10, Section 12.53, components 2, 3, and 4.



Sources: *Distribution*: Calflora 2021, CNDDB 2021. *Baselayers*: 2013 National Geographic Society, i-cubed, Esri, Garmin, NOAA, NPS, USGS.

Cascade alpine campion was last updated in the CNDDB on December 22, 2016 (CNDDB 2021), and therefore all Calflora, CCH, and/or NRIS records prior to this date are assumed to have already been reviewed and entered into the CNDDB for this plant. Accordingly, only records from Calflora, CCH, and/or NRIS reported after this date have been reviewed for potential new or updated occurrence information and are included in Table 4 in Appendix 1 as applicable.

In California, Cascade alpine campion is known from Mt. Shasta, Rainbow Mountain, and Lassen Volcanic National Park (Shasta, Siskiyou, and Tehama counties). All locations are in the High Cascade Range bioregion (CaRH). Outside of California, Cascade alpine campion is known from the Oregon and Washington Cascades; the nearest population in Oregon is on Mt. Thielsen in Douglas County, approximately 120 miles north of Mt. Shasta (CPNWH 2021). Therefore, the Lassen Volcanic National Park locations are the southernmost for the distribution of this species. Of the 14 California records, three are at least partly found on U.S. National Forest lands, and all of these are on the Shasta-Trinity National Forest. Of the remaining 11 records, the majority (nine) are located within Lassen Volcanic National Park, and two are located wholly on private land, although one record (#9) is very close to the boundary of the Klamath National Forest. Two records are in the Mount Shasta Wilderness, with one on a private inholding within the Wilderness. Six of the records are historical and have not been visited in over 20 years. Of the eight recent records, seven were first discovered since 2004. Three locations have been visited more than once over time (Records #2, #6, and #10). Only four locations (Records #7, #9, #10, #12) have had their populations censused, and only one of these (Record #10) has been censused over time. In all locations, the number of plants recorded is below 100, with three populations having 50 or fewer plants and one having between 50 and 100; the population at Record #10 had 50 plants in 2005 and 29 plants in 2013, a nearly 50% reduction in number.

There is one record of Cascade alpine campion from Scott Mountain (*Wenk 273*, CAS) that displays at the Consortium of California Herbaria website (CCH1 2021); this specimen was annotated to *Phlox speciosa* in February 2019 by CAS staff and displays correctly at the CCH2 (2021) website (Kierstead 2021 pers. comm.).

Of the 14 California records of Cascade alpine campion, 10 are currently included in the CNDDB. The four non-CNDDB records are located at least 0.5 mile from a known CNDDB occurrence. These four records seem to represent new occurrences and should perhaps be evaluated for inclusion in the CNDDB.

Brief description of natural history and key ecological functions[2]

Cascade alpine campion is a perennial herb with decumbent subterranean shoots from a branched caudex with white or purple tinged flowers that bloom from July to September. Plants are found on windswept volcanic ridges and plateaus in open, upper montane or subalpine coniferous forest or alpine boulder and rock fields at 2355–3110 m in elevation; it usually grows in well-drained soil pockets on talus and in rock crevices on volcanic substrates such as pre-Lassen dacite, andesite, ash, and pumice (Showers 1989, CNDDB 2021, CNPS 2021, FNA 1993+). Associates may include: *Abies magnifica, Pinus albicaulis, Tsuga mertensiana, T. menziesii, Holodiscus*

[2] Basis for other 1909.12 Chapter 10, Section 12.53 components.

microphyllus, Saxifraga spp.*, Potentilla* spp.*, Raillardella argentea, Oxyria digyna, Polemonium pulcherrimum,* and *Cardamine bellidifolia* (CNDDB 2021).

The genus *Silene* has approximately 850 species and is widely distributed in temperate regions (Jafari et al. 2020). Within the genus, Cascade alpine campion has traditionally been placed in *Silene* section *Physolychnis* (Frajman et al. 2018). In many phylogenetic analyses, Cascade alpine campion is placed sister to *Silene uralensis*, another alpine species found in North America, Greenland, and Siberia (FNA1993+, Popp and Oxelman 2007, Frajman et al. 2018); however, most analyses to date have sampled a relatively low number of species, and so this placement is not definitive.

Cascade alpine campion is morphologically very similar to *Silene grayi* and *S. sargentii*, both of which occur in California and have similar ecological preferences (Showers 1989); *Silene grayi* overlaps in distribution with Cascade alpine campion in the Cascade Ranges (JEPS 2021). Traits that can be used to distinguish Cascade alpine campion from the other two species are its shorter stature to 10 cm tall (versus to 30 cm tall), bilobed petal blades (versus four-lobed or bilobed with small lateral lobes), and calyx hairs with purple cross walls (as opposed to clear cross walls). Cascade alpine campion also differs from *S. grayi* by usually having narrower basal leaves 1.5–3.5 mm wide (versus 1–5 mm), anastomosing calyx veins, and smaller seeds 1–2 mm long (versus 2–3 mm long) (Showers 1989, JEPS 2021). Despite their morphological similarities, genetic studies have confirmed that the three species are distinct, and their hybrids are usually sterile (Kruckeberg 1961).

Although some *Silene* species are dioecious, most of the western North American species have bisexual flowers, with the stamens developing before the pistil. The stamens are exerted from the corolla in two successive whorls of five, with the stigma becoming receptive later that same day or the following day (Kruckeberg 1961). The pollinators of Cascade alpine campion are unknown, but, as the flowers are open during the day, it may be pollinated by bees or butterflies, as is the case with many other *Silene* species, or it could be self-pollinating (Showers 1989, Reynolds et al. 2009, Jafari 2020, CPC 2021). In contrast, *Silene grayi* has flowers that are open at night and they are known to be visited by sphyngid moths after sunset and syrphid flies at dawn; this difference in the timing of pollination and type of pollinator has been postulated to be the mechanism that keeps these two species from hybridizing where they are sympatric (Showers 1989).

The fruit of Cascade alpine campion is a capsule that releases the small seeds by opening six to eight apical valves (FNA 1993+). The seeds are broadly winged and adapted to wind dispersal (FNA 1993+). In greenhouse experiments, the seed germinability of western North American *Silene* species was found to be low, and plants grown from seed usually flowered in the first year (Kruckeberg 1961). The density and duration of snowpack in the locations where Cascade alpine campion grows is quite variable. Populations on vertical cliff faces are subject to winter desiccation and exposure to extreme cold. The ability of this species to grow on cliff faces may depend on snowmelt water from snow beds in rock crevices and the ability of mosses to trap soil and rapidly absorb snowmelt and rainfall (Showers 1989). This species appears to be tolerant of some disturbance where it grows on talus or loose ashy soil, which may favor its establishment

and restrict competition; however, plants also inhabit rock crevices that are not subject to disturbance (Kierstead 2021 pers. comm.).

Overview of ecological conditions for recovery, conservation, and viability[3] including Threats and Risk Factors

This species is known from 14 records in high elevation, open, rocky habitats of the High Cascade Range bioregion. Two occurrences are located in Wilderness Area, and nine are within the boundaries of a national park. Two records (both recent) are ranked in the CNDDB database, both of them ranked as good. Due to the remoteness of the locations of this species, it is unlikely to be disturbed by common threats. The only threat recorded in the CNDDB is timber harvest activities taking place near one of the locations on private land. There is no documentation of the effects of recreation on this species (Kierstead 2021 pers. comm.).

The most likely threat to this species is climate change which is predicted to have adverse effects on high-elevation species at the upper limits of their range, through changes in the timing of flowering, pollination, and seed germination (Brown et al. 2016, Gremer et al. 2020, Hülber et al. 2010, Mondoni et al. 2012). As Cascade alpine campion is a perennial of unknown lifespan, its populations could persist for decades, even without continual replacement of individuals. However, there is also the danger of reduction of snowpack which could have a detrimental effect on water availability in the summer. Exposure during the winter, due to reduction in snowpack, may not be a concern for this species, as it already grows on rock faces with little snow cover. Climate change may also favor encroachment of denser forest into what is currently relatively open habitat (Kierstead 2021 pers. comm.). To mitigate these threats, seed collection for *ex situ* conservation is recommended for this species.

Taxonomy[4]

Table 3 summarizes this species or subspecies/variety's name status in key literature.

Table 3. Name status of Cascade alpine campion

Entity	Name Status
CNDDB and CNPS	*Silene suksdorfii* Rob.
Jepson eFlora	*Silene suksdorfii* B. L. Rob.
Jepson Manual (1993)	*Silene suksdorfii* Robinson
Flora of North America	*Silene suksdorfii* B. L. Robinson
USDA NRCS[a] PLANTS	*Silene suksdorfii* B. L. Rob.

[a] Natural Resources Conservation Service [NRCS 2021]

Synonymy: No synonyms are listed for this species (Tropicos 2021).

Jepson eFlora link (JEPS 2021): https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=44581

[3] 1909.12 Chapter 10, Section 12.53, components 7, 9, 10, 11 and 12, as appropriate.
[4] 1909.12, Chapter 10, Section 12.53, component 1.

Type locality: The type material for *Silene suksdorfii* consists of three syntypes all from the state of Washington: Mt. Paddo (Adams) (*Suksdorf 47*, GH); Mt. Stewart (*Brandegee 654,* GH); Mt. Rainier (*Piper 623,* GH) (Robinson 1891, JSTOR 2021).

Key literature

Frajman, B., P. Schönswetter, H. Weiss-Schneeweiss, and B. Oxelman. 2018. Origin and diversification of South American polyploid *Silene* section *Physolychnis* (Caryophyllaceae) in the Andes and Patagonia. *Frontiers in Genetics* 9: article 639.

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Persons Contacted

Kierstead, Julie. 2021. Forest Botanist, Shasta-Trinity National Forest (retired). Email correspondence regarding distribution and threats to *Silene suksdorfii,* including a preliminary draft account for the species. Personal communication 25 January 2021.

Author(s) and Date:

Ellen A. Dean, California Native Plant Society, Assistant Rare Plant Botanist, 28 January 2021; revised 5 October 2021.

Reviewer(s) and Date:

Aaron E. Sims, California Native Plant Society, Rare Plant Program Director, 24 June 2021;
Julie Ann Kierstead, USDA Forest Service Region 5, Ecosystem Planning, 14 September 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.

Appendix 1: Known Occurrences

Table 4. Known Occurrences of Cascade alpine campion within California (NRIS, CNDDB, Calflora/CCH databases).

Duplicate records from the same site are given the same record number and are included in red. Rows containing questionable records are highlighted in pink.

Rec. #	Locality	County	Quad	Ref. (Source)	Date Last Obs'd	Population Info	Threats	Land Mgr.	Elev. (ft.)
1	ON NORTH AND NW-FACING SLOPES OF BUMPASS MT, LASSEN VOLCANIC NATIONAL PARK.	Shasta	Reading Peak (4012144)	CNDDB, May 2017 (EO 1)	17-Aug-1980	SITE IS BASED ON A 1980 SHOWERS COLLECTION. POPULATION INFORMATION IS NEEDED FOR THIS SITE.		LASSEN VOLCANIC NP	8700
2	SUMMIT AND SLOPES OF LASSEN PEAK, LASSEN VOLCANIC NATIONAL PARK.	Shasta	Lassen Peak (4012145)	CNDDB, May 2017 (EO 2)	10-Aug-1990	SITE IS BASED ON NUMEROUS COLLECTIONS FROM GILLETT IN 1952 AND 1953, SHOWERS IN 1979 AND 1980, OSWALD IN 1986, AND TAYLOR IN 1990. MAP DETAIL IS NEEDED FOR THIS AREA. INCLUDES FORMER OCCURRENCE #6.		LASSEN VOLCANIC NP	10000
2	Maps to Lassen Peak	Shasta	Lassen Peak (4012145)	Calflora Jan 2021 (wb2112-526)	2-Sep-2019			LASSEN VOLCANIC NP	10348
2	Maps to Lassen Peak	Shasta	Lassen Peak (4012145)	Calflora Jan 2021 (wb2112-536)	2-Sep-2019			LASSEN VOLCANIC NP	10279

Duplicate records from the same site are given the same record number and are included in red. Rows containing questionable records are highlighted in pink.									
Rec. #	**Locality**	**County**	**Quad**	**Ref. (Source)**	**Date Last Obs'd**	**Population Info**	**Threats**	**Land Mgr.**	**Elev. (ft.)**
3	ON SOUTH SIDE OF SUMMIT OF LOOMIS PEAK, LASSEN VOLCANIC NATIONAL PARK.	Shasta	Lassen Peak (4012145)	CNDDB, May 2017 (EO 3)	31-Jul-1980	SITE IS BASED ON A 1980 SHOWERS COLLECTION. POPULATION INFORMATION IS NEEDED FOR THIS SITE.		LASSEN VOLCANIC NP	8400
4	HELEN MOUNTAIN, LASSEN VOLCANIC NATIONAL PARK.	Shasta	Lassen Peak (4012145)	CNDDB, May 2017 (EO 4)	XXXXXXXX	ONLY SOURCE OF INFORMATION FOR THIS SITE IS AN UNDATED COLLECTION BY GILLETT CITED IN "A FLORA OF LASSEN VOLCANIC NATIONAL PARK." NEEDS FIELDWORK.		LASSEN VOLCANIC NP	
5	SUMMIT RIDGE OF BROKEOFF MOUNTAIN, LASSEN VOLCANIC NATIONAL PARK.	Shasta/Tehama	Lassen Peak (4012145)	CNDDB, May 2017 (EO 5)	19-Aug-1960	ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1960 HOWELL COLLECTION. NEEDS FIELDWORK.		LASSEN VOLCANIC NP	9000
6	NORTH SIDE OF RED BUTTE, ON LOWER SLOPE OF MT SHASTA, SHASTA-TRINITY NATIONAL FOREST.	Siskiyou	McCloud (4112232)	CNDDB, May 2017 (EO 7)	28-Aug-1980	SITE IS BASED ON A 1938 COOKE COLLECTION AND A 1980 SHOWERS COLLECTION; "OCCASIONAL IN THE COLONY" IN 1938. NEEDS FIELDWORK.		Shasta-Trinity NF, Mt. Shasta Wilderness	8100

Duplicate records from the same site are given the same record number and are included in red. Rows containing questionable records are highlighted in pink.									
Rec. #	**Locality**	**County**	**Quad**	**Ref. (Source)**	**Date Last Obs'd**	**Population Info**	**Threats**	**Land Mgr.**	**Elev. (ft.)**
7	ABOUT 0.7 MILE SOUTHWEST OF GREEN BUTTE, SOUTHERN SLOPE OF MT SHASTA.	Siskiyou	McCloud (4112232)	CNDDB, May 2017 (EO 8)	24-Jul-1997	ABOUT 25 PLANTS SEEN IN 1997, BUT MORE ADJACENT TO SURVEY AREA.		Shasta-Trinity NF	7720
8	CRAGS LAKE, LASSEN NATIONAL PARK.	Shasta	Manzanita Lake (4012155)	CNDDB, May 2017 (EO 9)	23-Jul-2004	SITE IS BASED ON A 2004 OBSERVATION BY GREENHOUSE IN CALFLORA.		LASSEN VOLCANIC NP	6600
9	CIRQUE ON NORTH FACE OF RAINBOW MOUNTAIN.	Siskiyou	Rainbow Mtn. (4112148)	CNDDB, May 2017 (EO 10)	12-Jul-2005	20 PLANTS OBSERVED IN 2005. PLANTS ARE SIMILAR TO S. GRAYI, ALTHOUGH IN FLOWER SIZE THE PLANTS FALL WITHIN THE STATED RANGE OF S. SUKSDORFII.	SURROUNDING LAND USE IS TIMBER HARVEST.	Private-Sierra Pacific, border with Klamath NF	6900
10	EASTERN SLOPE OF MOUNT SHASTA BETWEEN BREWER CREEK AND ASH CREEK, ABOUT 3.25 AIR MI ENE OF SUMMIT OF MOUNT SHASTA.	Siskiyou	Mt. Shasta (4112242)	CNDDB, May 2017 (EO 12)	14-Aug-2013	50 PLANTS IN SOUTH POLYGON IN 2005. 29 PLANTS IN BOTH POLYGONS IN 2013; LOTS OF GOOD HABITAT FURTHER WEST UP SLOPES OF MT SHASTA. PLANTS ARE SIMILAR TO S. GRAYI, ALTHOUGH IN FLOWER SIZE PLANTS FALL WITHIN STATED RANGE OF S. SUKSDORFII.		Shasta-Trinity NF, Mt. Shasta Wilderness, private	7800
11	Maps to west side of Ski Heil Peak.	Shasta	Lassen Peak (4012145)	Calflora Jan 2021 (gp10132)	28-Jul-2018	1+		LASSEN VOLCANIC NP	8645

Duplicate records from the same site are given the same record number and are included in red. Rows containing questionable records are highlighted in pink.									
Rec. #	**Locality**	**County**	**Quad**	**Ref. (Source)**	**Date Last Obs'd**	**Population Info**	**Threats**	**Land Mgr.**	**Elev. (ft.)**
11	Maps to west side of Ski Heil Peak.	Shasta	Lassen Peak (4012145)	Calflora Jan 2021 (gp10140)	26-Aug-2018	1+		LASSEN VOLCANIC NP	8920
11	Maps to west side of Ski Heil Peak.	Shasta	Lassen Peak (4012145)	Calflora Jan 2021 (gp10402)	28-Jul-2018	1+		LASSEN VOLCANIC NP	8661
12	Maps to west side of Eagle Peak, but observer says he was on the north side of Eagle Peak.	Shasta	Lassen Peak (4012145)	Calflora Jan 2021 (gp10375)	14-Jul-2018	51-100 plants. Growing from cracks in cliff.		LASSEN VOLCANIC NP	8970
13	Maps to Mount Diller.	Shasta	Lassen Peak (4012145)	Calflora Jan 2021 (gp10139)	28-Jul-2018	1+		LASSEN VOLCANIC NP	8865
14	Maps to ridge upslope of Green Butte on south side of Mt. Shasta.	Siskiyou	McCloud (4112232)	Calflora Jan 2021 (gp10421)	5-Aug-2018	1+. Growing from cracks in cliff.		Private inholding within Shasta-Trinity NF and Mt. Shasta Wilderness	9367
14	Maps to ridge upslope of Green Butte on south side of Mt. Shasta.	Siskiyou	McCloud (4112232)	Calflora Jan 2021 (gp10422)	5-Aug-2018	1+. Growing from cracks in cliff.		Private inholding within Shasta-Trinity NF and Mt. Shasta Wilderness	9331

Duplicate records from the same site are given the same record number and are included in red. Rows containing questionable records are highlighted in pink.									
Rec. #	**Locality**	**County**	**Quad**	**Ref. (Source)**	**Date Last Obs'd**	**Population Info**	**Threats**	**Land Mgr.**	**Elev. (ft.)**
14	Maps to ridge upslope of Green Butte on south side of Mt. Shasta.	Siskiyou	McCloud (4112232)	Calflora Jan 2021 (wb2112-501)	31-Aug-2019			Private inholding within Shasta-Trinity NF and Mt. Shasta Wilderness	9364
14	Maps to ridge upslope of Green Butte on south side of Mt. Shasta.	Siskiyou	McCloud (4112232)	Calflora Jan 2021 (wb2112-503)	31-Aug-2019			Private inholding within Shasta-Trinity NF and Mt. Shasta Wilderness	9379

Appendix 2: Additional Considerations at the Forest Level

<This section, including the next 5 subheadings, would be filled out by **Forest Service botanists**.>

<Forest Name>

Geographic distribution within the Forest

A. Scarce or isolated
B. Patchy or gaps
C. Contiguous

<Select a geographic distribution rank and provide references or cite 'specialist expertise, <name>' where appropriate.>

Abundance of the species on the Forest

A. Rare – current abundance is low enough that stochastic and other factors could lead to potential imperilment.
B. Uncommon – current abundance is large enough that demographic stochasticity is not likely to lead to rapid local extinction, but, in combination with highly variable environmental factors, could pose a threat.
C. Common – current abundance is large enough that species persistence is not threatened by demographic stochasticity in combination with environmental variation.
D. Insufficient information to draw inferences about criterion.

<Select a species abundance rank and provide references or cite 'specialist expertise, <name>' where appropriate.>

Population trend on the Forest

A. Significant downward or suspected downward population trend.
B. Stable population.
C. Upward population trend.
D. Insufficient information to draw inferences about criterion.

<Select a population trend rank and provide references or cite 'specialist expertise, <name>' where appropriate.>

Habitat trend on the Forest

A. Decline in habitat quality or quantity.
B. Stable amounts of suitable or potential habitat, relatively unchanged habitat quality.
C. Improving habitat quality or increasing amounts of suitable or potential habitat.
D. Insufficient information to draw inferences about criterion.

<Select a habitat trend rank and provide references or cite 'specialist expertise, <name>'where appropriate.>

Vulnerability of habitat on the Forest

A. Substantial modification of habitat has occurred or is anticipated with conditions departing from expectations based on NRV, and/or habitat is impacted by modern stressors such as drought, climate change, high intensity wildfire and wildfire suppression disturbances, loss of natural openings due to historical wildfire suppression, nonnative invasive species, water impoundments and diversions, and recreation, etc.
B. Habitat modification is likely to result in ecological patterns similar to the range of historical conditions, but is being impacted by modern stressors.
C. Habitat resilient, changes are similar in frequency and intensity to those expected from NRV, and modern stressors not significant.
D. Insufficient information to draw inferences about criterion.

<Select a habitat vulnerability rank and provide references or cite 'specialist expertise, <name>'where appropriate.>

Additional Forest specific information related to the SCC determination

<This section is provided for Forest botanists to add additional Forest specific information that is not captured in the section above, if necessary. Provide a narrative description here of the additional relevant information. State "No additional information" if this section is not used.>