Species: *Eurybia merita* (A. Nelson) G. L. Nesom, subalpine aster

Photo Source: Calflora 2023, CalPhotos 2023

Photo Credits: Upper left and right and bottom center: Donald Burke (Creative Commons CC-BY-NC 4.0 license); lower left and right: Steve Matson.

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 subalpine aster		
Entity	**Status**	**Status Definition**
NatureServe CA[a]	G5, SH	G5: Demonstrably Secure — Common; widespread and abundant. SH: Possibly extirpated — Species occurred historically in the state, and there is some possibility

		that it may be rediscovered. All sites are historical; the element has not been seen for at least 20 years, but suitable habitat still exists.
California Rare Plant Rank[b]	2B.3	2B: Rare and endangered in California, more common elsewhere. This taxon was added to the *CNPS Inventory of Rare and Endangered Plants of California* in 2006 and has undergone no changes since that date.
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]	SNR, HP-List 3	SNR: Not Ranked HP-List 3: Species for which more information is needed before status can be determined but that may be threatened or endangered in Oregon or throughout their range.
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 2023, 2023a]
[b] California Native Plant Society [CNPS 2023]
[c] California Department of Fish and Wildlife [CDFW 2023]
[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 2023]
[f] US Department of Interior Bureau of Land Management [BLM 2022]
[g] Oregon Biodiversity Information Center [ORBIC 2023]
[h] Oregon Department of Agriculture [ODA 2018]
[i] Nevada Division of Natural Heritage [NDNH 2022]
[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.

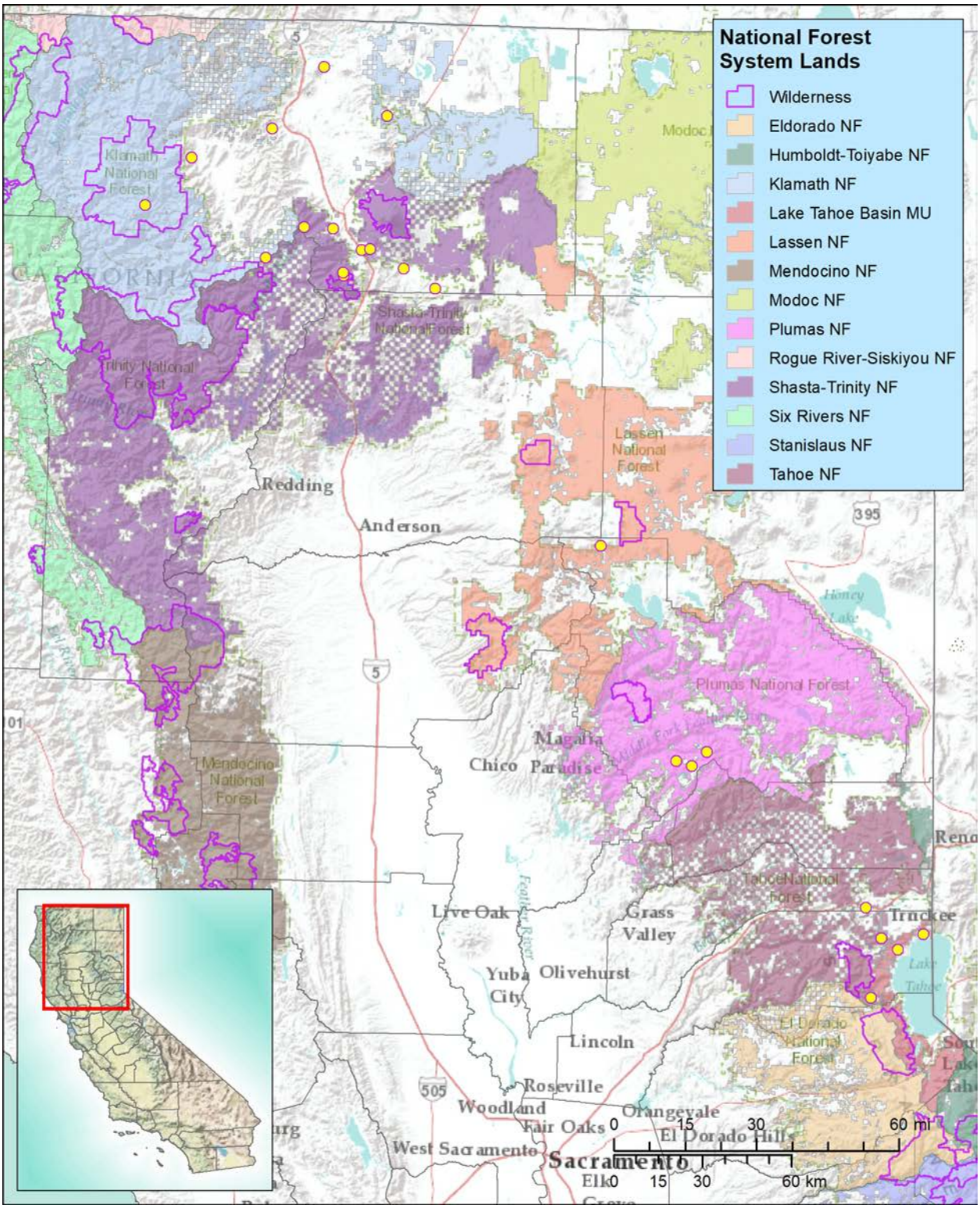
Distribution, abundance, and population trend on the planning unit[1]

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.

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

Table 2. Known occurrence frequency of subalpine aster 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
Klamath:	18, 22	0	2	0	1	29-Aug-1969	2
Lake Tahoe Basin MU:	4	0	1	0	1	1-Jul-1998	1
Plumas:	6, 8	0	2	1	1	30-Jul-2018	2
Shasta-Trinity:	17, 21	0	2	1	1	14-Aug-2022	2
Tahoe:	2, 5	0	2	0	2	6-Aug-1910	2
Totals:	N/A	0	9	2	6	N/A	9



Sources: *Distribution*: Calflora 2023, CCH2 2023, CNDDB 2023, Green 2023 pers. comm., UC/JEPS 2023. *Baselayers*: 2013 National Geographic Society, i-cubed, Esri, Garmin, NOAA, NPS, USGS.

Subalpine aster was last updated in the CNDDB on 1 June 2016 (CNDDB 2023), 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.

Outside of California, subalpine aster occurs in British Columbia, Idaho, Montana, Wyoming, South Dakota, Utah, Washington, and Oregon (FNA 1993+, NRCS 2023). Within California, it occurs in the Klamath Ranges (KR), High Cascade Range (CaRH), and northern High Sierra Nevada (nSNH) bioregions in Nevada, Placer, Plumas, and Siskiyou counties (CCH2 2023, Green 2023 pers. comm.). Nine of the 23 California records are located on U.S. National Forest lands: Klamath NF (2), Lake Tahoe Basin Management Unit (1), Plumas NF (2), Shasta-Trinity NF (2), and Tahoe NF (2). One record (#23) is located in Wilderness Area (the Marble Mountain Wilderness). Of the non-National Forest records, one is located on State Parks land, one is in the Warner Valley Wildlife Area, and 12 are on lands of unknown ownership. Nineteen of the 23 records are based on historical herbarium specimens and have not been visited in over 20 years; the other four records are recent. Only one observer noted an approximate population size (record #21 with fewer than 10 plants) (Green 2023 pers. comm.). Observers of one record from Placer County and one from Plumas County noted that the plant was uncommon when observed; at a second location in Placer County the observer noted that the plants do not flower most years.

Of the 23 California records of subalpine aster included in Table 4, only one is currently included in the CNDDB (record #10). The author of the 2012 *Jepson eFlora* treatment of *Eurybia*, Luc Brouillet, examined just two herbarium specimens of California subalpine aster at the Missouri Botanical Garden herbarium, both from Siskiyou County (Brouillet 2004, JEPS 2023). He did not examine the holdings of any California herbaria. However, Brouillet also noted that further examination of specimens determined to *E. radulina* could reveal additional localities for *E. merita* (Brouillet 2004, Lazar and Bittman 2006). In the past two years, a number of additional specimens in California herbaria have been examined and identified as subalpine aster, extending its range, and more locations and specimens will undoubtably be found. The 22 non-CNDDB records reported here should be evaluated for inclusion in the CNDDB.

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

Subalpine aster is a perennial herb with erect stems that emerge from woody rhizomes; the flowers are borne in heads, with purple disk flowers in the center and purple ray flowers along the edge. It blooms from July through September (Calflora 2023, CCH2 2023, JEPS 2023, UC/JEPS 2023). In California, plants have usually been observed in the shade or openings of dry, sometimes rocky, lower and upper montane coniferous forest at 3900–6838 ft in elevation; the plant has occasionally been reported from meadows or montane chaparral (Calflora 2023, CCH2 2023). An examination of the mapped substrate types where this species occurs in California did not reveal a preference for any particular substrate (CDC 2015). In Wyoming, it is

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

found in sites with finer-textured soils and less bare ground (Wright and Tinker 2012). In California, associated species include: *Abies concolor, A. magnifica, Pinus jeffreyi, P. ponderosa, P lambertiana, Pseudotsuga menziesii, Arctostaphylos* spp., and *Ceanothus* spp. (CCH2 2023).

The genus *Eurybia*, with approximately 23 species, is distributed in North America and Eurasia (FNA 1993+, Selliah and Brouillet 2008). There are three species of *Eurybia* in California: *E. integrifolia*, *E. radulina*, and subalpine aster (*E. merita*) (JEPS 2023). Subalpine aster was not thought to occur in California until 2004 (Brouillet 2004), and the species was first included in a flora of California in 2012 (JEPS 2023). Before that time, specimens of subalpine aster were identified as *E. radulina*, which differs from subalpine aster in having densely villous distal stems, coarsely serrated leaf margins, clasping leaf bases, phyllaries without purple margins (usually), and white rays (usually). In contrast, subalpine aster has villosulous distal stems, entire to serrulate leaf margins, slightly auriculate leaf bases, purple margined phyllaries, and purple rays (FNA 1993+, JEPS 2023). Although these characters, especially phyllary margin coloration, are helpful in separating the two species, the possibility of intermediate morphologies needs more investigation (Brouillet 2004).

The flowers in the heads of subalpine aster are of two kinds: bisexual disk flowers in the center and pistillate ray flowers around the edge; both types of flowers are capable of producing fruits (FNA 1993+). Although the pollinators of subalpine aster are unknown, pollinators that have been observed visiting other *Eurybia* species include beetles, wasps, bees, and butterflies (CPC 2023). The fruits are dry, indehiscent, one-seeded achenes (cypselae), and the pappus bristles attached to the achenes adapt them for wind dispersal (FNA 1993+). A comment on the specimen-label from one of the most southern locations of subalpine aster (record #4, from the Tahoe Basin in Placer County) noted that this species does not bloom most years (CCH2 2023). Clonal reproduction via rhizomes may be an important mode of reproduction. Very little other information is available on the ecology of subalpine aster. Although subalpine aster was present in the plots of three different burn studies in Montana and Wyoming, the effects of fire on this herb were not summarized in any of the studies (Metlen et al. 2006, Wright and Tinker 2012, Romme et al. 2016). Given that the plants have rhizomes that become woody with age, subalpine aster may be able to regenerate after fire, depending on temperature and severity.

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

Subalpine aster has a state rank of perhaps extirpated (SH) in California, which needs to be reevaluated in light of new information extending its geographic range (CNDDB 2023, CNPS 2023). It is considered critically imperiled (S1) in Utah, imperiled (S2) in Washington, vulnerable (S3) in Wyoming, apparently secure (S4) in Montana, and secure (S5) in British Columbia (NatureServe 2023). The species has not been ranked in Oregon, Idaho, or South

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

Dakota (NatureServe 2023). Two of the recent California location records for subalpine aster have site quality rankings; one is rated Good, and one is rated Fair (Green 2023 pers. comm.). Little is known about the ecology of this species, including population trends and its response to fire. Most of the known locations are in mid- to high-elevation, dry coniferous forest, which is not a specialized habitat. However, mid- to high-elevation dry forest on National Forest lands is at risk from wildfire suppression and fuels reduction tactics, including dozer lines, burn piles, mastication, thinning (which causes ground disturbance), and invasive species that occur after disturbance (Kierstead 2023 pers. comm.). Field work is needed to understand the status of populations of this species in California. Currently, it is not targeted for seed collection for *ex situ* conservation (CaPR 2023, CPC 2023).

Taxonomy[4]

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

Table 3. Name status of subalpine aster

Entity	Name Status
CNDDB and CNPS	*Eurybia merita* (A. Nels.) Nesom
Jepson eFlora	*Eurybia merita* (A. Nelson) G. L. Nesom
Jepson Manual (1993)	Not included
Flora of North America	*Eurybia merita* (A. Nelson) G. L. Nesom
USDA NRCS[a] PLANTS	*Eurybia merita* (A. Nelson) G. L. Nesom

[a] Natural Resources Conservation Service [NRCS 2023]

Synonymy: *Aster meritus* A. Nelson, *A. richardsonii* var. *meritus* (A. Nelson) Raup, *A. sibiricus* var. *meritus* (A. Nelson) Raup (FNA 1993+, Tropicos 2023).

Jepson eFlora link (JEPS 2023): https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=85317

Type locality: Wyoming. Yellowstone National Park (*Nelson 6754* RM) (Nelson 1904, JSTOR 2023).

Key literature

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[4] 1909.12, Chapter 10, Section 12.53, component 1.

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Persons Contacted

Green, Kaitlyn. 2023. Data Coordinator, California Native Plant Society. Email correspondence regarding recent/unprocessed survey forms for *Eurybia merita*. Personal communication 30 January 2023.
Kierstead, Julie. 2023. Forest Botanist, Shasta-Trinity National Forest (retired). Email correspondence regarding newly annotated specimens of *Eurybia merita* and edits on threats made on earlier account draft. Personal communications 1 September 2022 and 27 January 2023.

Author(s) and Date:

Ellen A. Dean, California Native Plant Society, Rare Plant Botanist, 30 January 2023

Reviewer(s) and Date:

Adam J. Searcy, California Native Plant Society, Rare Plant Scientific Coordinator, 26 January 2023; R. Douglas Stone, California Native Plant Society, Associate Rare Plant Botanist, 26 January 2023; Julie Ann Kierstead, USDA Forest Service Region 5 (retired), 27 January 2023

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 subalpine aster 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	Donner Lake Sierra Nevada Mountains	Nevada	Norden (3912033)	CCH2, Jan. 2023 (JEPS31914)	22 Aug 1886			Unknown	
1	Donner Lake	Nevada	Norden (3912033)	CCH2, Jan. 2023 (CAS:DS:119505)	1800s			Unknown	
2	Woods along Truckee River Truckee River	Placer	Tahoe City (3912022)	CCH2, Jan. 2023 (UC193318)	16 Sep 1883	woods along river		Tahoe NF	
3	Placer County: Northwest corner of the Tahoe Basin. Burton Creek State Park. Eastern side of Antone Meadow. Near dam. North side of pond.	Placer	Tahoe City (3912022)	CCH2, Jan. 2023 (DAV232421)	30-Aug-2019	Pine-fir forest. Dry forest floor. Uncommon perennial. Rays dark purple. Disk flowers light purple.		Burton Creek SP	6838
3	Placer County: Northwest corner of the Tahoe Basin. Burton Creek State Park. Eastern side of Antone Meadow. Near dam. North side of pond.	Placer	Tahoe City (3912022)	CNDDB recent survey form (Green 2023 pers. comm.)	30-Aug-2019	Pine-fir forest. Dry forest floor. Uncommon perennial. Rays dark purple. Disk flowers light purple. Site condition Fair.		Burton Creek SP	6838

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.)**
4	nSNH; Tahoe north shore; Snow Creek Watershed, Tahoe Vista/Kings Beach; Middle Fork Snow Creek above golf course along trails.	Placer	Kings Beach (3912021)	CCH2, Jan. 2023 (JEPS126391)	17-Aug-1997	Near open meadow dry mixed coniferous forest understory.		Lake Tahoe Basin Management Unit	6300
4	Tahoe north shore; Snow Creek Watershed, Tahoe Vista/Kings Beach; Middle Fork Snow Creek above golf course.	Placer	Kings Beach (3912021)	CCH2, Jan. 2023 (JEPS126298)	1-Jul-1998	Along trails near open meadow dry mixed coniferous forest understory, in shade beneath Pinus jeffreyi, Pinus ponderosa, Abies concolor. Most years does not bloom.		Lake Tahoe Basin Management Unit	6300
5	Near entrance to Blackwood Canyon, Lake Tahoe	Placer	Homewood (3912012)	CCH2, Jan. 2023 (CAS:BOT:3806)	6-Aug-1910			Tahoe NF	
6	1 mile west of Fowler Pk.	Plumas	Dogwood Peak (3912171)	CCH2, Jan. 2023 (CAS:BOT:887753)	17-Sep-1980	Red Fir Forest. Perennial, stems 1-3 dm. tall. Normal size stems and small size stems. Not common.		Plumas NF	5900
7	300 yards northeast of the metal gate, east side of Forest Road 22N68, about 100 yards west of the South Fork of the Feather River, about 1/2 mile northeast of Little Grass Valley Reservoir, about 5 miles (air) northeast of La Porte	Plumas	Onion Valley (3912078)	CCH2, Jan. 2023 (JEPS114521)	14-Aug-2008	Mixed Evergreen Forest (Yellow Pine Forest), on dry rocky soil. Normal size plant. Flowers purple		Unknown (border of Plumas NF)	5154

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.)**
8	About one-half mile by road east to La Porte Road, about 1 1/2 miles (air) northwest of Pilot Peak.	Plumas	Onion Valley (3912078)	CCH2, Jan. 2023 (JEPS129277)	30-Jul-2018	Mixed Evergreen Forest. On dry bare soil, forming large colonies, on the north side of the road to Cleghorn Bar. Normal size plant. Common. Flowers light purple.		Plumas NF	6267
9	Lee's Camp	Plumas	Mt. Harkness (4012143)	CCH2, Jan. 2023 (UC297887)	25-Aug-1926			Warner Valley Wildlife Area	
9	Lee's Camp	Plumas	Mt. Harkness (4012143)	CCH2, Jan. 2023 (CAS:DS:187482)	25-Aug-1926			Warner Valley Wildlife Area	

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.)**
10	METCALF'S RANCH, NORTHEAST BASE OF MOUNT EDDY, 3900 FEET. LOCATION VAGUE, UNABLE TO LOCATE METCALF'S RANCH. METCALF RR STATION WAS LOCATED NEAR EDGEWOOD, TO THE NNE OF MOUNT EDDY. MAPPED AS A LARGE NON-SPECIFIC FEATURE TO ENCOMPASS NORTHEAST BASE OF MOUNT EDDY WHERE ELEVATION IS 3900 FEET.	Siskiyou	Mount Eddy (4112234)	CNDDB, Jan. 2023 (EO 1)	30-Jul-1936	IN MOIST SOIL IN THE FOREST. COLLECTED HERE BY HELLER IN 1936 AS ASTER RADULINUS, LATER DETERMINED TO BE EURYBIA MERITA BY BROUILLET (2004). THIS IS THE ONLY KNOWN LOCATION OF THIS SPECIES IN CALIFORNIA. NEEDS FIELDWORK.		Unknown	3900
10	ne base of Mt. Eddy, Metcalf's Ranch Mt. Eddy	Siskiyou	Mount Eddy (4112234)	CCH2, Jan. 2023 (UC893627)	24-Aug-1915	moist soil in forest		Unknown	3900

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.)**
10	Metcalf's ranch, northeast base of Mt. Eddy	Siskiyou	Mount Eddy (4112234)	CCH2, Jan. 2023 (CAS:BOT:3808)	24-Aug-1915	In moist soil in the forest. The prevalent tree is Douglas fir with some white fir and sugar pine, after cutting the original stand of Jeffrey pine. The common undershrubs are Ceanothus and Uva-ursi in the dry places with Salix and Corylus in low ground.		Unknown	3900
10	Metcalf's ranch, northeast base of Mt. Eddy	Siskiyou	Mount Eddy (4112234)	CCH2, Jan. 2023 (CAS:DS:67595)	24-Aug-1915	In moist soil in the forest. The prevalent tree is Douglas fir with some white fir and sugar pine, after cutting the original stand of Jeffrey pine. The common undershrubs are Ceanothus and Uva-ursi in the dry places with Salix and Corylus in low ground.		Unknown	3900
11	McCloud	Siskiyou	McCloud (4112232)	CCH2, Jan. 2023 (CAS:BOT:3811)	24-Jul-1913			Unknown	
11	McCloud	Siskiyou	McCloud (4112232)	CCH2, Jan. 2023 (CAS:BOT:3807)	Jul-12			Unknown	
12	Sisson [Mt. Shasta City]	Siskiyou	City Of Mount Shasta (4112233)	CCH2, Jan. 2023 (CAS:DS:301820)	21-Jul-1912			Unknown	

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.)**
12	Sisson [Mt. Shasta City]	Siskiyou	City Of Mount Shasta (4112233)	CCH2, Jan. 2023 (CAS:BOT:3805)	21-Jul-1912			Unknown	
12	Mt. Shasta	Siskiyou	City Of Mount Shasta (4112233)	CCH2, Jan. 2023 (UC572797)	6-Aug-1937	chaparral - transition		Unknown	4000
12	Mount Shasta, California	Siskiyou	City Of Mount Shasta (4112233)	CCH2, Jan. 2023 (UC218899)	9 Aug 1897			Unknown	
13	Goosenest foothills	Siskiyou	Grass Lake (4112262)	CCH2, Jan. 2023 (UC166590)	20-Jul-1910	foothills in damp soil		Unknown	5000
13	Goosenest foothills	Siskiyou	Grass Lake (4112262)	CCH2, Jan. 2023 (CAS:DS:6046)	20-Jul-1910	Damp soil.		Unknown	5000
14	forest road 36N06 at crossing of Tate Creek; McCloud River drainage (headwaters)	Siskiyou	Lake Mccloud (4112221)	CCH2, Jan. 2023 (JEPS83582)	5-Aug-1987	base of moist slope, at margin of riparian thicket		Unknown	4870
15	summit to Ager; Northern Siskiyou Co	Siskiyou	Bogus Mountain (4112274)	CCH2, Jan. 2023 (JEPS31916)	Sep. 1901			Unknown	
16	Siskiyou County: Castle Lake. [Elevation a general measurement provided by Goldman for entire project; coordinates added by label maker]	Siskiyou	Seven Lakes Basin (4112224)	CCH2, Jan. 2023 (DAV231026)	1960			Unknown	5200

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.)**
16	Castle Lake	Siskiyou	Seven Lakes Basin (4112224)	CCH2, Jan. 2023 (CAS:BOT:3742)	24-Jul-1921			Unknown	
17	6.2 mi above and sw of junction with road to, along road to Castle Lake Gumboot Lake; Scott Creek Camp	Siskiyou	Seven Lakes Basin (4112224)	CCH2, Jan. 2023 (JEPS24788)	1-Sep-1958	under dense stands of Douglas firs		Shasta-Trinity NF	4700
18	meadow just below and n Scott Mountain road summit; just below and n of Scott Mountain road summit	Siskiyou	Scott Mountain (4112236)	CCH2, Jan. 2023 (JEPS81789)	2-Sep-1958	at edges of meadow		Klamath NF	5300
18	just below and n of Scott Mountain	Siskiyou	Scott Mountain (4112236)	CCH2, Jan. 2023 (JEPS24815)	2-Sep-1958	edges of meadow		Klamath NF	5300
18	meadow just below and n of Scott Mountain road summit	Siskiyou	Scott Mountain (4112236)	CCH2, Jan. 2023 (JEPS81790)	2-Sep-1958	edge of meadow		Klamath NF	5300
18	Summit of Scott Mts. n. of Carrville	Siskiyou	Scott Mountain (4112236)	CCH2, Jan. 2023 (CAS:BOT:282865)	24-Aug-1936			Klamath NF	
19	on Fort Jones and Yreka Road; Fort Jones, Yreka Road	Siskiyou	Yreka (4112266)	CCH2, Jan. 2023 (UC166191)	22-Jul-1908	Dry woods.		Unknown	
19	Roadside west of Forest House Mountain.	Siskiyou	Yreka (4112266)	UC/JEPS online database, Jan. 2023 (JEPS31913)	22-Jul-1908			Unknown	

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.)**
20	Shackleford Creek Trail, Marble Mts.	Siskiyou	Boulder Peak (4112351)	CCH2, Jan. 2023 (CAS:DS:297402)	9-Aug-1939			Unknown	
20	Shackleford Creek Trail, Marble Mts.	Siskiyou	Boulder Peak (4112351)	CCH2, Jan. 2023 (CAS:BOT:271727)	9-Aug-1939			Unknown	
21	Along trail to Caldwell Lakes.	Siskiyou	China Mtn. (4112245)	Calflora, Jan. 2023 (po236053)	14-Aug-2022	Open, dry coniferous forest with Pinus jeffreyi, Arctostaphylos patula, and Xerophyllum tenax.		Shasta-Trinity NF	6237
21	Along trail to Caldwell Lakes.	Siskiyou	China Mtn. (4112245)	CNDDB recent survey form (Green 2023 pers. comm.)	14-Aug-22	Fewer than 10 individuals. All flowering. Open, dry coniferous forest with Pinus jeffreyi, Arctostaphylos patula, and Xerophyllum tenax. Site condition good.		Shasta-Trinity NF	6212
22	Along trail above, between Abbotts Upper Cabin and English Lake Willow Springs, Salmon Mountains, Marble Mountain Wilderness Area, English P	Siskiyou	English Peak (4112342)	UC/JEPS online database, Jan. 2023 (UC1409463)	29-Aug-69	Along trail in dry gravelly soils of the Montane Scrub.		Klamath NF (Marble Mountain Wilderness)	5500
23	Howard Mount Shasta	Siskiyou	City Of Mount Shasta (4112233)	UC/JEPS online database, Jan. 2023 (UC618851)	19-Aug-38	Along roadside in the chaparral; very dry		Unknown	4000

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.>