Species: *Artemisia tripartita* Rydberg subsp. *tripartita*, threetip sagebrush

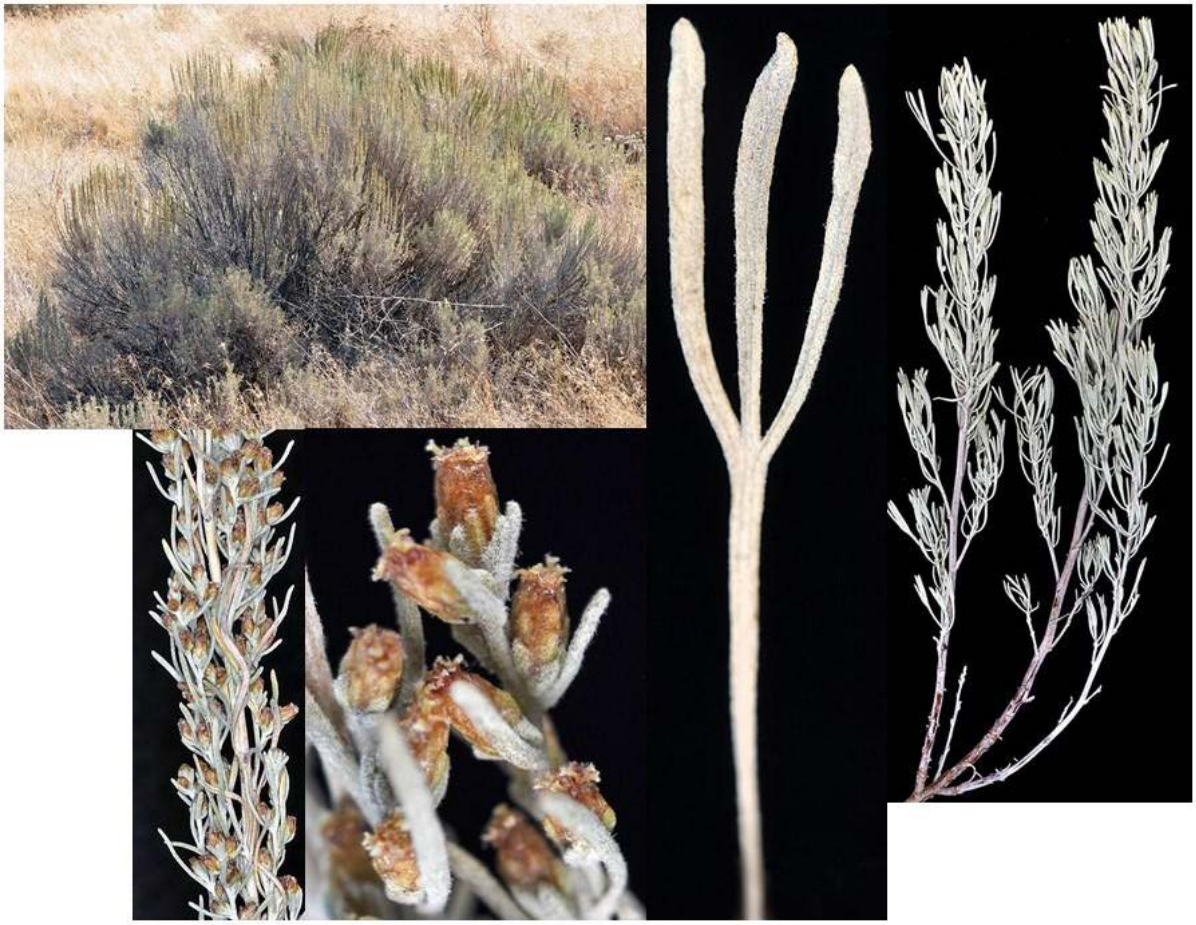

Photo Source: Oregon Flora Image Project (2022)

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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 threetip sagebrush		
Entity	**Status**	**Status Definition**
NatureServe CA[a]	G5T4T5, S2	G5: Demonstrably Secure — Common; widespread and abundant. T: Subspecies and varieties receive a **T-rank** attached to the G-rank.

		T4: Apparently Secure — Uncommon but not rare; some cause for long-term concern due to declines or other factors. T5: Demonstrably Secure — Common; widespread and abundant. Range Rank — A numeric range rank (i.e., T4T5) is used to indicate the range of uncertainty about the exact status of this subspecies. S2: Imperiled — Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very 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 2012 and has undergone no changes since that time (CNPS 2022).
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]	Not listed	
Oregon State Listing[h]	Not listed	
NatureServe NV[i]	Not listed	
Nevada State Listing[j]	Not listed	

[a] California Natural Diversity Database, California Dept. of Fish & Wildlife [CNDDB 2022, 2022a]
[b] California Native Plant Society [CNPS 2022]
[c] California Department of Fish and Wildlife [CDFW 2022]
[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 2022]
[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 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.

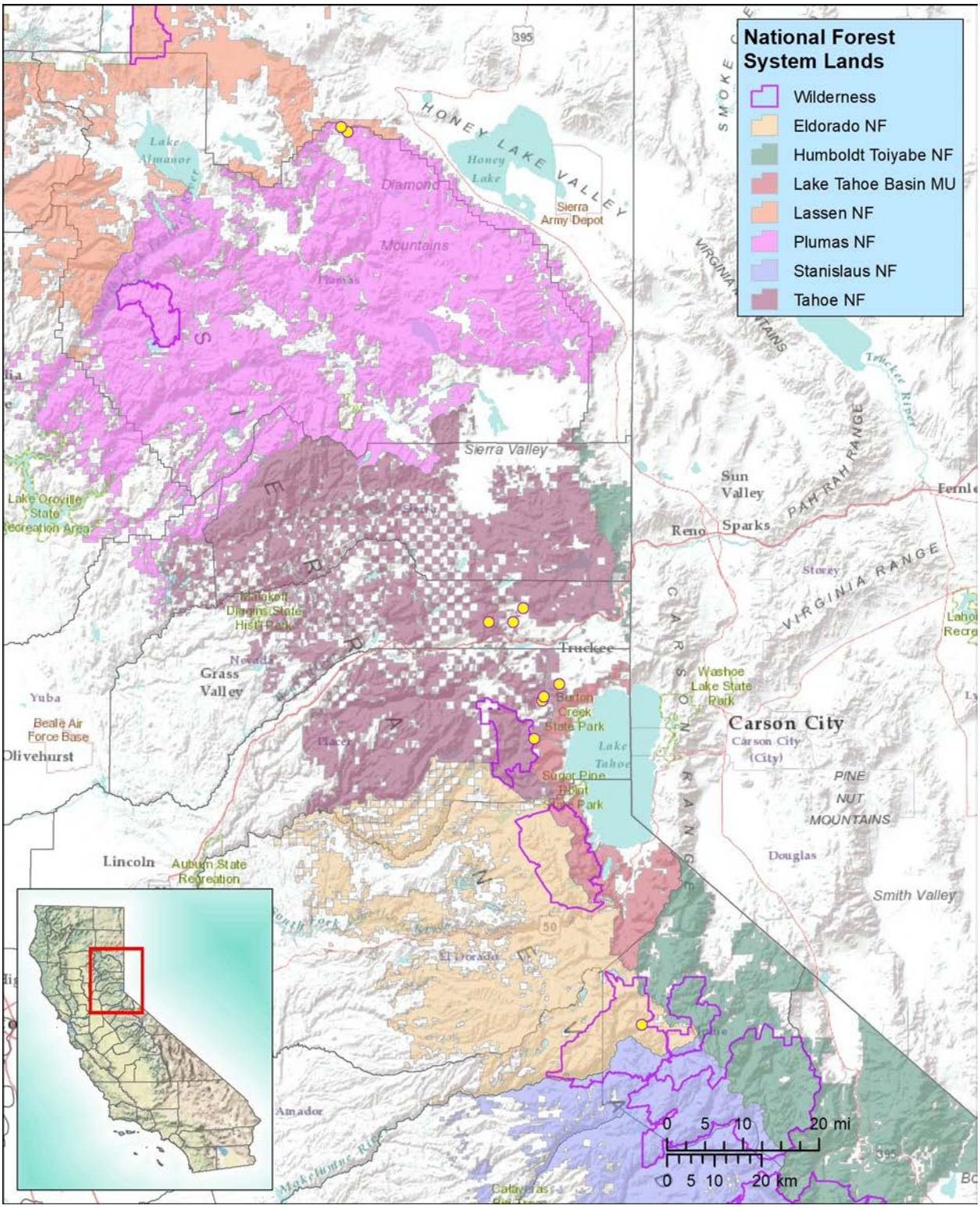
Distribution, abundance, and population trend on the planning unit[1]

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.

Table 2. Known occurrence frequency of threetip sagebrush 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
Eldorado:	10	0	1	0	1	1-Jan-1992	1
Lassen:	5, 6	1	1	2	0	13-Jul-2015	2
Tahoe:	2, 3, 8, 9	2	2	4	0	14-Jul-2021	4
Totals:	N/A	3	4	6	1	N/A	7

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



Sources: *Distribution*: NRIS 2020, Calflora 2022, CCH2 2022, CNDDB 2022, Greene 2022 pers. comm. *Baselayers*: 2013 National Geographic Society, i-cubed, Esri, Garmin, NOAA, NPS, USGS.

Threetip sagebrush was last updated in the CNDDB on October 5, 2012 (CNDDB 2022), 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.

Threetip sagebrush (*Artemisia tripartita* subsp. *tripartita*) occurs from British Columbia south to California, as well as in Idaho, Montana, Wyoming, Colorado, Utah, and Nevada (NRCS 2022). Another subspecies, *A. tripartita* subsp. *rupicola* is endemic to Wyoming (NRCS 2022). In California, threetip sagebrush is known from Lassen, Plumas, Nevada, Placer, and Alpine counties in the High Sierra Nevada (SNH) bioregion. All locations are on the eastern side of the Sierran crest (Table 4). Seven of the 10 Californian records are located on U.S. National Forest lands: two are on the Lassen NF, four are on the Tahoe NF, and one is on the Eldorado NF. The location on the Eldorado NF is in the Mokelumne Wilderness. The other three records are located on private land or land of unknown ownership. Only one location record is historical (not seen in the past 20 years); the other locations have been documented since 2003. Five of the locations have been censused, with populations ranging from dozens of plants to 100s of plants. None of the locations have been visited more than once.

Of the 10 Californian records of threetip sagebrush, four are currently included in the CNDDB. The six non-CNDDB records are located at least 0.9 mile from a known CNDDB occurrence. These six records seem to represent new occurrences and should perhaps be evaluated for inclusion in the CNDDB. As related below, threetip sagebrush is not yet included in the *Jepson eFlora* (JEPS 2022) and may be under-reported. At the bottom of Table 4 are two records highlighted in pink. The plants collected northeast of Lake Van Norden (Nevada Co.) are likely *A. arbuscula* subsp. *thermopola* (Sims and Bittman 2012). The other collection from Yosemite National Park has a duplicate identified as *A. rothrockii* at the California Academy of Sciences.

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

Threetip sagebrush is an aromatic shrub 2–15 (20) dm tall. In California, it has been observed in flower during August; elsewhere, it has been observed in flower from June to October (FNA 1993+, CNPS 2022. Oregon Flora 2022). In California, plants have been found in rocky or meadow openings in upper montane coniferous forest, often on volcanic substrates at 1900–2600 m (6245–8530 ft) (CNPS 2022, Calflora 2022, CCH2 2022). Plant associates include: *Pinus contorta* subsp. *murrayana, Artemisia tridentata, Monardella odoratissima, Ericameria nauseosa, Holodiscus discolor,* and *Chaenactis douglasii* (CNDDB 2022, Green 2022 pers. comm.).

The 250–500 species of the genus *Artemisia* are mainly concentrated in the Northern Hemisphere (FNA 1993+, JEPS 2012, Turi et al. 2014). Threetip sagebrush has been placed in

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

the sagebrush subgenus, *Artemisia* subg. *Tridentatae*, which is nearly exclusively found in North America (Shultz 2009, Mosyakin et al. 2017). Phylogenetic analyses have found that threetip sagebrush is a close relative of morphologically similar *A. tridentata* (Kornkven et al. 1999, Garcia et al. 2011), and the two taxa may hybridize (Turmenstein 1999, Sims and Bittman 2012). Threetip sagebrush is not yet included in the *Jepson eFlora*, and Californian specimens of this taxon might be mistaken for *A. tridentata* (JEPS 2022). Threetip sagebrush can be distinguished from *A. tridentata* in sometimes having longer leaves (1.5–4 cm vs. 0.5–3.5 cm) that usually have narrower blades (1–1.5 mm wide vs (1–)2–7 mm wide) and having narrower leaf lobes (to 0.5 mm vs ca. 1.5 mm) that are deeper (>1/3 the blade length vs up to 1/3 the blade length) (Shultz 2009). In addition, threetip sagebrush sometimes has leaf lobes that are 3-cleft, appearing to have 5 to 7 or even 9 leaf lobes instead of 3 (Abrams 1960).

Although big sagebrush has been known to live for as long as 200 years, plants of threetip sagebrush may not be as long-lived. There are reports of plants reaching maturity and senescing in as little as three years (Shultz 2009). All members of subgenus *Tridentatae* have two types of roots, lateral roots near the soil surface and tap roots that grow quickly to great depths to utilize deep sources of water (Shultz 2009). In addition, all sagebrush species have anatomical leaf and stem features that allow them to conserve and store water and survive a certain amount of water stress (Shultz 2009). However, some populations of threetip sagebrush are winter deciduous and found in more mesic habitats (Shultz 2009). Unlike many sagebrush species, some individuals of threetip sagebrush have the ability to re-sprout from stem tissue (crowns) beneath the soil surface after a fire or mechanical disturbance; this condition is often described as “root-sprouting” (Winward 1980, Shultz 2009, JEPS 2022). The flowers of threetip sagebrush are borne in small heads, and all flowers in a head are bisexual and can produce a fruit (Shultz 2009). Pollinators of threetip sagebrush are unknown, but *A. tridentata* is pollinated by bees, moths, and wind (CPC 2022). Threetip sagebrush is known to produce large quantities of fruits, which are minute, dry, indehiscent, and one-seeded achenes (or cypselae), lacking pappus, wings, or other dispersal aids (Turmenstein 1999, Shultz 2009)). They are carried by wind or dispersed by birds when attached to feathers or feet (Turmenstein 1999, Shultz 2009). Under experimental conditions, seed germination is described as moderate to rapid (Turmenstein 1999).

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

Threetip sagebrush ranges from central British Columbia southeast to the Rocky Mountains and south to California, where it reaches its southernmost range limit (Shultz 2009, NRCS 2022). It is fairly common, except in California and Wyoming, where it is considered critically imperiled (NatureServe 2022). Because it often grows on deep, volcanic soils that are preferred for agriculture, its habitat has been fragmented throughout its range, with remaining populations occurring as isolated islands on the edges of drainages and the bases of mountain slopes (FNA 1993+, Turmenstein 1999, Shultz 2009). Only one of the 10 Californian location records has an occurrence ranking (record #5), and that one is rated Excellent. The population on Ward Peak

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

(Placer Co.) is on private land near the Alpine Meadows Ski Area and is potentially threatened by expansion of the ski area or erosion (Bainbridge 2017, CNPS 2022). Potential threats to other locations include non-native species, which could suppress recruitment or alter fire regimes, wind energy development, off road vehicles, grazing, and mechanical ripping (Bainbridge 2017). As threetip sagebrush occurs at high elevations, it may be affected by decreased snowpack and lower water availability due to climate change. Although this plant has adaptations to prevent water loss, its preferred habitat is more mesic than some other sagebrush species, and even extremely drought resistant species, such as *A. tridentata*, have lost populations due to unstable weather patterns over the past 35 years (Shultz 2009). The ability of some threetip sagebrush plants to regenerate from underground stems may provide some protection from increased fire frequency or mechanical disturbance due to fire-fighting activities. However, populations of this plant vary in their ability to sprout after fire, depending on ecotype, fire severity, and moisture availability (Turmenstein 1999).

Taxonomy[4]

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

Table 3. Name status of threetip sagebrush

Entity	Name Status
CNDDB and CNPS	*Artemisia tripartita* Rydberg subsp. *tripartita*
Jepson eFlora	Not yet included
Jepson Manual (1993)	Not included
Flora of North America	*Artemisia tripartita* Rydberg subsp. *tripartita*
USDA NRCS[a] PLANTS	*Artemisia tripartita* Rydb. subsp. *tripartita*
[a] Natural Resources Conservation Service [NRCS 2022]	

Synonymy: *Artemisia trifida* Nutt. [illegitimate name], *A. tridentata* Nutt. subsp. *trifida* H.M. Hall & Clem., *A. tripartita* var. *tripartita*, *Seriphidium tripartitum* (Rydb.) W.A. Weber (FNA 1993+, NRCS 2022, Tropicos 2022).

Jepson eFlora link (JEPS 2022): At this writing, threetip sagebrush is not yet included in the *Jepson eFlora*. A description of this taxon is available in the Oregon Flora at: https://oregonflora.org/taxa/index.php?taxon=10676

Type locality: Original text: "Plains of the Rocky Mountains and Oregon" (Nuttall 1841). Later interpretation: "[Probably Idaho]. Plains of the Rocky Mtns" (Schulz 2009). Lectotype: "Plains of the Columbia and R[ocky] Mtns." (*Nuttall s.n.*, BM) (Mosyakin et al. 2017).

Key literature

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

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Persons Contacted

Green, Kaitlyn. 2022. Data Coordinator, California Native Plant Society. Email correspondence regarding recent/unprocessed survey forms for *Artemisia tripartita* subsp. *tripartita*. Personal communication 22 April 2022.

Author(s) and Date:

Ellen A. Dean, California Native Plant Society, Associate Rare Plant Botanist, 26 April 2022

Reviewer(s) and Date:

Aaron E. Sims, California Native Plant Society, Rare Plant Program Director, 20 June 2022

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 threetip sagebrush 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	SE SLOPE OF WARD PEAK, ABOUT 5 AIR MILES WSW OF TAHOE CITY. NEAR ALPINE MEADOWS SKI AREA. MAPPED BY CNDDB AROUND THE SE SLOPE OF WARD PEAK WITHIN SECTION 17 AS INDICATED ON COLLECTION LABEL.	Placer	Tahoe City (3912022)	CNDDB, Apr. 2022 (EO 1)	12-Aug-2005	HUNDREDS OF PLANTS (AT MOST) OBSERVED IN 2005. ON ROCKY (VOLCANIC) SLOPES WITH ARTEMISIA TRIDENTATA SSP. VASEYANA, MONARDELLA ODORATISSIMA, WYETHIA MOLLIS, LUPINUS ARBUSTUS, AND CASTILLEJA APPLEGATEI.		Private	8000
2	SAWTOOTH RIDGE, ABOUT 6 AIR MILES NNW OF TAHOE CITY. MAPPED BY CNDDB AROUND THE PORTION OF SAWTOOTH RIDGE IN SECTIONS 10 AND 11 BASED ON A 2012 JUNCOSA EMAIL.	Placer	Truckee (3912032)	CNDDB, Apr. 2022 (EO 2)	Aug 2003	FEWER THAN 100 PLANTS OBSERVED IN 2003. NEED BETTER MAP DETAIL FOR THIS SITE. VOLCANIC-ROCKY, ARID MONTANE SLOPES.		Tahoe NF	

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	WESTERN PART OF CASTLE PEAK, ABOUT 3.5 AIR MILES NORTH OF NORDEN. MAPPED BY CNDDB AROUND SECTION 1 BASED ON TRS INFORMATION IN A 2012 JUNCOSA EMAIL.	Nevada	Norden (3912033)	CNDDB, Apr. 2022 (EO 3)	Sep 2011	HUNDREDS OF PLANTS OBSERVED IN 2011. NEED BETTER MAP DETAIL FOR THIS SITE. VOLCANIC-ROCKY, ARID MONTANE SLOPES.		Tahoe NF	
4	[Maps to South Fork of Prosser Creek.]	Nevada	Norden (3912033)	Calflora, Apr. 2022 (xr346253)	14-Aug-2009	1+ individuals. Edge of lodgepole forest bordering large meadow complex in loose volcanic soil, slightly disturbed from past grazing, etc. This is a sunny area with flat, open land.		Unknown	6542
5	ABOUT 1/6 MILE NORTH OF RED ROCK LOOKOUT, DIAMOND MOUNTAINS CREST, SOUTH OF SUSANVILLE. MAPPED BY CNDDB BASED ON LOCATION DESCRIPTION AND WITHIN GIVEN TRS OF T28N R11E SECTION 11 (NE 1/4 OF SW 1/4).	Plumas	Diamond Mtn. (4012036)	CNDDB, Apr. 2022 (EO 4)	Jul 2012	UNKNOWN NUMBER OF PLANTS OBSERVED BY D. LEPLEY IN 2012. ROCKY GRANODIORITE OUTCROP.		Lassen NF, near border with Plumas NF	7500

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.)**
5	A ridgeline knob about 275 yards N of Red Rock Lookout and joined to it by a steep, narrow ridge. T28N, R11E, Sec11, NE1/4 of SW 1/4	Plumas	Diamond Mtn. (4012036)	CNDDB recent survey form (Greene 2022 pers. comm.)	25-Jul-2012	Dozens of plants observed. Windswept rocky ridge with Eriogonum var. nivale, Ericameria nauseosa, Holodiscus discolor, Stenotus acaulis, Phoenicaulis cheiranthoides, Chaenactis douglasii, Poa, Melica stricta. Occurance Rank: Excellent.	None	Lassen NF	7550
6	Mt. Hough Range Allotment Surveys. From the junction with the 28N02 road, head north on PC 213 (Diamond Mtn. Road) approximately ½ mile to Snoring Spring. From the spring – walk east/northeast approximately 0.27 miles to occurrence. Population is approximately 200 feet south of a ridgeline.	Lassen	Diamond Mtn. (4012036)	NRIS polys, Nov. 2020 (051102_ ARTRT2 _001)	13-Jul-2015	72 individuals	None observed.	Lassen NF, near border with Plumas NF	6809

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	South edge of meadow, about 40 yards south of Prosser Creek, about 200 yards northwest of the home, Carpenter Valley, basin of Prosser Creek, about 4.5 miles (air) west of Hobart Mills, about 6 miles (air) north of Truckee. T18N, R15E, northwest ¼ Section 24.	Nevada	Independence Lake (3912043)	CCH2, Apr. 2022 (CHSC123855)	2-Aug-2021	Mountain Meadow. On dry dark soil. Twigs from a shrub 3 feet tall. Common.		Unknown	6247
8	Tahoe National Forest	Placer	Tahoe City (3912022)	Calflora, Apr. 2022 (svy4433)	14-Jul-2021	1+		Tahoe NF	
9	Tahoe National Forest	Placer	Tahoe City (3912022)	Calflora, Apr. 2022 (svy4434)	14-Jul-2021	1+		Tahoe NF	
10	Snow Canyon Research Natural Area [Mokelumne Wilderness]	Alpine	Pacific Valley (3811958	Calflora, Apr. 2022 (ce434)	1-Jan-1992	1+		El Dorado NF (Mokelumne Wilderness)	
	Near the edge of a large meadow, on the south side of the dirt road, 50 yards east of the old sheep corral, northeast of Lake Van Norden, about 1 1/2 miles east of Soda Springs. T17N R14E S25 NW1/4	Nevada	Norden (3912033)	CCH2, Apr. 2022 (CHSC080798; JEPS102624)	21-Jul-2001	Stems from a plant 2 feet tall, on dry gravelly soil, near the edge of a large meadow. Uncommon. Red Fir Forest.		Royal Gorge	6770

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.)**
	Buck Camp Trail, Yosemite National Park.	Mariposa		CCH2, Apr. 2022 (MIN115 8928)	2 Aug 1898			Yosemite NP	

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.>