

# Plant Species Evaluation Form

## *Epilobium nivium* Bdg.

### SNOW MOUNTAIN WILLOWHERB

**Family:** Onagraceae  
(CNPS 2018)

**PLANTS Symbol:** EPNI  
(USDA 2018)

**Calif. Endemic:** Yes  
(CNPS 2018)

**Synonyms/Other Names:** *Epilobium nivium* was described by T.S. Brandegee in 1892, on the basis of material collected from Snow Mountain in Lake County, California. There have been no recombinations or revisions since the original description (Tropicos 2018).

**Identification Issues:** The identification of species within *Epilobium* requires flowering material. Provided this is available, *E. nivium* should not be difficult to determine (Hoch 2012).

#### Taxonomy:

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Species In Genus: 165 species: worldwide except tropics. Etymology: (Greek: upon pod, from inferior ovary). Note: Incl *Boisduvalia*, *Zauschneria*. Most taxa polyploid; many with anthers +- = stigma self-pollinated; many hybrids. Taxa with alternate leaves moved to *Chamerion*.

Habit: Subshrub 1--2.5 dm, stems many from woody caudex, +- gray strigose. Leaf: occasionally clustered, 8--18 mm, lance-elliptic, densely spreading-hairy; petiole 0--3 mm. Inflorescence: erect, densely spreading-hairy. Flower: hypanthium 5--10 mm; sepals 3--4.5 mm; petals 6--10 mm, rose-purple; generally stamens < pistil; stigma 4-lobed. Fruit: 8--16 mm, fusiform, glandular; pedicel 2--5 mm. Seed: 1--2 per chamber, 1.5--2.4 mm, +- obovoid, low-papillate. eFlora Treatment Author: Peter C. Hoch.

#### Status:

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

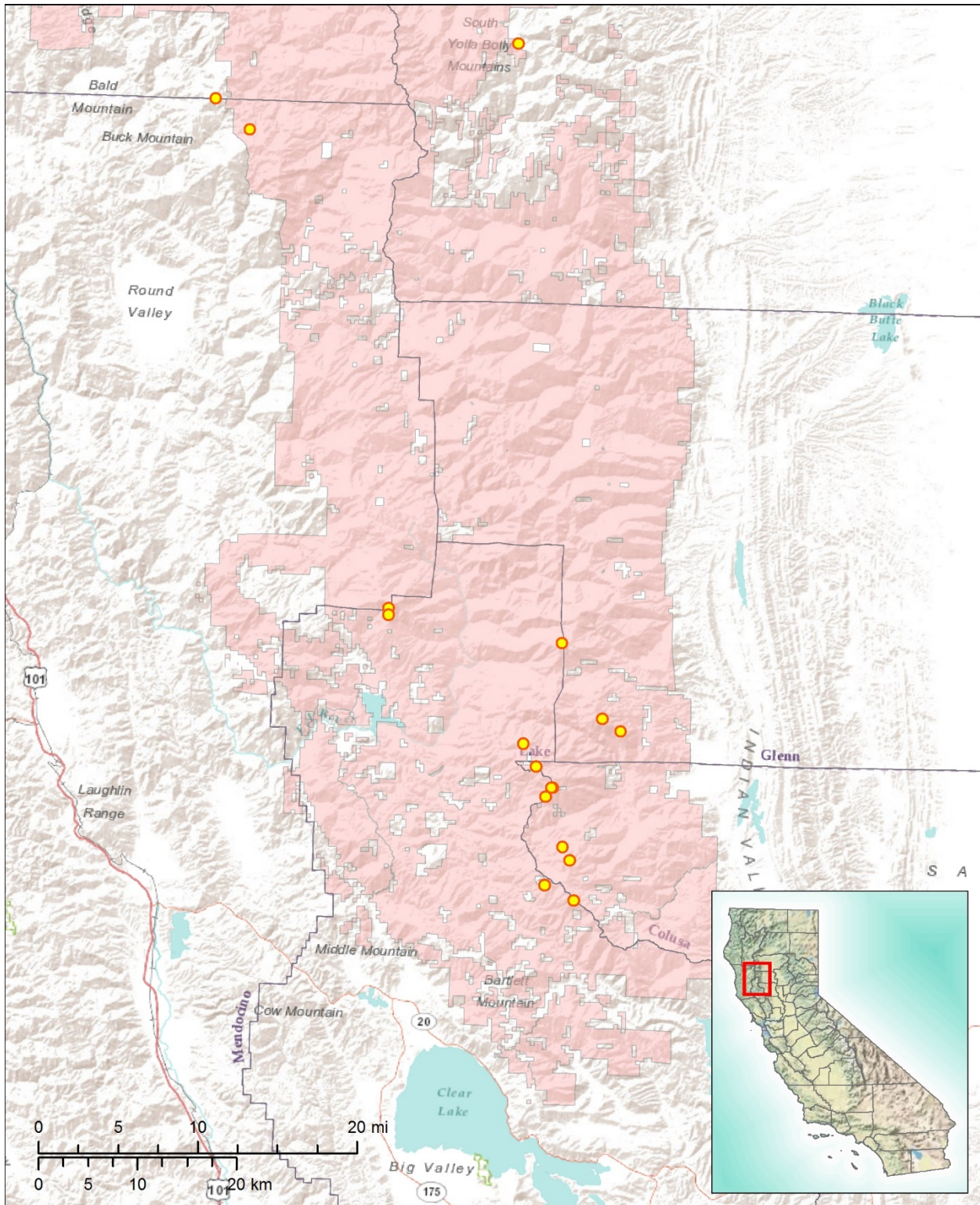
State Listing	G-rank	S-rank	CRPR	R5 FSS	NFP SM	CA BLM
CA: Not listed NV: Not listed OR: Not listed	G2G3	CA: S2S3 NV: Not listed OR: Not listed	1B.2	Sensitive	Not listed	Not listed
SWAP: Not listed	NNHP: Not listed	NNPS: Not listed	ORBIC: Not listed	OCS: Not listed	IUCN: Not listed	

Expanded abbreviations and citations: State Listing=California Endangered Species Act Listing (CDFW 2018b), Nevada Division of Forestry Fully Protected Plant Species (NAC 527) (NDF 2012), Oregon Department of Agriculture Listed Plants (ODA 2014); G-rank=Global Conservation Status (CDFW 2018a; NatureServe 2018); S-rank=Subnational (state or province-level) Conservation Status (CDFW 2018a; NatureServe 2018; NNHP 2017; ORBIC 2016); CRPR=California Rare Plant Rank (CNPS 2018); R5 FSS=USDA Forest Service Region 5 Regional Forester Sensitive Plant Species List (USDA 2013); NFP SM=Forest Service and Bureau of Land Management Northwest Forest Plan Survey and Manage Species (USDA 2001); CA BLM=California Bureau of Land Management Designated Sensitive Species (BLM 2010); SWAP=California State Wildlife Action Plan Status (CDFW 2015); NNHP=Nevada Natural Heritage Program Status (NNHP 2017); NNPS=Nevada Native Plant Society Status (NNHP 2017); ORBIC=Oregon Biological Information Center Status (ORBIC 2016); OCS=Oregon Conservation Strategy Species (ODFW 2016); IUCN=International Union for Conservation of Nature Red List Status (IUCN 2017).

**Distribution:** This species is a California endemic, found in the southern High North Coast Ranges (s NCoRH) bioregion. Records exist from Colusa, Glenn, Lake, Mendocino, Tehama, and Trinity counties (CNPS 2018, Hoch 2012). National Forest Service administered lands on

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which *E. nivium* occurs are limited to Mendocino NF, with one occurrence from within the five-mile buffer zone of Shasta-Trinity NF (CNDDDB 2017, NRIS 2017).



**Sources:** *Distribution:* CNDDDB 2017, NRIS 2017. *Layers:* USDA Forest Service, Pacific Southwest National Forests: CPAD 2016. *California counties:* CDF 2009. *Basemaps:* California inset map: © 2013 National Geographic Society, i-cubed (Esri 2017a). Main map: Esri, DeLorme, USGS, NPS (Esri 2012) and Esri, USGS, NOAA (Esri 2017b).

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**Locations within California:**

Record numbers indicate sites that contain an individual, population, or groups of populations located within ¼ mile of each other, per the California Natural Diversity Database (CNDDDB 2017) definition of Element Occurrences (EOs) in California. Official EO numbers for plants in California are determined solely by the CNDDDB and are included within the Reference (Source) column for CNDDDB data. Duplicate records from the same site are given the same record number and included in red. The Population Info column includes total number of individuals and total number and size of populations/sub-populations when provided. Elevations provided in meters from source have been converted to feet. If not provided in original source, Land Manager information was obtained using the California Protected Areas Database (CPAD 2016) and Quad information was obtained using 24K Quads, SDE Feature Class (CDFG 2013). All other information is directly from the Reference (Source) unless additional citation is given.

<b>Rec. #</b>	<b>Locality</b>	<b>County</b>	<b>Quad</b>	<b>Reference (Source)</b>	<b>Date Last Observed</b>	<b>Population Info</b>	<b>Threats</b>	<b>Land Manager</b>	<b>Elev. (ft.)</b>
1	SPUR RUNNING SE FROM THE SUMMIT OF CASTLE PEAK, WESTERN EDGE OF YOLLA BOLLY-MIDDLE EEL WILDERNESS.	Mendocino	Leech Lake Mtn. (3912381)	CNDDDB, May 2017 (EO 1)	6-Sep-1975	PLANTS WERE FAIRLY COMMON AT THIS SITE IN 1975.		Mendocino NF	5950
2	WESTERN SIDE OF HOXIE PEAK, ALONG TRINITY/MENDOCINO COUNTY LINE, YOLLA BOLLY-MIDDLE EEL WILDERNESS.	Mendocino   Trinity	Bluenose Ridge (3912382)	CNDDDB, May 2017 (EO 2)	21-Oct-1977	ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1977 COLLECTION BY KAY.		BLM	5560

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Rec. #	Locality	County	Quad	Reference (Source)	Date Last Observed	Population Info	Threats	Land Manager	Elev. (ft.)
3	0.3 AIR MILE SSW OF THE SUMMIT OF HULL MOUNTAIN, ALONG BOARDMAN RIDGE, MENDOCINO NATIONAL FOREST.	Mendocino	Hull Mountain (3912258)	CNDDDB, May 2017 (EO 3)	7-Jul-2012	10 PLANTS OBSERVED IN 1988. 13 SEEN IN 2012.	IN 1988 IT WAS OBVIOUS THIS SITE WAS USED FOR SKEET SHOOTING, BUT IN 2012 THE SITE APPEARED INTACT.	Mendocino NF	6400
4	RIDGE RUNNING SE FROM THE SUMMIT OF SAINT JOHN MOUNTAIN, FROM 0.5 TO 1.5 MILES SE OF THE SUMMIT, ALONG USFS ROAD 18N06.	Glenn	St. John Mtn. (3912246)	CNDDDB, May 2017 (EO 4)	25-Jun-2003	ABOUT 23 PLANTS OBSERVED IN 1978. 30-50 PLANTS OBSERVED IN 1986-1987 BETWEEN THIS OCCURRENCE AND OCCURRENCE #16 COMBINED. IN 2003 POPULATIONS OBSERVED IN THE 3 NORTHWESTERN POLYGONS, FROM THE NW TO THE SE WERE: >10, <50 AND <50 PLANTS.	POSSIBLY THREATENED BY ORV ACTIVITY OR FOOT TRAMPLING, BUT SITES APPEARED TO BE RELATIVELY UNDISTURBED IN 1987.	Mendocino NF	6000
5	NEAR THE SUMMIT OF THE WEST PEAK OF SNOW MOUNTAIN, IN SNOW MOUNTAIN WILDERNESS.	Colusa   Lake	Crockett Peak (3912247)	CNDDDB, May 2017 (EO 5)	20-Sep-1936	SITE BASED ON 1936 COLLECTIONS. NEEDS FIELDWORK. INCLUDES FORMER OCCURRENCE #6.		Mendocino NF	6500

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Rec. #	Locality	County	Quad	Reference (Source)	Date Last Observed	Population Info	Threats	Land Manager	Elev. (ft.)
6	ALONG SUMMIT SPRING TRAIL, 0.2 & 0.5 MI N OF TRAILHEAD, 2 AIR MI S OF WEST PEAK OF SNOW MOUNTAIN, SNOW MTN WILDERNESS.	Colusa   Lake	Fouts Springs (3912236)	CNDDDB, May 2017 (EO 7)	22-Jul-2012	NE POLYGON: FEWER THAN 100 PLANTS IN 2003, 96 IN 2005, APPROX 50 IN 2012. SE POLYGON: FEWER THAN 10 IN 2003, 10 IN 2005. WESTERN POLYGON: FEWER THAN 50 IN 2003, 37 IN 2005. APPROX 70 PLANTS BETWEEN THE 2 SOUTHERN POLYGONS COMBINED IN 2012.	TRAIL PASSES VERY CLOSE TO SOME PLANTS BUT THERE WAS NO EVIDENCE OF DISTURBANCE TO THESE PLANTS IN 2005 OR 2012.	Mendocino NF	5400
6	Mendocino NF	Colusa	Fouts Springs (3912236)	NRIS, Sep 2016 (050853EP NI002)	11-Jul-2016	210 individuals		Mendocino NF	
7	GOAT MOUNTAIN, ON RIDGE ABOUT 0.25 MILE SOUTHEAST OF SUMMIT, MENDOCINO NATIONAL FOREST.	Colusa   Lake	Fouts Springs (3912236)	CNDDDB, May 2017 (EO 8)	21-Aug-1983	30 PLANTS OBSERVED IN 1983.	NO VISIBLE THREATS NOTED IN 1983.	Mendocino NF	5980

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Rec. #	Locality	County	Quad	Reference (Source)	Date Last Observed	Population Info	Threats	Land Manager	Elev. (ft.)
8	BOARD CAMP RIDGE, 1 AIR MILE SSW OF UPPER LETTS LAKE, ON BOTH SIDES OF USFS ROAD 17N10, MENDOCINO NATIONAL FOREST.	Colusa	Fouts Springs (3912236)	CNDDDB, May 2017 (EO 9)	23-Oct-2011	APPROXIMATELY 100 PLANTS OBSERVED IN SW POLYGON IN 2010 AND 2011. APPROXIMATELY 200 PLANTS OBSERVED IN NE POLYGON IN 2011.	SURROUNDING AREA EXPERIENCES IMPACTS FROM RECREATION, BUT NEITHER OF THESE SITES APPEARED TO BE IMPACTED IN 2010-2011.	Mendocino NF	5400
8	CNDDDB source;	Colusa	Fouts Springs (3912236)	NRIS, Sep 2016 (050853EP NI001)	5-Sep-2011	200 individuals		Mendocino NF	
9	NEAR HIGH ROCK, 0.1 MI EAST OF SUMMIT SPRING TRAIL, 1.5 AIR MILES SE OF WEST PEAK OF SNOW MOUNTAIN, SNOW MTN WILDERNESS.	Colusa   Lake	Fouts Springs (3912236)	CNDDDB, May 2017 (EO 10)	11-Sep-1974	OCCURRENCE KNOWN FROM A 1974 COLLECTION BY HECKARD AND AN OBSERVATION BY BOWMAN FROM SOMETIME PRIOR TO 1979. INCLUDES FORMER OCCURRENCE #11.		PVT in USFS-Mendocino NF	6300

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10	0.6 AIR MILE SSW OF THE SUMMIT OF HULL MOUNTAIN, ALONG BOARDMAN RIDGE, MENDOCINO NATIONAL FOREST.	Lake	Hull Mountain (3912258)	CNDDDB, May 2017 (EO 12)	7-Jul-2012	32 PLANTS OBSERVED IN 1988. 20 OBSERVED IN EACH POLYGON IN 2012.	NO THREATS WERE OBSERVED IN 2012.	Mendocino NF	6000
11	SHEETIRON MOUNTAIN, MENDOCINO NATIONAL FOREST.	Glenn   Lake	St. John Mtn. (3912246)	CNDDDB, May 2017 (EO 13)		REPORTED IN A HECKARD ARTICLE WHICH USED SLID DATA AS ONE SOURCE AMONG MANY. ALSO INCLUDED IN A 1994 MCCARTEN REPORT WHICH USED THE CNDDDB AS ONE SOURCE AMONG MANY, WHILE CNDDDB CITED SLID. OCCURRENCE MAY WELL BE VALID BUT NEEDS VERIFICATION.		Mendocino NF	



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Rec. #	Locality	County	Quad	Reference (Source)	Date Last Observed	Population Info	Threats	Land Manager	Elev. (ft.)
12	0.6 AIR MILE WSW OF THE WEST END OF UPPER LETTS LAKE, NE OF BOARD CAMP RIDGE, MENDOCINO NATIONAL FOREST.	Colusa	Fouts Springs (3912236)	CNDDDB, May 2017 (EO 14)	30-Jul-2012	APPROXIMATELY 30 PLANTS OBSERVED IN 2012.	SITE IS NEAR A ROAD WHICH RECEIVES RECREATIONAL USE BUT SITE IS VIRTUALLY INACCESSIBLE AND APPEARED SECURE IN 2012.	Mendocino NF	4900
13	1.9 AIR MILES WNW OF THE SUMMIT OF GOAT MOUNTAIN, MENDOCINO NATIONAL FOREST.	Lake	Fouts Springs (3912236)	CNDDDB, May 2017 (EO 15)	31-May-2008	OCCURRENCE KNOWN ONLY FROM A 2008 COLLECTION BY DEAN, ET AL. PLANTS DESCRIBED AS "COMMON IN THE ROCKS RIGHT AT THIS SPOT, BUT UNABLE TO CONFIRM THE POPULATION LIMITS."		Mendocino NF	4890
14	RIDGE RUNNING SE FROM THE SUMMIT OF SAINT JOHN MOUNTAIN, FROM 2.1 TO 2.6 AIR MILES SE OF THE SUMMIT, N OF FOUTS SPRINGS.	Glenn	St. John Mtn. (3912246)	CNDDDB, May 2017 (EO 16)	1-Jan-1987	30-50 PLANTS OBSERVED IN 1986-1987 BETWEEN THIS OCCURRENCE AND OCCURRENCE #4 COMBINED.	POSSIBLY THREATENED BY ORV ACTIVITY OR FOOT TRAMPLING, BUT SITES APPEARED TO BE RELATIVELY UNDISTURBED IN 1987.	Mendocino NF	4500



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15	NE END OF NORTH RIDGE, NORTH OF SNOW MOUNTAIN.	Lake	Crockett Peak (3912247)	CNDDDB, May 2017 (EO 17)	23-Jun-1981	ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1981 COLLECTION BY HECKARD AND HICKMAN.		Mendocino NF	6400
16	NORTHWEST OF OVENLID, EAST OF YOLLA BOLLY-MIDDLE EEL WILDERNESS.	Tehama	South Yolla Bolly (4012217)	CNDDDB, May 2017 (EO 18)		ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1994 U.S. FOREST SERVICE REPORT WHICH PROVIDES "NORTHWEST OF OVENLID" AS ONE OF THE KNOWN LOCALITIES FOR THIS SPECIES. MORE INFORMATION IS NEEDED REGARDING THIS OCCURRENCE.		Mendocino NF	
17	Mendocino NF	Lake	Fouts Springs (3912236)	NRIS, Sep 2016 (050854EP NI003)	11-Aug-2016	120 individuals		Mendocino NF	

**Distribution on National Forest System (NFS) Lands:**

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

National Forest System (NFS) lands	Record #s (from Locations table above)	CNDDDB EOs	Non-CNDDDB Records	Recent (seen in past 20 yrs.)	Historic (not seen in past 20 yrs.)	Most Recent Obs.	EOs/ Recs. (5 mile buffer)	Total Records on NFS lands
Angeles:	-	-	-	-	-	-	-	0
Cleveland:	-	-	-	-	-	-	-	0
Eldorado:	-	-	-	-	-	-	-	0
Inyo:	-	-	-	-	-	-	-	0
Klamath:	-	-	-	-	-	-	-	0
Lake Tahoe Basin MU:	-	-	-	-	-	-	-	0
Lassen:	-	-	-	-	-	-	-	0
Los Padres:	-	-	-	-	-	-	-	0
Mendocino:	1, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17	14	1	8	5	11-Aug-2016	2	15
Modoc:	-	-	-	-	-	-	-	0
Plumas:	-	-	-	-	-	-	-	0
San Bernardino:	-	-	-	-	-	-	-	0
Sequoia:	-	-	-	-	-	-	-	0
Shasta-Trinity:	-	-	-	-	-	-	1	0
Sierra:	-	-	-	-	-	-	-	0
Six Rivers:	-	-	-	-	-	-	-	0
Stanislaus:	-	-	-	-	-	-	-	0
Tahoe:	-	-	-	-	-	-	-	0
<b>Totals:</b>	N/A	14	1	8	5	N/A	3	15

**Demographic and Population Trends:** *Epilobium nivium* is known from approximately 17 occurrences, nine of which have information related to population; of these, five contain year-on-year data. In all, there are 16 observations—including repeated censuses—of which 11 (68.8%) number from one to 50 plants; just one (6.3%) documented between 51 and 100 individuals; and the remaining four (25%) had between 100 and 200 individuals. Of the five records with population data from multiple years, three show increases, and two show decreases, across sampling intervals ranging from one to 25 years (CNDDDB 2017, NRIS 2017). There are 16 element occurrences in CNDDDB (2017); four receive a rank of “good”, four are “fair”, and eight are “unknown”. It can be inferred that occurrences of *E. nivium* tend to be rather small, in the

tens or 10s or 100s of individuals. Additional surveys will be required to establish the long-term stability of these occurrences, and to provide a better sense of the species' regional abundance.

**Life History:** *Epilobium nivium* is a perennial herb that blooms from June through October (CNPS 2018). The pollination biology of the group is not well known, but known associates include hummingbirds (Trochilidae: Apodiformes); bumble bees (Apidae: Hymenoptera); and several families of Lepidoptera (CPC 2018). Species in this genus are able colonizers; *Epilobium* has been documented growing atop glaciers (Fickert et al. 2007), and members of the genus were early invaders on the pumice plains of Mount St. Helens after its eruption (Titus et al. 1998). *Epilobium* frequently appears in early seral communities after timber harvest (Nelson and Halpern 2005).

**Diversity:** *Epilobium* is the largest genus in Onagraceae, comprising 165 species of mainly temperate herbs. The genus is notable for its morphological, ecological and cytological diversity, manifested largely between eight named infra-generic sections (Baum et al. 1994, Hoch 2012b). Intraspecific dimensions of diversity have not been assessed in *E. nivium*.

**Habitat:** This species occurs in rocky areas within upper montane coniferous forest and chaparral, at elevations between 795 and 2,500 meters (CNPS 2018). It is often encountered on barren ridges and outcrops, growing on a substrate of shale, talus or volcanic deposits. Woody species known to co-occur with *E. nivium* include: *Arctostaphylos patula*, *Garrya fremontii*, *Pinus lambertiana*, *P. ponderosa*, *Pseudotsuga menziesii*, *Quercus chrysolepis*, *Q. durata*, *Q. garryana*, and *Q. kelloggii*. Herbaceous associates include: *Allium falcifolium*, *Arabis/Bouchera* spp., *Arenaria nuttallii*, *Cheilanthes gracillima*, *Collinsia greenei*, *Erigeron foliosus*, *Eriogonum* spp., *Holodiscus boursieri*, *Penstemon* spp., *Sedum laxum*, *Streptanthus tortuosus*, and *Zauschneria latifolia* (CNDDDB 2017).

**Habitat Status or Trend:** The North Coast Ranges bioregion has been subject to both logging and fire abatement during the past century; large, fire-resistant trees were removed, while overall forest density increased as much as two-fold (Knapp et al. 2013). The result is a considerable reduction in forest gap size and frequency (Skinner 1995), as well as shading-out of understory shrubs and herbaceous taxa (Knapp et al. 2013). Ongoing climate change will produce a longer fire season, while also increasing landscape productivity—augmenting already-high fuel loads (Lenihan et al. 2003). Intense burns and short fire return intervals can have dramatic effects on plant community composition, potentially shifting ecosystems to alternative stable states (Callaway and Davis 1993, Zedler et al. 1983). As an herbaceous taxon of forest openings, *E. nivium* has doubtless been impacted by these human-mediated trends.

**Capacity for the Species to Disperse:** The seeds of *E. nivium* are relatively large (1.5-2.4 mm in length), with a prominent constriction toward the micropylar end lending an overall obovoid shape. The seed surface is covered with convex cells that give it a cobblestone-like appearance (Seavey et al. 1977). These structures suggest no obvious means of dispersal beyond gravity and surface flow. Some members of the genus exhibit ruderal traits (high seed production, effective dispersal, and formation of dense stands in bare areas) but *E. nivium* does not appear to follow this strategy (Gregor et al. 2013, Nelson and Halpern 2005).

**Threats:** *Epilobium nivium* is threatened by trampling and other impacts associated with recreation activities, including hiking and off-road vehicle use (CNDDDB 2017, CNPS 2018). Disturbance resulting from timber operations may also have adverse effects (CNPS 2018). Long-term reduction in forest gap size and frequency has likely reduced habitat availability for this taxon (Knapp et al. 2013, Skinner 1995).

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**Reviewer(s) and Date:**

David Magney, Rare Plant Program Manager, California Native Plant Society, (916) 447-2677 ext. 205, dmagney@cnps.org. September 28, 2018.

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

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

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