

Plant Species Evaluation Form

Streptanthus oblaceolatus T.W. Nelson & J.P. Nelson

TRINITY RIVER JEWELFLOWER

Family: Brassicaceae
(CNPS 2018)

PLANTS Symbol: STOB5
(USDA 2018)

Calif. Endemic: Yes
(CNPS 2018)

Synonyms/Other Names: Described in 2009; this entity was first acknowledged in a note appending the treatment of *Streptanthus tortuosus* in *The Jepson Manual, First Edition* (Buck et al. 1993) (Nelson and Nelson 2009). There are no known synonyms of *S. oblaceolatus* (Tropicos 2018).

Identification Issues: The *Jepson eFlora* key to Brassicaceae is broken into four separate groups. *Streptanthus* falls within Group 2 based on its simple hairs and presence of cauline leaves. Group 2 also contains many allied genera (tribe Thelypodieae) with similar growth forms, habitat, and morphology. *Streptanthus* is distinguished from these allied genera (e.g. *Caulanthus*, *Thelypodium*, *Thysanocarpus*) by its bilateral flowers and its flattened and linear fruit (Al-Shehbaz 2017). *Streptanthus oblaceolatus* is a confirmed member of the *S. tortuosus* complex based on its bracteate racemes and expanded receptacle. *Streptanthus oblaceolatus* has numerous inflorescence bracts, yellow sepals, an entire stigma, and two sterile adaxial stamens. In contrast, *S. tortuosus* has a single inflorescence bract, purple sepals, a weakly lobed stigma, and entirely fertile stamens (Nelson and Nelson 2009).

Taxonomy:

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Species In Genus: 35 species: southwestern United States, northern Mexico. Etymology: (Greek: twisted flower, from wavy-margined petals).

Genus Description – Habit: Annual to perennial herb, generally +- glaucous; hairs simple or 0. Leaf: basal rosetted or not, petioled, entire or dentate to pinnately lobed or divided; cauline sessile, occasionally petioled, base generally lobed or clasping. Inflorescence: elongated. Flower: radial or bilateral; calyx urn- or occasionally bell-shaped, sepals erect, base +- sac-like, keeled or not; petal blade narrower to wider than proximal 1/2, generally channeled, margins +- crinkled or not; stamens in 3 pairs of unequal length, or 4 long and 2 short, longest filaments fused or free. Fruit: silique, dehiscent, linear, flat parallel to septum, unsegmented; stigma entire or 2-lobed. Seed: 10--120, in 1 row, generally winged.

Species Description – Habit: Biennial, glabrous. Stem: 5--10 dm, branched distally. Leaf: basal rosetted, oblaceolate, coarsely dentate; mid-cauline sessile, 2--10 cm, lance-linear, entire, base lobed; distal much-reduced. Inflorescence: open; terminal sterile flower cluster 0; bracted proximally or between most proximal 1--2 flowers. Flower: sepals 8--9 mm, +- keeled, yellow; petals 12--16 mm, recurved at tip, not crinkled, +- yellow, adaxial pair +- longer; filaments in 3

pairs of unequal length; longest pair fused to above middle, 13--16 mm, lower pair free, 9--11 mm; anthers fertile, 3--3.5 mm. Fruit: spreading-ascending, 4--8 cm, 1.5--2 mm wide, constricted between seeds, valves glabrous; stigma entire; pedicel ascending, 3--6 mm, strongly expanded at receptacle. Seed: +- 2 mm, oblong, wing distal. eFlora Treatment Author: Ihsan A. Al-Shehbaz.

Status:

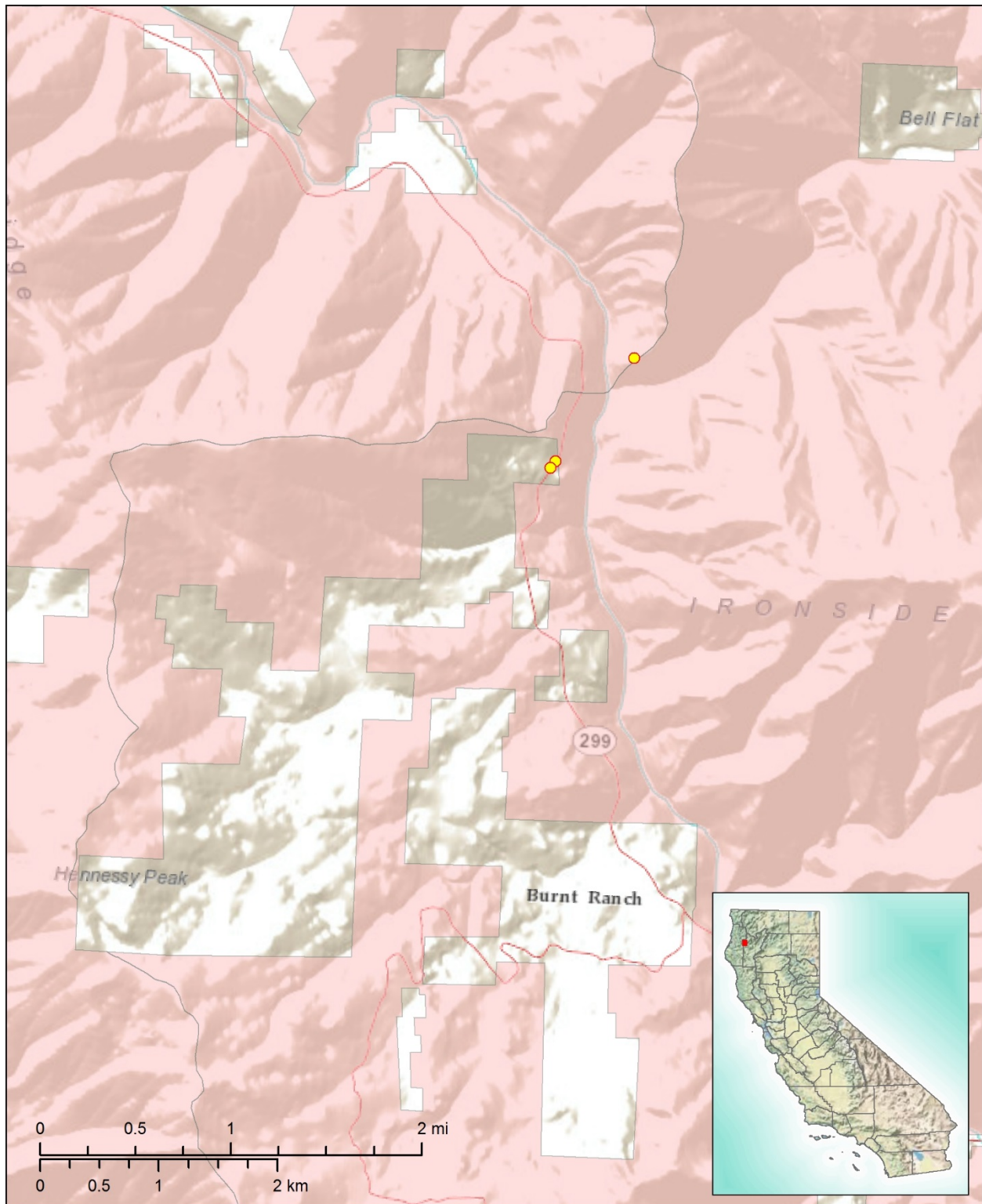
Note: Federally recognized Endangered, Threatened, Proposed, or Candidate species under the Endangered Species Act are omitted as they do not meet the definition of a Species of Conservation Concern (FSH 1909.12 § 12.52).

State Listing	G-rank	S-rank	CRPR	R5 FSS	NFP SM	CA BLM
CA: Not listed NV: Not listed OR: Not listed	G1	CA: S1 NV: Not listed OR: Not listed	1B.2	Sensitive	Not listed	Not listed

SWAP:	NNHP:	NNPS:	ORBIC:	OCS:	IUCN:
Not listed	Not listed	Not listed	Not listed	Not listed	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: Northern California; known from two Element Occurrences in Trinity County on National Forest System lands. The entire distribution spans a localized region on the border of Six Rivers and Shasta-Trinity National Forests. Occurrences are roughly within 1.0 mile of each other (Calflora 2017; CCH 2017; CNDDDB 2017; NRIS 2017).



Sources: *Distribution:* Calflora 2017; CCH 2017; 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).

Locations within California:

(Note: 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) definition of Element Occurrences in California). Official Element Occurrence (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 in meters from source were 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) column unless additional citation is given.)

Rec. #	Locality	County	Quad	Reference (Source)	Date Last Observed	Population Info	Threats	Land Manager	Elev. (ft.)
1	NEAR JUNCTION OF NEW RIVER AND TRINITY RIVER, SIX RIVERS NF.	Trinity	Ironside Mtn. (4012374)	CNDDDB, May 2017 (EO 1)	3-Apr-1972	UNKNOWN NUMBER OF PLANTS SEEN IN AREA IN 1965 AND 1972. NEEDS FIELDWORK.		Six Rivers NF	980
1	HWY 299	Trinity	Ironside Mtn. (4012374)	Calflora, May 2017 (po2520)	1-Jun-2015	101 - 1000 individuals		Six Rivers NF	1339
1	Trinity River	Trinity	Ironside Mtn. (4012374)	Calflora, May 2017 (po2518)	1-Jun-2015	51 - 100 individuals		Six Rivers NF	1316
1	HWY 299	Trinity	Ironside Mtn. (4012374)	Calflora, May 2017 (po2519)	1-Jun-2015	individuals		Six Rivers NF	1322
2	HWY. 299, 1 MI W OF BURNT RANCH, 100 M E OF SHASTA-TRINITY NATIONAL FOREST BOUNDARY, TRINITY NF.	Trinity	Ironside Mtn. (4012374)	CNDDDB, May 2017 (EO 2)	3-Jul-2009	UNKNOWN NUMBER OF PLANTS SEEN IN AREA IN 2004 AND 2009. NEEDS FIELDWORK.		Shasta-Trinity NF	1350

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Rec. #	Locality	County	Quad	Reference (Source)	Date Last Observed	Population Info	Threats	Land Manager	Elev. (ft.)
2	16.3 km SE of Willow Creek, Shasta-Trinity National Forest, 1.6 km SSE of Gray Falls Trailhead, along Hwy. 299 above the Trinity River	Trinity	Ironside Mtn. (4012374)	CCH, Jan 2017 (HSC9841 5)	4-Jul-2009			Shasta-Trinity NF	1306
2	;	Trinity	Ironside Mtn. (4012374)	NRIS, Apr 2017 (0514_54_STOB5_00 01)	4-Jul-2009	individuals		Shasta-Trinity 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:	-	-	-	-	-	-	-	0
Modoc:	-	-	-	-	-	-	-	0
Plumas:	-	-	-	-	-	-	-	0
San Bernardino:	-	-	-	-	-	-	-	0
Sequoia:	-	-	-	-	-	-	-	0
Shasta-Trinity:	2	1	-	1	-	4-Jul-2009	-	1
Sierra:	-	-	-	-	-	-	-	0
Six Rivers:	1	1	-	1	-	1-Jun-2015	-	1
Stanislaus:	-	-	-	-	-	-	-	0
Tahoe:	-	-	-	-	-	-	-	0
Totals:	N/A	2	0	2	0	N/A	0	2

Demographic and Population Trends: Known from only two occurrences. Between 101 and 1,000 plants were counted in June of 2015 at the site of Element Occurrence one (EO 1). An unknown number of plants were documented at the site of Element Occurrence two (EO 2) in 2009. Records from both occurrences indicate that more fieldwork is needed (CNDDDB 2017; NRIS 2017; CCH 2017; Calflora 2017).

Life History: *Streptanthus oblaceolatus* is an herbaceous perennial that blooms from April through June (CNPS 2017). *Streptanthus* taxa are known to accumulate heavy metals such as nickel (Ni). Taxa accumulating high concentrations of Ni have demonstrable effects on the

development herbivorous lepidopteran larvae (*Spodoptera exigua*) (Boyd and Moar 1999). Plants in the genus *Streptanthus* are pollinated by bees in the genera *Anthophora*, *Bombus*, *Megachile*, *Osmia*, and *Lasioglossum*. *Streptanthus* taxa are also pollinated by butterflies, bee flies, and syrphid flies (CPC 2017). Hummingbirds have been observed visiting *S. glandulosus* plants growing in cultivation (Kruckeberg 1957).

Diversity: *Streptanthus ob lanceolatus* is a member of the large and globally distributed family Brassicaceae. Formerly known as Cruciferae, most members of this family often bear flowers with a four-merous, cross-like (cruciate) perianth with six tetradynamous (four long, two short) stamens and two carpels. Brassicaceae contains numerous taxa important to agriculture (e.g. *Brassica*, *Nasturtium*, *Raphanus*, *Armoracia*, *Eutrema*, *Sinapis*), scientific research (e.g. *Arabidopsis thaliana*), and horticulture (e.g. *Alyssum*, *Arabis*, *Aubrieta*, *Aurinia*, *Erysimum*, *Hesperis*, *Iberis*, and *Malcolmia*) (Al-Shehbaz 2010). Brassicaceae is split into 51 tribes, 340 genera, and 3,840 species (Chen et al. 2016). The genus *Streptanthus* is a member of the Thelypodieae along with other prominent western North American genera such as *Caulanthus*, *Stanleya*, *Thelypodium*, and *Thysanocarpus*. Thelypodieae is a monophyletic tribe of 27 genera and 215 species that are restricted to America (Warwick et al. 2010, Al-Shehbaz 2010). *Streptanthus* is represented by 35 species endemic to northern Mexico and central/western United States (Al-Shehbaz 2010). The entire group has urn-shaped zygomorphic flowers. Morphological and molecular patterns in the genus intergrade with patterns seen in allied genera (i.e. *Caulanthus*, *Thelypodium*, *Stanleya*).

Robust phylogenetic analyses (ML and BI analyses of 6 nrDNA and 2 cpDNA regions) partitioned *Streptanthus* into two somewhat distant clades. One *Streptanthus* clade contains taxa largely concentrated in the California Floristic Province (CFP), with a considerable number of *Caulanthus* taxa nested within. The second *Streptanthus* clade contains taxa with ranges largely extending beyond the CFP. Nested within this second clade are some members of the Streptanthoid Complex (incl. members of *Thelypodium*, *Stanleya*, and *Caulanthus*). Serpentine association is a major component of the CFP *Streptanthus* clade. Stochastic character mapping of the CFP group indicates that serpentine endemism evolved independently at least four times, and serpentine tolerance on at least eight separate occasions (Cacho et al. 2014). *Streptanthus ob lanceolatus* is a member of the *S. tortuosus* species complex (Nelson and Nelson 2009).

Habitat: The two known occurrences of this taxon are on steep and rocky banks, growing in fissures and in soil pockets along exposed and vertical rock faces. Plants are also found in gravelly substrates. *Streptanthus ob lanceolatus* is associated with openings in *Quercus chrysolepis*/*Pseudotsuga menziesii* woodland alongside *Eriogonum nudum*, *Keckiella corymbosa*, *Sedum spathulatum*, *Pentagramma triangularis*, *Polystichum imbricans*, *Bromus hordeaceus*, *Briza maxima*, and *Avena fatua* (Nelson and Nelson 2009).

Habitat Status or Trend: This entity is represented by two CNDDDB Element Occurrences and is only known from three separate collections (CNDDDB 2017; NatureServe 2018; Nelson and Nelson 2009). There are possibly more plants on the opposite side of the Trinity River and New River gorges along steep and inaccessible rocky bluffs (Nelson and Nelson 2009).

Capacity for the Species to Disperse: The dispersal capacity of *Streptanthus* taxa remain unknown. Albeit, each *S. oblancoolatus* fruit produces small (2 mm) winged seeds (Al-Shehbaz 2017). Species of the closely related genus *Thelypodium* have similar seeds that are small, lightweight, and conducive to free dispersal. Wind is likely a contributor to the distribution of such seeds, especially into open habitats with limited vegetation (Al-Shehbaz 1973). Similar to *Streptanthus*, the fruit of *Thelypodium* are long and slender siliques that dehisce at maturity (Al-Shehbaz 2010).

Threats: Specific threats to this taxon are undocumented and remain unknown. Its very small known range and very small number of occurrences leaves *Streptanthus oblancoolatus* vulnerable to local stochastic events.

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Persons Contacted:

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Julie Ann Kierstead, USDA Forest Service Region 5 Ecosystem Planning, 8 December 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.

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