

**Rare Plant Status Review: *Streptanthus insignis* subsp. *insignis***  
**Proposed Addition to California Rare Plant Rank 4.3, G3G4T3T4 / S3S4**  
Jonathon Holguin (CNPS), Aaron E. Sims (CNPS), and Kristi Lazar (CNDDDB)  
10 December 2020

**Background and Taxonomy**

*Streptanthus insignis* Jeps. subsp. *insignis* is an annual herb in Brassicaceae known from the inner South Coast Ranges in San Benito, Monterey, Fresno, and Merced counties. The taxon was first published at the species level in 1925 in W. L. Jepson's *A Manual of the Flowering Plants of California*, and the autonym, subsp. *insignis*, was established in 1983 when *S. insignis* subsp. *lyonii* was described by Kruckeberg and Morrison. *Streptanthus insignis* subsp. *insignis* is included in *The Jepson Manual* (Al-Shehbaz 1993), *Jepson eFlora* (Al-Shehbaz 2012), and *Flora of North America* (Al-Shehbaz 2010). It is a member of the Streptanthoid complex (SDC) as described by Cacho et al. in 2014. This group is comprised of taxa within the genera *Streptanthus* and *Caulanthus* and is supported by phylogenetic analysis of several highly variable single-copy nuclear genes, three frequently used nuclear genes (ITS, phyA, PEPC), and two chloroplast regions (trnL, trnH-psbA) (Cacho et al. 2014). *Streptanthus insignis* subsp. *insignis* may be differentiated from other *Streptanthus* spp. in having dark purple sepals and corollas of all flowers (with white petals sometimes present) combined with sparsely to densely stiff-hairy fruit, and distribution in San Benito, Merced, Monterey, and western Fresno counties. *Streptanthus insignis* may be distinguished from the co-occurring species, *S. breweri*, by the presence of the flag, or terminal cluster of sterile flowers, at the apex of the raceme (Al-Shehbaz 2012).

The only other infraspecific taxon, *Streptanthus insignis* subsp. *lyonii*, is a rare taxon from Merced County that has been included in the CNPS Inventory as a California Rare Plant Rank (CRPR) 1B taxon since the third edition in 1984 (CNPS 2020; available at <http://www.rareplants.cnps.org/detail/1504.html>). Subspecies *lyonii* is similar in form to subsp. *insignis*, but with green-yellow to purple sepals and sterile terminal flowers that are yellow, green-yellow or purple. The sterile cluster of flowers, or flag, at the top of the inflorescence for each subspecies is colored similarly to the respective fertile flower calyces. Fruit tomentum is generally denser (more commonly dense) in subspecies *lyonii*. Additionally, subspecies *lyonii* has a more northern center of distribution than the bulk of *S. insignis* subsp. *insignis* occurrences, along with marginally lower affinity for serpentinite-derived substrates: 3.3 vs. 4 ultramafic affinity index as assessed by Calflora (Al-Shehbaz 2012; Calflora 2020). Etymology: From Greek, streptos-, meaning twisted; -anthos, meaning flower; the genus name alludes to the crisped petal margin. From Latin, insignis-, means "remarkable" in reference to the showy appearance of this taxon's flowers (Charters 2020).

*Streptanthus insignis* subsp. *insignis* was recommended for addition to CRPR 4 by Kruckeberg and Morrison (1983) in their manuscript including the original description of subsp. *lyonii*. It was a proposed new addition during the CNPS Inventory 6th edition development, but instead postponed for addition presumably due to a lack of responses regarding its recommended rarity status and its potential for being too common (unpublished CNPS files). Subspecies *insignis* was recently brought to our attention again as a potential addition to the CNPS Inventory, and with newly available online resources since first recommended, we are now able to get a much more accurate depiction of this taxon's distribution and rarity.

### **Ecology**

*Streptanthus insignis* subsp. *insignis* is an annual herb characteristic of openings in chaparral, often associated with badlands, rock outcrops, and substrates of greywacke, talus, shale, and often serpentinite (Al-Shehbaz 2012; Calflora 2020). It most often occurs between 300 and 1100 meters in elevation, and blooms between March and May (Al-Shehbaz 2012; Calflora 2020). Associated taxa include: *Acanthomintha* spp., *Clarkia breweri*, *Eriogonum* spp., *Juniperus californica*, *Streptanthus breweri*, and *Pinus sabiniana* (CCH2 2020).

### **Distribution and Abundance**

There are over 500 voucher and observation records of *S. insignis* subsp. *insignis*, and due to this high number, its total occurrences have been estimated using a GIS tool developed and described by Green and Sims (2018). Using the tool resulted in an estimated 86 occurrences of this plant. Twenty-five occurrences are considered historical (having been last seen over 20 years ago), whereas the remaining 61 occurrences obtained from databases are non-historical and have been observed at least once within the past 20 years. Forty-five occurrences of *S. insignis* subsp. *insignis* sit on land of unknown ownership, while the remaining 41 occurrences are on land owned by the Bureau of Land Management, the majority of which are located in the Clear Creek Management Area.

### **Status and Threats**

The primary threat to *S. insignis* subsp. *insignis* is non-native annual grass invasion (especially *Bromus madritensis* competition) (O'Dell pers. comm. 2020). Cattle grazing occurs within the area occupied by *S. insignis* subsp. *insignis* as well, but the overall grazing effect (competition reduction) counteracts the negative effect of annual grass competition on the species to some degree (O'Dell pers. comm. 2020).

### **Summary**

Based on the available information, CNPS and CNDDDB recommend adding *Streptanthus insignis* subsp. *insignis* to California Rare Plant Rank 4.3 of the CNPS Inventory. If knowledge on the distribution, threats, and rarity status of *S. insignis* subsp. *insignis* changes in the future, we will re-evaluate its status at that time.

### **Recommended Actions**

CNPS: Add *Streptanthus insignis* subsp. *insignis* to CRPR 4.3

CNDDDB: Add *Streptanthus insignis* subsp. *insignis* to G3G4T3T4 / S3S4

### **Draft CNPS Inventory Record**

*Streptanthus insignis* Jeps. ssp. *insignis*

plumed jewelflower

Brassicaceae

CRPR 4.3

San Benito, Merced, Fresno, Monterey

Atwater (422D) 3712035, Panoche Pass (363A) 3612161, Cerro Colorado (362B) 3612068, Llanada (362C) 3612058, Panoche (362D) 3612057, Rock Spring Peak (340B) 3612048, Hernandez Reservoir (340A) 3612047, Idria (339B) 3612047, Cervo Mtn. (339A) 3612045, Pinalito Canyon (341D) 3612131, Lonoak (340C) 3612038, Priest Valley (316B) 3612026, Sherman Peak (316A) 3612025, Parkfield (292B) 3512084, The Dark Hole (292A) 3512083,

Ruby Canyon (384D) 3612171, Ortigalita Peak (383C) 3612078, Hepsedam Peak (340D) 3612037, San Benito Mtn. (339C) 3612036, Santa Rita Peak (339D) 3612035, Smith Mountain (316D) 3612015, Curry Mountain (315C) 3612014

Chaparral /openings, rocky, talus, graywacke, shale, often serpentinite; elevation 300-1100 meters

Annual herb. Blooms March to May.

Possibly threatened by non-native plants. See *Manual of the Flowering Plants of California*, p. 420 (1925) by W.L. Jepson for original description, and *Madroño* 30(4): 234-239 (1983) for revised nomenclature.

### Literature Cited

Al-Shehbaz, I. A. 2010. *Streptanthus insignis* subsp. *insignis*. pp. 717 in: Flora of North America Editorial Committee (ed.), *Flora of North America North of Mexico*, Vol 7: Magnoliophyta: Salicaceae to Brassicaceae. Oxford University Press, New York and Oxford. Pp. 224-746.

\_\_\_\_\_. 2012. *Streptanthus insignis* subsp. *insignis*, in Jepson Flora Project (eds.) *Jepson eFlora*, [https://ucjeps.berkeley.edu/eflora/eflora\\_display.php?tid=53145](https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=53145), accessed on October 10, 2020. (printed version pp. 572).

Cacho, N. I., A. M. Burrell, A. E. Pepper, and S. Y. Strauss. 2014. Novel nuclear markers inform the systematics and the evolution of serpentine use in *Streptanthus* and allies (Thelypodieae, Brassicaceae). *Molecular Phylogenetics and Evolution* 72: 71-81.

[CNPS] California Native Plant Society, Rare Plant Program. 2020. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website <http://www.rareplants.cnps.org> [accessed 20 November 2020].

Charters, M. L. Dictionary of Botanical Names. 2003-2018. Website <http://www.calflora.net/botanicalnames/pageI.html> [accessed 20 November 2020].

Green, K. and A. E. Sims. 2018. Assessing rarity status of the newly described Shasta County endemic, *Adiantum shastense* (Pteridaceae), by employing innovative tools in geographic information systems. Rare Plant Program, California Native Plant Society. Presented in Scientific Poster session of CNPS 2018 Conservation Conference, Los Angeles, CA, 1-3 February 2018.

Jepson, W. L. 1925. *Streptanthus insignis* Jeps. Pp. 420 in: *A Manual of the Flowering Plants of California*.

Kruckeberg, A. R. and J. L. Morrison. 1983. New *Streptanthus* taxa (Cruciferae) from California. *Madroño* 30(4): 230-244.

### Personal Communications

O'Dell, Ryan. 2020. Botanist, Bureau of Land Management. Personal email regarding distribution of and threats to *S. insignis* subsp. *insignis*. Aug. 20, 2020.