Streptanthus insignis subsp. insignis

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 (CNDDB)
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.

Sent to: CW, Al-Shehbaz, S. Richardson on 12/10/2020
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 serpentine (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 CNDDB 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
CNDDB: 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,
Streptanthus insignis subsp. insignis

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 serpentine; elevation 300-1100 meters

Annual herb. Blooms March to May.


Literature Cited


Personal Communications