

Added to California Rare Plant Rank 1B.1 on July 20, 2016

Rare Plant Status Review: *Streptanthus tortuosus* subsp. *truei*
Proposed Addition to California Rare Plant Rank 1B.1 ~~1B.2~~, G5T1T2 / S1S2
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 June 9, 2016

Changes made to the original document are in blue text.

Background

Streptanthus tortuosus Kellogg subsp. *truei* Al-Shehbaz is a perennial herb in the Brassicaceae known only from Nevada County, California. It was recently described by Al-Shehbaz (2013) and is therefore not included in *The Jepson Manual* (Rollins 1993b), *The Jepson Manual, Second Edition (TJM 2)* (Al-Shehbaz 2012), or *Flora of North America, Vol. 7* (Al-Shehbaz 2010). *Streptanthus tortuosus* is a highly variable species which was once split into five varieties by Rollins (1993a) and was later treated by Al-Shehbaz (2012) as a single polymorphic species. While working with a loan from the California Academy of Sciences, Ihsan Al-Shehbaz examined four collections of *S. tortuosus* from Nevada County with substantial differences initiating the subsequent description of *S. tortuosus* subsp. *truei* (Al-Shehbaz 2013). The subspecific epithet, *truei*, was given after Gordon H. True who collected all of the specimens cited in Al-Shehbaz (2013). *Streptanthus tortuosus* subsp. *truei* is distinguishable from *S. tortuosus* subsp. *tortuosus* by having caudate-acuminate sepals (versus subacute to obtuse sepals) that are considerably longer (12-21 mm) than the 7-14 mm petals (versus sepals that are subequal to slightly shorter than the 6-14 mm petals in subsp. *tortuosus*), and by the acuminate uppermost cauline leaves (versus uppermost cauline leaves that are acute or obtuse to rounded at apex) (Al-Shehbaz 2013).

The recent description of *S. tortuosus* subsp. *truei* comes as a bit of a surprise in light of Al-Shehbaz's treatment of *S. tortuosus* in *TJM 2*, in which he did not recognize any of the previously described varieties of *S. tortuosus*. The basis of Al-Shehbaz's treatment of *S. tortuosus* in *TJM 2* was entirely on herbarium specimens, yet he decided to recognize subsp. *truei* on the basis of collections from a single population. Robert Preston (pers. comm. 2016), who did his dissertation work on *S. tortuosus*, recognizes its described varieties, which vary substantially both morphologically and ecologically. In addition to herbarium study, R. Preston accepts the past varieties of *S. tortuosus* based on seeing many populations, and in comparing their geographic ranges and habitat and substrate associations. Although generally opposed to concurrently accept two conflicting treatments within a species, we tentatively agree to follow Rollins (1993a, 1993b) treatment of the varieties of *S. tortuosus* while also accepting Al-Shehbaz's (2013) description of subsp. *truei*. Should one or more of the varieties of *S. tortuosus* potentially be rare, endangered, or of limited distribution, we will evaluate their status for inclusion in the CNPS Inventory and CNDDB.

Streptanthus tortuosus subsp. *truei* occurs in partial shade on steep rocky slopes of lower montane coniferous forest at an approximate elevation of 765-860 meters (Google Inc. 2015; Preston pers. comm. 2016). The soils where it occurs are Mariposa-

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Maymen Association, derived from metamorphic rock (R. Preston pers. comm.), and it is not associated with serpentinite as many other *Streptanthus* taxa are. *Streptanthus tortuosus* subsp. *truei* primarily blooms from June to July (Al-Shehbaz 2013), but a single specimen from late September has flowers and buds (L. Janeway pers. comm. 2016).

There is only one known occurrence of *Streptanthus tortuosus* subsp. *truei*, from west of Foote's Crossing along the Yuba River within the Tahoe National Forest. Three collections are from 1971 and one is from 1976, with the only recent collection by Robert Preston in June of 2014 (*Preston 2969*) (Al-Shehbaz 2013; Consortium of California Herbaria 2016). *Streptanthus tortuosus* subsp. *truei* is seemingly endemic to Nevada County where *S. tortuosus* subsp. *tortuosus* is also found, and it is unknown if both subspecies have a sympatric relationship or if they hybridize (Al-Shehbaz 2013). As of this writing, there are approximately 60 non-duplicate records of *S. tortuosus* in the Consortium of California Herbaria (2016) from Nevada County that are not annotated to subspecies or variety. Fifty of these records, however, are from herbaria that were reviewed by I. Al-Shehbaz (pers. comm. 2016) and found to be the common subspecies. Seven of the remaining ten collections not annotated from CHSC (one specimen) and UCD (six specimens) have been reviewed by herbarium curators and found to be subsp. *tortuosus*; one collection from CHSC (*Ahart 1213*, CHSC43437) was annotated to subsp. *truei*, and is from the same occurrence (L. Janeway pers. comm. 2016), and one collection from UCD (*Myatt 1666*, UCD40155) couldn't be determined because it lacks cauline leaves and the few flowers on it were too degraded to make a determination (D. McNair pers. comm. 2016). The remaining collection of *S. tortuosus* from Nevada County that has not been annotated (*Kelch 93.007*, CDA347) is at least over 30 air km away from the only known occurrence of subsp. *truei*, and is expected to be the common subspecies. Since *S. tortuosus* subsp. *truei* is known from far northern Nevada County along the border of Sierra and nearby Yuba counties, there's also a potential for specimens of *S. tortuosus* from these counties to be subsp. *truei*; however, very minimal specimens exist from these counties in herbaria not already reviewed by I. Al-Shehbaz. Due to its recent description and common habitat type, it's possible that dedicated field surveys may turn up more occurrences of subsp. *truei*. Although there is a lot of inaccessible terrain in the Yuba River drainage where subsp. *truei* occurs, R. Preston (pers. comm. 2016) has never come across anything like it in that part of the foothills in the past, and therefore doesn't think that much more of it will show up.

There are no known threats to *Streptanthus tortuosus* subsp. *truei*, and due to its remote location it is unlikely to be threatened by foot traffic or recreation activities. According to Preston (pers. comm. 2016), the plants and habitat appear to be in pretty good condition, and the most likely source of threat would come from any project to improve the road in the area near the occurrence, which doesn't seem probable at this time.

Based on the available information, CNPS and CNDDDB recommend adding *Streptanthus tortuosus* subsp. *truei* to California Rare Plant Rank **1B.1** ~~4B.2~~ of the CNPS Inventory. For other rare taxa known only from a single occurrence, we tend to err on the side of caution and provide a Threat Rank of .1 due to potential stochastic

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events and unknown effects of climate change; however, since the population of subsp. *truei* was recently visited and found to be in good condition, we are proposing a threat rank of 2 at this time. If knowledge on the distribution, threats, and rarity status of *S. tortuosus* subsp. *truei* changes in the future, we will re-evaluate its status at that time.

Recommended Actions

CNPS: Add *Streptanthus tortuosus* subsp. *truei* to CRPR 1B.1 ~~4B.2~~

CNDDDB: Add *Streptanthus tortuosus* subsp. *truei* to G5T1T2 / S1S2

Draft CNPS Inventory Record

Streptanthus tortuosus Kellogg ssp. *truei* Al-Shehbaz

True's mountain jewelflower

Brassicaceae

CRPR 1B.1 ~~4B.2~~

Nevada

Pike (557B) 3912048

Lower montane coniferous forest / partial shade on steep rocky slopes; elevation 765-860 meters.

Perennial herb. Blooms June to July (September)

See *Harvard Papers in Botany* 18(1):13-15 (2013) for original description.

Literature Cited

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