Plagiobothrys myosotoides deleted from California Rare Plant Rank 4.3, and P. torreyi var. perplexans added to 4.3 on August 21, 2012

Rare Plant Status Review: Plagiobothrys myosotoides and Plagiobothrys torreyi var. perplexans

Proposed deletion of Plagiobothrys myosotoides from 4.3, G4Q / S3.3

Proposed New Add of Plagiobothrys torreyi var. perplexans to 4.3, G4T3 / S3

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Changes made to the original document appear in blue text.

Background

Plagiobothrys myosotoides is a CNPS Rank 4.3 plant that has been included in the CNPS Inventory since 1984. It is not included in The Jepson Manual, Second Edition (TJM 2), as it does not occur in California. Plagiobothrys myosotoides is a South American species that was first noted as occurring in California by Johnston (1939), with the name being applied to plants from the Mt. Hamilton Range (currently P. verrucosus) and the Sierra Nevada foothills (currently P. torreyi var. perplexans) and South Coast Ranges (currently P. torreyi var. perplexans and P. uncinatus; The Jepson Manual, TJM, 1993; D. Gowen pers. comm. 2012; R. Kelley pers. comm. 2012). Horn’s (2000) dissertation reviewed the genus Plagiobothrys in South America and included photographs of the nutlets of South American P. myosotoides and P. verrucosus. These images allowed R. Kelley (pers. comm. 2011), the TJM 2 and Flora of North America treatment author for Plagiobothrys, to determine that the California plants did not actually belong to P. myosotoides. Instead, he recognized the plants from the Mt. Hamilton Range as P. verrucosus (another South American taxon), and the plants from the Sierra Nevada and South Coast Ranges as P. torreyi var. perplexans. Consequently, CNPS and CNDDB propose to delete Plagiobothrys myosotoides from Rank 4.3 of the CNPS Inventory, and add Plagiobothrys torreyi var. perplexans to Rank 4.3. Plagiobothrys verrucosus is also being proposed as a new addition to Rank 2.1 in a concurrent status review.

Plagiobothrys torreyi var. perplexans is an annual herb in the Boraginaceae family that is endemic to California, known from the central and southern Sierra Nevada and the southern outer coast ranges. It is included in TJM 2 (available online at http://ucjeps.berkeley.edu/cgi-bin/get_IJM.pl?tid=78495), but was treated as P. myosotoides in TJM (1993); the Flora of North America treatment for Boraginaceae is not yet available. Plagiobothrys torreyi var. perplexans is most similar to P. tenellus and P. torreyi var. torreyi (TJM 2, Johnston 1939). It co-occurs with var. torreyi in the lower Sierra Nevada Foothills, and can be differentiated by several nutlet characters: var. perplexans has rows of round translucent papillae on the abaxial side of the nutlet and the nutlet is strongly arched with a pointed base. Plagiobothrys torreyi var. torreyi does not have papillae, the nutlet is not arched, and the nutlet base is rounded (TJM 2). However, the two varieties may intergrade where they co-occur, as a collection by R. Kelley (YM-YOSE117324) shows nutlets characters that are intermediate between the
two varieties (CCH 2012). *Plagiobothrys tenellus* has a roughly cross-shaped nutlet, while *P. torreyi* var. *perplexans* has a roughly ovate nutlet. *Plagiobothrys torreyi* var. *perplexans* blooms from April to September.

*Plagiobothrys torreyi* var. *perplexans* is known from a wide variety of habitats in the central to southern Sierra Nevada, including lower and upper coniferous forest, as well as seasonally wet meadows within the lower montane coniferous forest. In the South Coast Ranges, it is found in chamisal chaparral (CCH 2012), and there is no coastal influence but rather an interior influence that is similar to where you would find it in the Greenhorn Mountains or southern Sierra Nevada (R. Kelley pers. comm. 2012). It is often (but not always) found following fires, and may persist in the seed bank for many years until a fire occurs (R. Kelley pers. comm. 2011, *TJM 2*). The plant has an apparent affinity for igneous soils, which restricts it from many of the Sierra foothills that have metamorphic soils (R. Kelley pers. comm. 2011). *Plagiobothrys torreyi* var. *perplexans* occurs from 1195 to 2745 meters (CCH 2012).

There are only about 20 approximately 15 known occurrences of *P. torreyi* var. *perplexans* in California. About half of the specimens are currently labeled as *P. myosotoides* in the CCH (2012), but many of those occur at or near an occurrence that has already been annotated to *P. torreyi* var. *perplexans*. All of the occurrences, with the exception of two from the interior South Coast Ranges, are from the central and southern Sierra Nevada. Eight Four of those occurrences are found within Yosemite National Park and one is on lands preserved by the Sierra Foothills Conservancy. Only nine of the known occurrences are historical, due mostly to recent surveys in Yosemite National Park (occurrences not documented in the past 20 years are considered historical by the CNDDB).

Threats to *P. torreyi* var. *perplexans* are currently unknown. Given its occurrence on National Park lands and its fairly widespread distribution in California, it should be considered of minimal conservation concern at this time. Given its affinity for germination after fire, however, it could be negatively affected by fire suppression.

Based on the available information, CNPS and CNDDB recommend deleting *Plagiobothrys myosotoides* from the CNPS Inventory. We also recommend adding *Plagiobothrys torreyi* var. *perplexans* to Rank 4.3 of the CNPS Inventory. If current records are later found to be an under-representation of its actual distribution and frequency, it will be re-evaluated by CNPS at that time.

**Recommended Actions**

**CNPS:** Delete *Plagiobothrys myosotoides* from Rank 4.3; add *Plagiobothrys torreyi* var. *perplexans* to Rank 4.3

**CNDDB:** Delete *Plagiobothrys myosotoides* from G4Q / S3.3; add *Plagiobothrys torreyi* var. *perplexans* to G4T3 / S3
Current CNPS Inventory Record
Plagiobothrys myosotoides (Lehm.) Brand
(see Online Inventory at: http://www.rareplants.cnps.org/detail/1259.html)

Draft CNPS Inventory Record
Plagiobothrys torreyi (A. Gray) A Gray var. perplexans I.M. Johnst.
chaparral popcornflower
Boraginaceae
Rank 4.3
Fresno, Kern, Mariposa, San Luis Obispo, Tulare, Tuolumne
Alta Sierra (261A) 3511865, Auberry (397C) 3711914, El Capitan (437B) 3711966, El Portal (438A) 3711967, Fairview (284B) 3511884, Kernville (284C) 3511874, Lake Eleanor (456A) 3711987, Lake Isabella North (260B) 3511864, Lime Mountain (270B) 3542068, Santa Margarita (246A) 3512045, Sentinel Peak (308D) 3611815, Shaver Lake (397D) 3711913, Ten Lakes (455A) 3711956, Wawona (437C) 3711956
Chaparral, meadows and seeps, lower montane coniferous forest, upper montane coniferous forest / burned areas, igneous soils; elevation 1195 – 2745 meters. Previously identified as P. myosotoides, which does not occur in CA. Possibly threatened by fire suppression. Similar to P. tenellus and P. torreyi var. torreyi; co-occurs with var. torreyi in the lower Sierra Nevada Foothills. See Contributions from the Gray Herbarium of Harvard University 68:72 (1923) for original description.