Added to California Rare Plant Rank 1B.3 of the CNPS Inventory on December 4, 2013

Rare Plant Status Review: *Astragalus austiniae*
Proposed Addition to California Rare Plant Rank 1B.3, G2G3 / S2S3

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Changes made to the original document appear in blue text.

Background

Astragalus austiniae is a perennial herb in the Fabaceae that is endemic to high peaks in the Lake Tahoe region of California and Nevada. It is currently included on the list of plants that were considered but rejected (CBR) from the CNPS Inventory, 2nd Ed. (Smith et al. 1980), due to being too common. However, upon a recent evaluation of this plant, it appears to be rarer than originally thought. It was first described by Gray (1876) and has been recognized in most subsequent treatments of the California flora. It is included in *The Jepson Manual* (Spellenberg 1993) and *The Jepson Manual, Second Edition* (Wojciechowski and Spellenberg 2012; available online at: http://ucjeps.berkeley.edu/cgi-bin/get_IJM.pl?tid=14707); the *Flora of North America* treatment of Fabaceae is not yet available. Barneby (1964) observed that *A. austiniae* resembles *A. spaldingii* and *A. tyghensis* (neither of which occurs in California; NatureServe 2013) based on the small pods and pubescent petals, respectively, but suggested that these similarities were the product of convergent evolution. According to Barneby (1964) and Cronquist et al. (1989), *A. austiniae* is most closely related to *A. andersonii*, which is more widespread than *A. austiniae* but occurs at lower elevations, sometimes within a few miles of *A. austiniae* populations. These two taxa can be distinguished by the smaller overall size of *A. austiniae*, the banner and wings of *A. austiniae* that are hairy on the outside, versus glabrous in *A. andersonii*, and the smaller fruits of *A. austiniae* that are generally included in the calyx (Wojciechowski and Spellenberg. 2012; Cronquist et al. 1989). *Astragalus austiniae* flowers from July to September (Consortium of California Herbaria, CCH, 2013).

Astragalus austiniae is restricted to the rocky ridges and slopes of high peaks in the Lake Tahoe region. It is found in subalpine coniferous forest as well as alpine boulder and rock fields. It occurs between 2440 and 2965 meters in elevation.

In California, there are only eight known occurrences of *A. austiniae*. It is found on Echo Peak, Mt. Tallac, the ridge west of Granite Lake, Mt. Lola, Castle Peak (a.k.a. Mt. Stanford), Needle Peak, Tinkers Knob, and a ridge above Shealor Lakes (CCH 2013). In Nevada it is only known from Mt. Rose (UNR 2013; A. Tiehm pers. comm. 2013). All of the known occurrences are on U.S. Forest Service lands; they span the Lake Tahoe Basin Management Unit, Tahoe National Forest, and El Dorado National Forest in California, as well as the Humboldt-Toiyabe National Forest in Nevada. Although restricted to relatively few occurrences, it can be locally common, for example, at Mt. Lola (*True 6941*; CCH 2013) and Mt. Rose in Nevada (A. Tiehm pers. comm. 2013). In

a cursory survey at Castle Peak, N. Jensen (pers. comm. 2013) observed only a few dozen plants, although the abundance of collections from that peak suggest that it is, or perhaps was, fairly common there (CCH 2013). Population information for most occurrences is not available. We contacted several USFS botanists who work in the area of distribution for *A. austiniae* in California and Nevada, and none of them were familiar with this plant. *Astragalus austiniae* occurs in areas of rugged terrain, so additional occurrences may exist. However, its general distribution is probably accurate, given that it has never been documented in the well-botanized Carson and Ebbetts Pass areas to the south or the Sierra Buttes and Sierra Lakes Basin to the north (N. Jensen pers. comm. 2012). Of the eight occurrences, only two have been recently documented (occurrences not documented in the past 20 years are considered historical by the CNDDB). However, its high number of historical occurrences may not be significant; there has been little or no land use change in its area of occupancy, so the probability of the plants still being present is considered to be high.

Despite being known from only a single occurrence in Nevada, *A. austiniae* does not have a rarity ranking for that state. Tiehm (pers. comm. 2013) observed that it is "locally abundant but not widespread", and that the plants from Mt. Rose could actually constitute multiple occurrences. *Astragalus austiniae* had been considered for rarity status in Nevada in the past, but was rejected due to its global rank of G4, meaning "apparently secure" (J. Johnson pers. comm. 2013). CNPS and CNDDB will update its global rank to better reflect its overall abundance and distribution, and recommend that it be considered for rarity status in Nevada.

Current threats to *A. austiniae* should be considered minimal, owing to its occurrence on semi-remote high-elevation peaks, many of which are in designated wilderness areas (CCH 2013). The occurrence at Castle Peak could face moderate threats from trampling by hikers, as it is a popular destination not too far from a major highway (N. Jensen pers. comm. 2013). Castle Peak has a network of small trails leading to the top, and some of the other peaks where it occurs could see comparable foot traffic (N. Jensen pers. comm. 2012). The occurrence at Mt. Lola could face only a limited amount of trampling, as that peak receives fewer visitors than Castle Peak (S. Matson pers. comm. 2013). In the long term, *A. austiniae* may face a more serious threat of climate change, given that it grows approximately at the current timberline and above (N. Jensen pers. comm. 2012). It is uncertain if *A. austiniae* could successfully migrate northward in a future with a warmer climate regime.

Based on the available information, CNPS and CNDDB recommend adding *Astragalus austiniae* to California Rare Plant Rank 1B.3. If more information regarding the abundance and distribution of this plant become available, CNPS and CNDDB will re-evaluate its status at that time.

Recommended Actions
CNPS: Add *Astragalus austiniae* to CRPR 1B.3
CNDDB: Add *Astragalus austiniae* to G2G3 / S2S3

Sent to: SN, E. Bergstrom, J. Johnson, S. and S. Perry, A. Tiehm, A. Walker on 10/24/2013

New CNPS Inventory Record
Astragalus austiniae ~~Brewer & S. Watson~~ A. Gray
Austin's astragalus
Fabaceae
CRPR 1B.3
Nevada
Alpine, El Dorado, Nevada, Placer
Tragedy Spring (507B) 3812062, Emerald Bay (523A) 3812081, Granite Chief (539A) 3912023, Independence Lake (555A) 3912043, Norden (555D) 3912033
Alpine boulder and rock fields, subalpine coniferous forest / rocky; elevation 2440-2965 meters.
Perennial herb. Blooms July to September.
Known in CA only from the Lake Tahoe region. Similar to *A. andersonii*. See *Geological Survey of California, Botany* 1:156 (1876) for original description.

Literature Cited

Barneby, R.C. 1964. Atlas of North American Astragalus Part II. Memoirs of the New York Botanical Garden 13: 1118-1119.

Consortium of California Herbaria (CCH). 2013. Data provided by the participants of the Consortium of California Herbaria. Regents of the University of California, Berkeley. Accessed on 23 September 2013. Available online at: http://ucjeps.berkeley.edu/consortium/

Cronquist, A., A.H. Holmgren, N.H. Holmgren, J.L. Reveal, and P.K. Holmgren. 1989. Intermountain Flora: Vascular Plants of the Intermountain West, U.S.A. Vol 3. Part B: Fabales. New York Botanical Garden, New York. 279 pp.

Gray, A. 1876. Geological Survey of California, Botany 1:156. (original description)

NatureServe. 2013. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Accessed on 23 September 2013. Available online at: http://www.natureserve.org/explorer.

Smith, J.P., Jr., R.J. Cole, and J.O. Sawyer, Jr. 1980. Inventory of Rare and Endangered Vascular Plants of California. Special Publication No. 1 (2nd Edition). California Native Plant Society, Berkeley. 115 pp.

Spellenberg, R. 1993. *Astragalus*. Pp. 583-605 in Hickman, J.C. (ed.), The Jepson Manual: Higher Plants of California. University of California Press, Berkeley and Los Angeles.

University of Nevada, Reno (UNR). 2013. University of Nevada, Reno Herbarium Database. Reno, Nevada. Available online at http://www.cabnr.unr.edu/reno_herbarium/. Accessed on 23 September 2013.

Wojciechowski, M.F. and R. Spellenberg. 2012. *Astragalus*. Pp. 729-752 in Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken (eds.), The Jepson Manual: Vascular Plants of California (2nd ed.). University of California Press, Berkeley and Los Angeles.