

Changed California Rare Plant Rank of *A. rigidissima* var. *rigidissima* from 4.3 to 1B.3 in the CNPS Inventory on May 7, 2012

**Rare Plant Status Review: *Arabis rigidissima* vars. *demota* and *rigidissima*
Proposed Name Change to ~~*Boechea rigidissima*~~ vars. ~~*demota*~~ and ~~*rigidissima*~~**

**Proposed Rank Change of ~~*B. A. rigidissima*~~ var. *rigidissima*
from 4.3, G3T3 / S3 to 1B.3, G3T2 / S2; and**

~~*B. A. rigidissima*~~ var. *demota* from G3T2Q / S1.2 to G3T3 / S1

Danny Slakey (CNPS), Aaron Sims (CNPS), and Roxanne Bittman (CNDDDB)

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Changes made to the original document appear in blue text.

Background on Name Changes

Arabis rigidissima vars. *rigidissima* and *demota* are perennial herbs in the Brassicaceae family that were added to the 1st Edition (1974) and 5th Edition (1994) of the CNPS Inventory, and are currently included as California Rare Plant Rank 4.3 and 1B.2 taxa, respectively. Recent taxonomic work has resulted in the transfer of most North American species of *Arabis* to the genus *Boechea*, including *Arabis rigidissima* (Al-Shehbaz 2003). From here on, we will use the name ~~*Boechea rigidissima*~~ to reflect the new taxonomy. The *Flora of North America* (FNA; available online at http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=250094538) and *The Jepson Manual, Second Edition* (TJM 2; available online at http://ucjeps.berkeley.edu/cgi-bin/get_IJM.pl?tid=85457) both do not treat the varieties within this species. ~~*Boechea*~~ *Arabis rigidissima* var. *rigidissima* is, however, treated in *The Jepson Manual* (1993). The two varieties are geographically disjunct, with var. *rigidissima* occurring in Siskiyou and Trinity counties, and var. *demota* occurring mainly in Washoe County, Nevada, and barely extending into eastern Placer County, California (CNDDDB 2012, FNA). Windham and Al-Shehbaz (2007) have shown that species with larger pollen grain size are often apomictic hybrids; based on this evidence, both varieties of ~~*B. A. rigidissima*~~ are apomictic hybrids, possibly derived from *B. stricta* and *B. suffrutescens* (both of which are common in California; Consortium of California Herbaria – CCH – 2012, FNA). The two varieties of ~~*Boechea*~~ *Arabis rigidissima* “show enough morphological divergence to suggest that they represent distinct origins, if not distinct combinations of parental genomes” (FNA). Variety *rigidissima* has a definite style and its siliques are acuminate at the apex; var. *demota* has no style and its siliques are acute to obtuse at the apex (Rollins 1983). These differences, as well as differences in valve venation, are minor but consistent when compared between the two varieties. More detailed studies on *Boechea rigidissima* are currently being conducted by other researchers (I. Al-Shehbaz pers. comm. 2012).

Based on the strong geographic disjunction (about 200 miles apart) and consistent morphological distinction between the two varieties of ~~*B. A. rigidissima*~~, CNPS and CNDDDB recommend retaining both varieties in the Inventory, but under the genus ~~*Boechea*~~ instead of *Arabis*. If future taxonomic work provides additional clarification to their taxonomy, CNPS and CNDDDB will re-evaluate their status at that time.

Background on Rank Changes

Review of these taxa showed that ~~B.~~ *A. rigidissima* ~~ssp.~~ *var. rigidissima* is much less common than a typical Rank 4.3 taxon. Available herbarium collections show that there are about six occurrences of this plant in California (CCH 2012); three collections are within a half mile of each other, so there may be as few as four total occurrences. Several field botanists agree that the plant should be evaluated and potentially moved to Rank 1B.3 to better reflect its rarity (J. Nelson, D. York, D.W. Taylor pers. comm. 2012).

There are few threats facing ~~B.~~ *A. rigidissima* *var. rigidissima*, as all of the known occurrences are located in National Forests, and four of those are located within wilderness areas. Only one collection has been made in the last twenty years (York 2940; occurrences not documented in the last 20 years are considered historical by the CNDDDB). Based on the available information, CNPS and CNDDDB recommend that ~~B.~~ *A. rigidissima* *var. rigidissima* be moved from California Rare Plant Rank 4.3 to 1B.3.

Some questions exist on the identity of the California occurrences of ~~B.~~ *A. rigidissima* *var. rigidissima*. Both of the current CNDDDB occurrences of this plant are documented only by field survey forms, and searches for this plant at these locations only yielded the discovery of closely-related taxa. *Boechera rectissima* *var. rectissima* was at CNDDDB EO#1, and *B. suffrutescens* and *B. platysperma* were found at CNDDDB EO#2 (D.W. Taylor pers. comm. 2012). We also discovered an herbarium collection of *Boechera Arabis rigidissima* *var. demota* that was not previously included in the CNDDDB (Tiehm – 524; CCH 2012). Although this specimen is only annotated to *B. rigidissima*, its location implies that it belongs to *var. demota* (Rollins 1983). It was collected approximately 0.75 miles northeast of CNDDDB EO #2, and represents a third California occurrence. Additionally, ~~B.~~ *A. rigidissima* *var. demota* is currently known in Nevada from 41 occurrences (D.W. Taylor pers. comm. 2012). This level of global abundance suggests that the CNDDDB rank should be changed from G3T2Q / S1.2 to G3T3 / S1; however, with only 44 occurrences known worldwide, its current California Rare Plant Rank of 1B.2 is not recommended to change.

Recommended Actions

CNPS: Change ~~*Arabis rigidissima* vars. *rigidissima* and *demota*~~ to ~~*Boechera rigidissima* vars. *rigidissima* and *demota*~~.

Re-rank ~~*Boechera Arabis rigidissima* var. *rigidissima*~~ from CNPS 4.3 to CNPS 1B.3

CNDDDB: Change ~~*Arabis rigidissima* vars. *rigidissima* and *demota*~~ to ~~*Boechera rigidissima* vars. *rigidissima* and *demota*~~.

Re-rank ~~*Boechera Arabis rigidissima* var. *rigidissima*~~ from G3T3 / S3 to G3T2 / S2

Re-rank *Arabis rigidissima* *var. demota* from G3T2Q / S1.2 to G3T3 / S1

Revised CNPS Inventory Records

~~*Boechera Arabis rigidissima* (Rollins) Al-Shehbaz var. *rigidissima*~~

Trinity Mountains rockcross

Brassicaceae

Rank 1B.3

Siskiyou, Trinity

Dees Peak (686D) 4112313, Eaton Peak (701C) 4112238, English Peak (702B)

4112342, Thurston Peaks (668B) 4012382

Upper montane coniferous forest (gravelly or rocky); elevation 1600 - 2200 meters.

Perennial herb. Blooms July to August.

Similar to *Boechea suffrutescens*. ~~A synonym of *Arabis rigidissima* var. *rigidissima* in *The Jepson Manual* (1993); See *Boechea rigidissima* varieties not treated in *TJM 2*; varieties are not treated. See *Rhodora* 43(511):380-381 (1941) for original description, and *Novon* 13(4):381-391 (2003) for revised nomenclature.~~

Boechea Arabis rigidissima (Rollins) Al-Shehbaz var. *demota* Rollins

Galena Creek rockcress

Brassicaceae

Rank 1B.2

Nevada

Placer

Martis Peak (554D) 39120C1

Broadleafed upland forest, upper montane coniferous forest / rocky; elevation 2255 – 2560 meters.

Perennial herb. Blooms August.

Known in CA from only near Martis Pk., and in NV from the Carson Range. Threatened by logging and fuel reduction projects. On watch list in NV. Not in *The Jepson Manual* (1993) and *TJM 2*. See *Journal of the Arnold Arboretum* 64:498 (1983) for original description, and *Novon* 13(4):381-391 (2003) for revised nomenclature.

Literature cited

Al-Shehbaz, I. 2003. Transfer of most North American species of *Arabis* to *Boechea*. *Novon* 13(4): 381-391.

Rollins, R.C. 1983. Studies in the Cruciferae of western North America. *Journal of the Arnold Arboretum* 64(4): 491- 510.

Windham, M.D. and I. Al-Shehbaz. 2007. New and noteworthy species of *Boechea* (Brassicaceae) II: apomictic hybrids. *Harvard Papers in Botany* 11(2):257-274.