

Added to California Rare Plant Rank 2B.2 of the CNPS Inventory on July 26, 2019**Rare Plant Status Review: *Muhlenbergia emersleyi*****Proposed Addition to California Rare Plant Rank 2B.2, G5 / S1**

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Changes made to the original document are in blue text.

Background and Taxonomy

Muhlenbergia emersleyi Vasey is a perennial, ~~rhizomatous~~ herb in the Poaceae known from the San Bernardino National Forest in California, east to Arizona, New Mexico, and Texas in the United States, and south to Central America (Peterson 2003). It is included in the *Flora of North America North of Mexico* (Peterson 2003), but not included in the *Jepson eFlora* (Peterson 2012) since it was previously not known from California. *Muhlenbergia emersleyi* was described in 1892 as part of a monograph of grasses of the United States (Vasey 1892). It is perhaps most similar to *M. elongata* based on its key break with this species in the *Flora of North America North of Mexico*; it is differentiated in having basal sheaths laterally compressed and usually keeled (vs. basal sheaths rounded), glumes exceeding florets (vs. glumes exceeded by florets), and culms (50)80 to 150 cm tall (vs. culms 4030 to 120160 cm tall in *M. elongata*) (Peterson 2003). It is closely related to *M. elongata* and *M. lucida* since all three species appear in a strongly supported clade based on DNA sequence markers (Peterson et al. 2010; P. Peterson pers. comm. 2019). ~~*M. longiligula* and can be differentiated by its compressed-keeled sheaths, pubescent florets and membranous ligules (Peterson 2003).~~ The specific epithet *emersleyi* comes from J. D. Emersley for whom it is named after (Vasey 1892).

Ecology

In California, *Muhlenbergia emersleyi* occurs in montane chaparral along rocky slopes, gravelly washes, and often on gabbroic soils. It is known from an approximate elevation of 1,200 to 2,500 meters throughout its range in North America north of Mexico (Peterson 2003), and from 1,280 to 1,570 meters in California (Calflora 2019; CalPhotos 2019; Google LLC 2019), with a blooming period from September to November (Calflora 2019). *Muhlenbergia emersleyi* is generally associated with *Bouteloua curtipendula* (CalPhotos 2019, K. Morse pers. comm. 2019).

Distribution and Abundance

In California *Muhlenbergia emersleyi* is currently known from only two occurrences between Sugarloaf Mountain and Santa Rosa Mountain in Riverside County, and along the Pacific Crest Trail (PCT). Both occurrences are located in the San Bernardino National Forest. There was an estimated population size of 190 plants seen at Record 1 in September of 2016. Record 2 had an estimated population size of more than 50 plants in September 2016, and more than 81 plants seen in May of 2019 (Calflora 2019, T. Chester pers. comm. 2019).

The native status of *M. emersleyi* in California has been brought into question. *Muhlenbergia emersleyi* is in the nursery trade and there is an abundance of horse traffic along the trails at the Sawmill location and along the PCT where it was found in California, leading to the suspicion that horses have possibly spread this species into California (T. Chester pers. comm. 2019). However, it is believed that an introduction is fairly unlikely; the location where it occurs at the

Sawmill site is mostly off the main trail and on the side of a trail where horses are unlikely to go. The habitat where it occurs is also fairly unique for the area surveyed. Nevertheless, it would be good to survey off trail, particularly at the PCT location, in attempts to discover new populations of this plant in California (K. Morse pers. comm. 2019). Since *M. emersleyi* is newly discovered in California, it is suspected to have more occurrences that have not yet been discovered; field surveys are needed.

Status and Threats

Muhlenbergia emersleyi is not ranked in Arizona, New Mexico, or Texas (NatureServe 2019). There are no known threats to *M. emersleyi*, but it could possibly be threatened by having such small populations and numbers of plants along with its proximity to trails (K. Morse pers. comm. 2019).

Summary

Based on the available information, CNPS and CNDDDB recommend adding *Muhlenbergia emersleyi* to California Rare Plant Rank 2B.2 of the CNPS Inventory. If knowledge on the distribution, threats, and rarity status of *M. emersleyi* changes in the future, we will re-evaluate its status at that time.

Recommended Actions

CNPS: Add *Muhlenbergia emersleyi* to CRPR 2B.2

CNDDDB: Add *Muhlenbergia emersleyi* to G5 / S1

Draft CNPS Inventory Record

Muhlenbergia emersleyi Vasey

bullgrass

Poaceae

CRPR 2B.2

Riverside

Arizona, New Mexico, Texas; Baja California, Sonora Mexico

Toro Peak (065C) 3311654, Butterfly Peak (066D) 3311655

Chaparral (montane) / rocky, gravelly, often gabbroic; elevation 1,280-1,570 meters.

Perennial rhizomatous herb. Blooms September to November.

Discovered in CA by Keir Morse in 2016. See *Contributions from the United States National Herbarium* 3(1): 66 (1892) for original description, and *American Journal of Botany* 97(9):1532-1554 for phylogenetic classification.

Literature Cited

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