

## RANGE EXTENSION AND FIRST MONTANA RECORDS FOR *CASTILLEJA PUBERULA* RYDB. (OROBANCHACEAE)

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### ABSTRACT

Two recent collections of the rare plant species *Castilleja puberula* Rydb. are reported for Montana. These records document a wide disjunction in and extension of the range of *C. puberula*, which was previously known only from 6 counties in the Rocky Mountains of north-central Colorado.

This paper reports a substantial disjunction in and extension for the range of the rare plant species *Castilleja puberula* Rydb. Until recently, *C. puberula* was only known from alpine plant communities in the Rocky Mountains of north-central Colorado, in Boulder, Clear Creek, Gilpin, Grand, Larimer, and Park counties (Ackerfield 2015; Colorado Rare Plant Technical Committee 2015; Hartman & Nelson 2001; Weber & Wittman 2012), and it was regarded as endemic to Colorado (J. Ackerfield, pers. comm. 2015). *Castilleja puberula* is a listed species of management concern, both in Colorado, where it is listed as S2-S3, as well as globally as G2-G3 (Colorado Rare Plant Technical Committee 2015).

In late 2014, Dick Olmstead (WTU) shared some photos he obtained of an unusual *Castilleja* species he collected in August 2014 near the summit of Mount Jefferson, a peak on the Continental Divide in the Centennial Range in Beaverhead Co., southwestern Montana, and close to the border of Fremont Co., Idaho (Figs. 1-2). It was quickly evident that these plants were unlike the usual *Castilleja* species known from Montana and they most closely resembled *C. puberula*. While searching the web site of the Consortium of Pacific Northwest Herbaria for similar plants, Olmstead noted a collection ten years earlier of a similar species from virtually the same location by Montana botanist Peter Lesica, a sheet of which was obtained on loan from MONTU. Lesica's collection was initially identified as *C. flava* S. Wats., a similar but considerably taller species found primarily in sagebrush habitats at moderate elevations, though a later annotation by Lesica linked his collection to *C. nivea* Pennell & M. Ownbey, another yellowish alpine *Castilleja* known from several mountain ranges in Montana and adjacent Wyoming. However, *C. nivea* has calyces divided into four subequal lobes, whereas the Mount Jefferson plants have calyces divided deeply in the adaxial-abaxial plane but cleft much more shallowly in the lateral plane.

Subsequent examination of both the Olmstead (Figs. 3-4) and Lesica (Figs. 5-6) collections and comparison with collections of *Castilleja puberula* from Colorado allowed positive identification of the Montana plants as belonging to that species. Specimen citations are provided below.

**Montana.** Beaverhead Co.: Centennial Range, common in stony limestone soil just below the summit of Mount Jefferson, T15S R2E S5, 10,150 ft, with *Dryas octopetala* and *Silene acaulis*, 16 Jul 2004, Lesica 8884 (MONTU, NY); alpine meadows on upper slopes of Mount Jefferson, 44.56157° N, 111.50415° W, in rocky alpine meadow, 3090 m, plants circa 15 cm tall, flowers yellow, 19 Aug 2014, Olmstead 2014-132 (ID, WTU). Figure 7 shows the locality.

These collections of *Castilleja puberula* are the first and second for Montana and also represent the first known occurrence of this species outside of Colorado. This population represents a disjunction of approximately 600 km from the nearest populations in Colorado. Plants of the Montana

population are remarkably similar to the Colorado plants and show little, if any, morphological divergence. The large gap between the Colorado and Montana populations is difficult to explain, and *C. puberula* should be looked for in similar limestone alpine situations in the intervening mountains, especially in Wyoming.

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#### LITERATURE CITED

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Figure 1. *Castilleja puberula* at the collection site on Mount Jefferson, Olmstead 2014-132 (WTU), second collection for Montana. Photo by R.G. Olmstead.



Figure 2. *Castilleja puberula* at the collection site, *Olmstead 2014-132* (WTU). Photo by R.G. Olmstead.

Figure 3. Full sheet of *Olmstead 2014-132* (WTU).



Figure 4. Cropped specimens from *Olmstead 2014-132* (WTU).



Figure 5. Full sheet of Lesica 8884 (MONTU), first collection of *Castilleja puberula* in Montana.



Figure 6. Cropped specimens from *Lesica 8884* (MONTU).



Figure 7. Habitat of *Castilleja puberula* near summit of Mount Jefferson, Beaverhead Co., Montana — site of both collections cited here as range extensions. The relatively flat-topped peak in the middle distance is Sawtell Peak, with the Yellowstone Plateau in the background. Photo by R.G. Olmstead.



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