

Kept in CNPS Inventory as California Rare Plant Rank 2.3 on February 22, 2013**Rare Plant Status Review: *Agrostis humilis*****Proposal to keep at Rank 2.3, G4 / S2**

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

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Background

Agrostis humilis is a Rank 2.3 plant in the Poaceae that has been included in the CNPS Inventory since 1980 (2nd Edition). It was included in *The Jepson Manual* (TJM 1993), but in the *Flora of North America* (FNA) and *The Jepson Manual, Second Edition* (TJM 2), *Agrostis thurberiana* (a common taxon) was treated as a synonym of *A. humilis*, due to the “complete intergradation” between the two putative species (*Agrostis humilis* was also moved to the genus *Podagrostis* in FNA, but for consistency we maintain it in *Agrostis* for this status review) (FNA). Contact information for FNA treatment author M. Harvey could not be obtained, so we were unable to find out what information was used to substantiate the claim of complete intergradation. Moore et al. (2005) also mentioned intergradation occurring between the two taxa at several sites in the southern Sierra Nevada. Given that the two species have significant overlap in their geographic and elevation ranges, it is possible that intergradation could occur in other parts of their ranges as well (TJM 1993). If accepted, the synonymization of these two taxa would result in *A. humilis* becoming common in California, as *A. thurberiana* is common throughout the state (Consortium of California Herbaria, CCH, 2012).

Delineations of the two taxa may have led to some of the confusion between them. In TJM (1993), *A. humilis* was described as a shorter plant with a longer, more flattened inflorescence than *A. thurberiana*, but with some overlap in each character. To investigate the distinctiveness of the two taxa, P. Peterson (treatment author for *Agrostis* in TJM 2), R. Soreng, and the first author examined the type specimens as well as many other specimens of both species from several western states. We had some difficulty identifying the plants based on the characters in TJM (1993), but were able to identify two key characters not included in previous treatments (e.g., Hitchcock and Cronquist 1973, Cronquist et al. 1977, TJM 1993, Taylor 2010) that could aid in separating the species. Soreng (pers. comm. 2012) observed a distinction in the basal leaf branching patterns: *A. humilis* primarily has intravaginal shoots, while *A. thurberiana* has extravaginal shoots (extravaginal shoots have a rudimentary prophyll with a bladeless sheath above it, while intravaginal shoots have a developed prophyll with no bladeless leaves). Additionally, *A. humilis* generally has a hairier adaxial leaf surface, with erect, short, sinuate, coarse hairs. The adaxial leaf surface of *Agrostis thurberiana* is either glabrous or sometimes with sparse appressed hairs (rarely with coarse hooks) (R. Soreng pers. comm. 2012). Using these characters, they were able to clearly identify all but one of the specimens in the U.S. National Herbarium (Henderson 3927) to either *A. humilis* or *A. thurberiana*, and recommend maintaining them as separate species (R. Soreng and P. Peterson pers. comm. 2012).

To assist with differentiating *A. humilis* from *A. thurberiana*, R. Soreng has developed a taxonomic key (see Appendix I). In addition, other treatments, such as the *Manual of Grasses for North America* (Barkworth et al. 2007), *Intermountain Flora*, Vol. 6 (Cronquist et al. 1977), and the upcoming Oregon Flora Project (B. Wilson pers. comm. 2012) recognize both *A. humilis* and *A. thurberiana* as separate taxa. The *Flora of the Yosemite Sierra* (Taylor 2010) also recognizes both taxa, mentioning that *A. humilis* prefers calcareous substrates, while *A. thurberiana* does not; however, it also states that “the distinction between species of *Podagrostis* in our region is uncertain”.

There are currently 20 records of *A. humilis* in the CNDDDB. The CNDDDB recently updated its records of *A. humilis*, but none of the specimens from the UC Davis Herbarium were included in it. The UC Davis Herbarium recently annotated the relevant specimens to *FNA* synonymy, which placed *A. thurberiana* within *A. humilis*. Twelve of these specimens at UC Davis are within the range of *A. humilis*, so some could represent new occurrences (CCH 2012). The UC Davis collections of *A. humilis* and *A. thurberiana* specimens should be reviewed to determine which, if any, are actually *A. humilis*; followed by updating their records in the CCH, accordingly.

Based on the available information, CNPS and CNDDDB recommend keeping *Agrostis humilis* at Rank 2.2 in the CNPS Inventory. Placement within the genus *Agrostis* or *Podagrostis* is uncertain given conflicts between recent treatments and the lack of genetic data to support generic circumscriptions (R. Soreng pers. comm. 2012). We propose to retain the plant in the genus *Agrostis*, following *TJM* 1993. If more information on the taxonomy, distribution, or abundance of *A. humilis* becomes available in the future, CNPS and CNDDDB will re-evaluate its status at that time.

Recommended Actions

CNPS: Keep at Rank 2.3

CNDDDB: Keep at G4 / S2

Revised CNPS Inventory Record

Agrostis humilis Vasey

mountain bent grass

Poaceae

Rank 2.3

Alpine, Madera, Mariposa, Mono, Tuolumne

Colorado, Idaho, Montana, New Mexico, Nevada, Oregon, Utah, Washington, Wyoming

Alpine boulder and rock field, meadows and seeps, subalpine coniferous forest / sometimes calcareous; elevation 2670 – 3200 meters.

Perennial herb. Blooms July to September.

To be expected elsewhere in CA; need field surveys. Threatened by foot traffic and vehicles. Possibly threatened by grazing and trampling. Similar to *A. variabilis* and intergrades with *A. thurberiana*. Different circumscription here than *TJM* 2, which includes *A. thurberiana* (a common taxon) as a synonym. See *Bulletin of the Torrey*

Botanical Club 10(2):21(1883) for original description and *Madroño* 25(4):232 (1978) for first CA record.

Literature Cited

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Appendix I

Taxonomic key differentiating *Agrostis humilis* from *Agrostis thurberiana* by R. Soreng, 2012:

Panicles 1.5—4 (5) cm long, linear or slightly spreading; plants 0.3—1.8 (2.4) dm tall, with a densely tufted habit, with all or most vegetative shoots intravaginal (shoots with a well developed prophyll, without bladeless leaves above it); leaf blades often folded, adaxial surfaces of at least some blades with erect, often sinuate, short, coarse hairs; plants alpine. *A. humilis*

Panicles (3.5) 5—10 cm long, usually somewhat open or eventually contracted; plants (1.5) 2—6 dm tall, with a loosely tufted habit, with all or most vegetative shoot extravaginal (shoots with a rudimentary prophyll, and with one or a few bladeless sheaths above it; or, when immature, noticeable as swollen buds at the nodes); leaf blades usually flat, adaxial surface usually smooth and glabrous, infrequently with sparse appressed hairs, or rarely with coarse hooks); plants of forests to subalpine and low alpine. *A. thurberiana*

(Also note that smooth glume keels occur in both species, while many other *Agrostis* species have coarse hooks along the keels.)