

Added to California Rare Plant Rank 2B.1 of the CNPS Inventory on December 12, 2018

**Rare Plant Status Review: *Catabrosa aquatica*
Proposed Addition to California Rare Plant Rank 2B.1, G5 / S1**

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Changes made to the original document are in blue text.

Background and Taxonomy

Catabrosa aquatica (L.) P. Beauv. is a perennial, sometimes stoloniferous or rhizomatous, grass in the Poaceae known “throughout much of the Northern Hemisphere and in South America, occurring from Macaronesia, Europe and North Africa north and east through Siberia, the Caucasus, Kazakhstan, India and Kashmir to Mongolia and China. It also occurs throughout western central North America and eastern Canada and in southern South America” (Akhani 2014). In California it is only known from a single occurrence in Little Shasta Spring (Little Shasta Meadows) of Siskiyou County. It was first discovered in California by Marla Knight, who also made the first known collection of it in 2007, in vegetative condition. Knight made additional collections since that time, but was never able to successfully key it out in *The Jepson Manual* since it was previously unknown from California, and there were no specimens with an inflorescence. It remained a mystery until earlier this year when, at Marla’s request, Erin Rentz and Sarah Malaby (Forest Botanists, Klamath Falls Ranger District, Fremont-Winema National Forest, Oregon) collected and identified it during a meadow walk (Lonergan, E. pers. comm. 2018). Knight’s 2007 collection (#1185) was recently annotated by Barbara Wilson to be *Catabrosa aquatica*, and an additional collection by Knight (#1200) was determined by Barbara Wilson and Jennifer Whipple to be *Torreyochloa pallida* var. *pauciflora* (Knight, M. pers. comm. 2018).

Although *Catabrosa aquatica* has gone under many different names throughout its taxonomic history (58 synonyms in Tropicos [2018]), there are currently no significant taxonomic issues associated with it (Akhani 2014). Its basionym is *Aira aquatica* L., which is represented by the following synonyms: *Colpodium aquaticum* (L.) Trin., *Diarrhena aquatica* (L.) Raspail, *Glyceria aquatica* (L.) J. Presl & C. Presl, *Melica aquatica* (L.) Loisel., and *Molinia aquatica* (L.) Wibel (Tropicos 2018). *Catabrosa* was formerly treated as a genus of only two species (Barkworth 2007), but currently includes seven accepted species, with *C. aquatica* being the only one known from North America (Kew Science 2018). NatureServe (2018) includes two varieties of *C. aquatica*, var. *aquatica* and var. *laurentiana*, with the latter being endemic to southeastern Canada, though recent treatments do not formally recognize infraspecific taxa of this species (Barkworth 2007; Chambers et al. 2017).

Catabrosa is in the *Poeae* tribe and resembles members of the *Meliceae* in having closed leaf sheaths, truncate, scarious lemma apices, and also in chromosome base number, but it lacks the distinctive lodicule morphology of that tribe (Barkworth 2007). In the *Flora of North America North of Mexico*, *Catabrosa* breaks out in the taxonomic key next to *Cutandia* (Barkworth 2007), a genus of plants native to Asia and the Mediterranean (Kew Science 2018); *Cutandia memphitica* is the only species of the genus that is known in the state and is reported from southern California (CCH 2018; Smith 2014). *Catabrosa aquatica* is similar to *Torreyochloa pallida* var. *pauciflora*, and co-occurs with this taxon at the single California occurrence. Barbara

Wilson (pers. comm. 2018) notes the following: “Both *Catabrosa aquatica* and *Torreyochloa pallida* are sort of broad-leaved, stoloniferous (or rhizomatous; they don't care) aquatic grasses. A handy difference that works even on sterile material: *Torreyochloa pallida* leaf sheaths are open (with overlapping margins) to the base, while *Catabrosa* leaf sheaths are closed at least part of the way.” *Catabrosa* may be superficially similar to *Poa*, and has been described as a short, blunt-leaved grass that is similar to *Poa trivialis* (Rose 1965). However, B. Wilson (pers. comm. 2018) doesn't really consider *P. trivialis* to be similar to *Catabrosa*, and notes that *P. trivialis* also occurs in different habitat. *Catabrosa* is differentiated from *Poa* in having lemma apices that are rounded to truncate, erose and scarious, and unawned, versus lemma apices that are acute to acuminate, and sometimes minutely mucronate in *Poa* (Barkworth 2007).

According to Moerman (1998), the seeds of *Catabrosa aquatica* were used for food and the grass provides good pasture for horses; however, Barkworth (2007) indicates that although palatable, it is never sufficiently abundant enough to be considered an important forage species. The name *Catabrosa* comes from the Greek *katabrosis*, meaning ‘eating up’ or ‘corrosion’, referring to the appearance of its lemma apices (Barkworth 2007).

Ecology

Rangewide, *Catabrosa aquatica* is known from inland, freshwater wetlands of permanent and seasonal rivers, streams, creeks, waterfalls, ponds, and lakes; growing in slow moving, shallow waters of rivers and streambanks, in muddy ponds, stagnant margins, and ditches between 800 and 4,000 meters in elevation (Akhani 2014; Barkworth 2007).

In California, *C. aquatica* occurs in and along a shallow, cold, low-gradient stream that runs through an open meadow, co-occurring with *Aconitum columbianum*, *Carex* sp., *Geum* sp., *Machaeranthera canescens*, *Perideridia bolanderi*, *Ranunculus aquatilis*, *Rumex* sp., and *Torreyochloa pallida* var. *pauciflora*. The elevation at the single known occurrence of *C. aquatica* in California is approximately 1,835 meters (Knight, Lonergan, and Wilson pers. comm. 2018; Google Inc. 2015), and has been observed blooming in July and September (Knight, M. and E. Lonergan pers. comm. 2018).

Distribution and Abundance

The single occurrence of *C. aquatica* in California is located in Little Shasta Spring at the head of Shasta River, throughout the vicinity of Martin's Dairy Campground, within Klamath National Forest, Siskiyou County. It has been documented by collections and observations from 2007 to present, is reported to have over 100 plants, and occurs in the creek for quite a distance (Knight and Lenz 1185; Lonergan, E. pers. comm. 2018). Additional surveys are needed to determine the extent of the single known occurrence, and surveys should also occur in preferred habitat throughout the region in order to discover potential new occurrences in California.

The closest known collection of *C. aquatica* outside of California is from Steens Mountain, Harney County, Oregon (Yen et al. 07-38; SRP51769), which lies approximately 315 air-km to the northeast-east of the California occurrence. The next closest out-of-state record is from the Montana Mountains, Humboldt County, Nevada (Tiehm and Nachlinger 15433; SRP43721), lying approximately 340 air-km directly to the east of the occurrence in California (CPNWH 2018). Thus, the single occurrence of *C. aquatica* in California represents a significant range extension for this species, and is of local significance.

Status and Threats

Globally, *Catabrosa aquatica* is classed at IUCN Least Concern and Secure (G5) since it is widespread with stable populations and does not face any major threats (Akhani 2014; NatureServe 2018). In Canada, it is Critically Imperiled (S1) in New Brunswick and Prince Edward Island; Imperiled to Vulnerable in Alberta (S3), Newfoundland Island (S2S3), and Nunavut (S2); Imperiled to Apparently Secure in Labrador (S2S4), Manitoba (S4?), Ontario (S4), Quebec (S3S4), and Saskatchewan (S4); and all sites are historical (SH) in British Columbia. In the United States, it is Critically Imperiled (S1) in Alaska and Wisconsin; Vulnerable (S3) in Wyoming; Apparently Secure to Secure (S4S5) in Montana; and not ranked (SNR) in Arizona, Colorado, Idaho, Iowa, Nebraska, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, and Washington (NatureServe 2018). *Catabrosa aquatica* is also state listed as Endangered in Wisconsin (WDNR 2018) and is designated as an obligate wetland (OBL) species (USDA 2018).

The immediate and surrounding land uses at the single California site of *C. aquatica* are recreation and cattle grazing. It is adjacent to a campground, and the area is grazed, with hoof marks from cattle visible along the stream. The site also sees unauthorized OHV use during the hunting season (Lonergan, E. pers. comm. 2018). The significant and extent these disturbances may have on *C. aquatica* remain unknown, and require further research.

Summary

Based on the available information, CNPS and CNDDDB recommend adding *Catabrosa aquatica* to California Rare Plant Rank 2B.1 of the CNPS Inventory. Although no direct threats are currently known, we recommend a Threat Rank of 0.1 based on this species being known from only a single occurrence in California, and therefore subject to potential stochastic events as well as adverse effects of climate change. If knowledge on the distribution, threats, and rarity status of *C. aquatica* changes in the future, we will re-evaluate its status at that time.

Recommended Actions

CNPS: Add *Catabrosa aquatica* to CRPR 2B.1

CNDDDB: Add *Catabrosa aquatica* to G5 / S1

Draft CNPS Inventory Record

Catabrosa aquatica (L.) P. Beauv.

water whorlgrass

Poaceae

CRPR 2B.1

Siskiyou

Alaska, Arizona, Colorado, Idaho, Iowa, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington, Wisconsin, Wyoming; South America

Panther Rock (732C) 4112272

Meadows and seeps / streambanks; elevation 1,835 meters.

Perennial (stoloniferous/rhizomatous) herb. Blooms July-September.

Discovered in CA by Marla Knight in 2007. Possibly threatened by grazing, trampling, vehicles, and recreational activities. Similar to *Torreyochloa pallida* var. *pauciflora*; differs in having leaf sheaths closed at least part of the way, vs. leaf sheaths open (with overlapping margins) to the base in *T. pallida*. See *Species Plantarum* 1: 64 (1753) for original description, and *Essai d'une Nouvelle Agrostographie* 97 (1812) for revised nomenclature.

Sent to: NW, B. Baldwin, M. Barkworth, S. Malaby, B. Wilson on 11/02/2018

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