Bromus pumpellianus Scribn. — Pumpelly's brome grass

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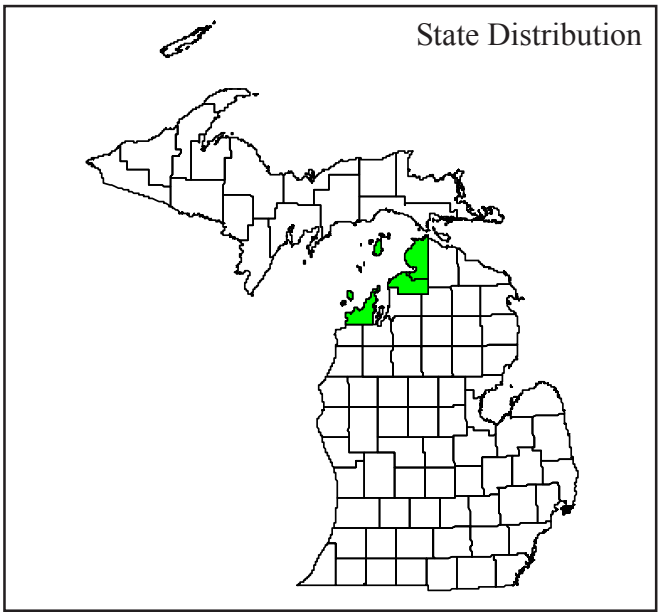

Best Survey Period

Status: State threatened

Global and state rank: G4G5T4/S2

Family: Poaceae (grass)

Other common names: Arctic brome grass

Synonyms: *Bromus inermis* Leyss. ssp. *pumpellianus* (Scribn.) Wagnon; *B. polyanthus* Scribn.; *B. arcticus* Shear.

Taxonomy: Wagnon (1952) treated this taxon as *Bromus inermis* ssp. *pumpellianus*. The European *Bromus inermis* has become established throughout North America, hybridizing with the native plants as described by Elliot (1949). If the species *B. pumpellianus* is recognized, our plants are var. *pumpellianus*, or var. *purpurascens* (Hook) Wagnon, though at least three collections have been referred to var. *arcticus*.

Total range: *Bromus pumpellianus* occurs primarily in western North America, ranging from Alaska and the Northwest Territories to the Colorado Rockies. It is disjunct rather locally in the northern Great Lakes region, occurring along northeastern Lake Michigan shores, and is considered rare in Ontario.

State distribution: *Bromus pumpellianus* is restricted to the northwestern Lower Peninsula in Emmet, Charlevoix, and Leelanau counties, where it occurs on the mainland as well as on South Fox, Beaver, and the Manitou Islands. The sole (1912) Cheboygan County locality has likely been extirpated with the development of Mackinaw City. Fifteen stations have been discovered or confirmed extant since 1980, including a 1999 discovery on the north shore of Beaver Island. Plants at three colonies are known to number in the thousands, and four others have estimates of between 100 and 500 clumps.

Recognition: Stems of *B. pumpellianus* are 5-10 dm tall and have **nodes with long hairs** and leaves (5-8 mm wide) that are **hairy on the upperside**. The narrowly cylindrical inflorescences bear slender spikelets on short, erect stalks. The short-awned lemmas are **distinctly hairy on the margins, nerves, and lower back** and are **slightly indented** at the tip. The lower glume is typically one-nerved while the upper is three-nerved. Well-developed **auricles (lobes) at the summit of the leaf sheath** help distinguish this native species from the introduced and widely distributed *B. inermis* (smooth or rocket brome), which also can be distinguished by its glabrous or only finely hairy nodes, and leaves that are usually hairless.

Best survey time/phenology: Pumpelly's brome grass is best sought while in full fruit, typically during July and August. The characters for determination are rather subtle; thus attempts to distinguish this species during less optimal periods should occur only after considerable experience with the species.

Habitat: This rare grass grows on low sand dunes and along beaches in Lake Michigan usually in association with *Ammophila breviligulata* (beach grass), *Arctostaphylos uva-ursi* (bearberry), *Artemisia caudata* (worm-

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wood), *Agropyron dasystachyum* (dune wheatgrass), *Cirsium pitcheri* (Pitcher's thistle), and *Prunus pumila* (sand cherry). In its main range, to the west and north, *B. pumpellianus* habitat includes gravelly or sandy slopes, shores, and tundra. In Ontario, it inhabits sandy prairies and beaches, and is occasionally adventive along railroads on the north shore of Lake Superior (Riley & Reznicek, 1984).

Biology: Pumpelly's brome grass is a perennial, which spreads vegetatively via rhizome growth. Its spikelets mature from late June to September, though most collections have been made in July and early August.

Conservation/management: Although this grass can be found on moderately disturbed beaches and dunes, its shoreline habitat is vulnerable to heavy recreational use and residential development, the latter being responsible for its destruction in at least two cases. However, because large colonies have been found at sites moderately disturbed by foot and/or ORV traffic, it can evidently tolerate some disturbance. Since it is found primarily in open dune or exposed shoreline communities where active disturbance is an integral ecological process, it is likely adapted to natural shoreline disturbances.

Comments: Hitchcock (1935) and Gleason (1952) refer to Great Lakes occurrences as adventive; however, Elliot (1949) points out that numerous other western and arctic species occur naturally in the Great Lakes region. Wagnon (1952) notes that the habitat of Great Lakes plants resembles that of the western var. *purpurascens* less than that of var. *arcticus,* although the latter has been only rarely collected in Michigan.

Research needs: Study of virtually any aspect of the biology and ecology of this species, as well as systematic surveys to assess its status in Michigan, would help inform management decisions and facilitate the development of optimal protection strategies. Due to increasing development pressures on the shoreline habitat of *B. pumpellianus*, research on the role of disturbance, particularly the effects of human disturbance, is of immediate concern.

Related abstracts: open dunes, fascicled broom-rape, Lake Huron tansy, Pitcher's thistle, Lake Huron locust, piping plover

Selected references

Dore. W.G. and J. McNeill. 1980. Grasses of Ontario. Canad. Dept. Agr. Monogr. 26:30-34.

Elliot, F.C. 1949. *Bromus inermis* and *B. pumpellianus* in North America. Evolution 3:142-149.

Riley, J.L. and A.A. Reznicek. 1984. *Bromus pumpellianus* Scribn. In, Atlas of the rare vascular plants of Ontario. G.W. Argus and D.J. White (eds.). Natl. Mus. of Nat. Sciences, Ottawa, Canada.

Wagnon, H.K. 1952. A revision of the genus *Bromus*, Section Bromopsis, of North America. Brittonia 7:415-480.

Voss, E.G. 1957. New records of vascular plants from the Douglas Lake region (Emmet and Cheboygan Counties), Michigan. Pap. Mich. Acad. 2:3-34.

Abstract citation

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