

Eleocharis wolfii Gray

Common Name: Wolf's Spike-rush

Synonyms: None

Family: Cyperaceae

[Images]

[Range Maps]

Best time to survey/phenology: The best time to identify this plant is when it is in fruit. The flowering and fruiting season is from May through July, but the plant remains recognizable into late September. (NatureServe 2001)

Status: Minnesota: Endangered

Other relevant listings: Rare status in 22 states and provinces.

Basis for state status/listing: Of all the Minnesota spike-rushes, this may be the rarest and most poorly understood. In fact, it is surprisingly rare for a species with such wide distribution, but it seems to be rare or infrequent throughout its range. (Coffin 1988)

It was first collected in Minnesota by A. L. Ballard somewhere near Nicollet (Nicollet County) in 1892. It was next found near Lake Traverse in the Red River Valley in 1921 and again in Norman County in 1967. None of these sites have been relocated since the dates of their original discovery, and it is unknown if any of the populations still survive. (Coffin 1988) In 1998, hundreds of plants were found at a site in Scott County, and the next year small population was found in Renville County. (RFD 2001)

This species appears to have always been rare, but it has likely suffered a recent decline resulting from loss of habitat – specifically, the loss of native grasslands and wetlands owing to agricultural expansion. The amount and rate of decline cannot be documented because there are too few records to detect a clear trend. However, it is possible to document the loss of wetlands, which has been as great as 90% in some agricultural regions. (Coffin 1988)

Description: *E. wolfii* is a small, grass-like plant that commonly grows in small tufts. It spreads from rhizomes. Stems are 1-4 dm long and 1-1.5 mm wide, very flat, furrowed or with numerous parallel horizontal lines, and often inrolled. Stem sheaths are dark red, brown, or straw colored, ending in a thin, translucent tooth that may be split and free from the stem. The flowers are acute, 4-9 mm long, lance-shaped to ovoid, and arranged in a spiral. The flower scales vary from dark red with a broad light green or brown midvein and translucent margin to straw-colored with a translucent margin to nearly translucent throughout. The fruit is pear shaped, pale yellow to gray, 1 mm long, with nine rounded ribs and numerous transverse partitions. The tubercle is conical, up to 0.1 mm long. There are no perianth bristles. (Coffin 1988, McGregor 1991)

E. wolfii is very similar to the common *E. acicularis*, but it has a few distinguishing characters. *E. wolfii* has flat stems, rounded spikelets, and many-ranked scales, the lowest ones being thick and leathery. *E. acicularis* has hair like stems, flattened spikelets, and two or three ranked scales, the lowest being thin, pliable, and almost translucent. (Coffin 1988)

Preferred habitat: The preferred habitat of *Eleocharis wolfii* in Minnesota is poorly known. The older collections refer to its habitat only as “moist places.” The site in Norman County was described as “mud flats near stream.” Apparently, these were wetlands in the prairie region. The populations in Renville and Scott counties were both associated with rock outcrops, apparently where the rock formations collected or concentrated precipitation runoff. (Coffin 1988, RFD 2001)

Reports from the rest of its range indicate that *Eleocharis wolfii* occurs in marshes, swamps, sedge meadows, wet to wet-mesic prairies, wet margins of lakes, rivers, ponds and creeks, wet

ditches, sandy roadsides, mud flats, and ephemerally wet flatwoods. It is reported that its best growth and reproduction is seen in relatively open, sunny locations that remain moist throughout the growing season. (NatureServe 2001)

Biology and Life History: *Eleocharis wolfii* has a broad distribution throughout central and eastern North America. Yet throughout its range it is rare or infrequent. It is a perennial grass-like species that commonly grows in clumps and forms mats. It spreads by well-developed underground stems. Its leaves are reduced to bladeless sheaths confined to the base of the plant. Both stems and leaves function as photosynthetic organs. Its flowering and fruiting season is from May through July. It requires high light levels to produce viable seed. Without such light the plants become weakened and elongated and the seeds abort before maturity. Too much light may result in the drying out of the site and poor reproduction. (NatureServe 2001)

Conservation and management considerations: The loss of native grasslands and wetlands in North America is the greatest threat to *E. wolfii*. Activities such as draining of wetlands or removal of native prairie vegetation for agriculture, home construction, and road development are responsible for this loss. Grassland habitats are also threatened by the overgrowth of woody vegetation that has resulted from the loss of the natural fire regime. Forested sites are threatened by clearing of timber. Other threats include invasion of exotic plants, soil compaction and trampling by livestock, destructive recreational activities, and herbicide application. (NatureServe 2001)

As a result, any management considerations for this species should include the protection of natural hydrologic regimes and the use of prescribed fire in prairie habitats. Regular monitoring of known sites should occur, as well as efforts to relocate historic sites, and proactive surveys in suitable habitat. Any proposed development in the vicinity of known populations of *E. wolfii* or which would affect the hydrologic regime should be inspected and modified to avoid any adverse impacts. (NatureServe 2001)

Further research is needed on the habitat, life history, population trends, beneficial management practices, reproductive biology, ecology, and population demographics of this species. (NatureServe 2001)

Conservation efforts in Minnesota: The species was assigned to the state Endangered species list in the 1980's.

Selected references:

Coffin, B. and L. A. Pfannmuller, eds. 1988. Minnesota's Endangered Flora and Fauna. University of Minnesota Press, Minneapolis.

Gleason, H. A., and A. Cronquist. 1991. Manual of Vascular Plants of Northeastern United States and Adjacent Canada. New York Botanical Garden, Bronx, New York.

McGregor, Ronald L. II. and T. M. Barkley. 1986. Flora of the Great Plains. University Press of Kansas, Lawrence, Kansas.

Minnesota Natural Heritage and Nongame Research Program, Minnesota Department of Natural Resources, January 17, 2001. Rare Features Database, St. Paul, MN. (RFD 2001)

NatureServe: An online encyclopedia of life [web application]. Version 1.1. Arlington, Virginia, USA: Association for Biodiversity Information. Available: <http://www.natureserve.org/>. (Accessed: February 20, 2001 (NatureServe 2001)

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