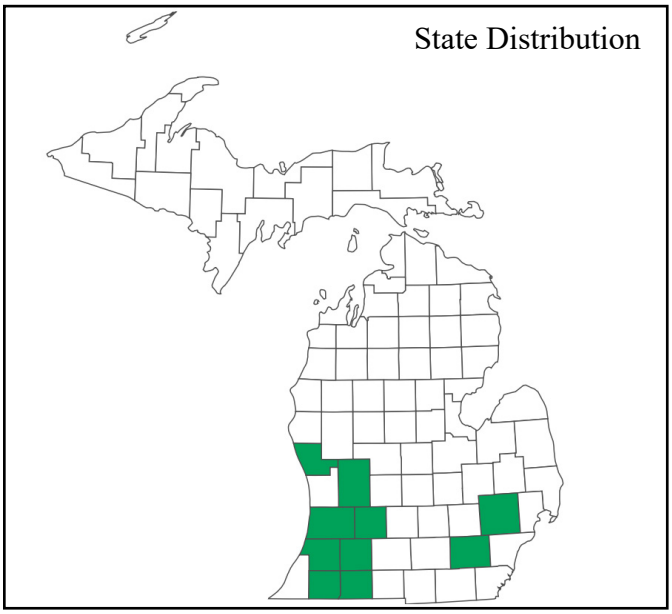
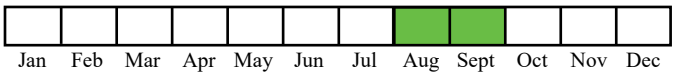
Fuirena pumila Spreng. Umbrella grass



Best Survey Period



Status: State Threatened

Global and state rank: G5 (Globally Secure) / S2 (State Imperiled)

Other common names: Dwarf umbrella sedge

Synonyms: *Fuirena squarrosa* var. *pumila* (Sprengel) Torrey, *Fuirena torreyana* Beck., *Fuirena simplex* var. *pumila* (Torr.) C. B. Clarke ex Coville

Family: Cyperaceae (sedge family)

Sub-family: Cyperoideae (Stevens 2024)

Taxonomy: The division of the Cyperoideae into tribes remains unresolved; however, Glon et al. (2017) demonstrated a close relationship between *Fuirena*, *Bolboschoenus*, *Cyperus*, *Schoeoplectiella*, and *Schoenoplectus*. Globally, there are an estimated 30 species of *Fuirena*, mostly in tropical and warm-temperate regions. *Fuirena pumila* is the only member of the genus that consistently exhibits an annual life history strategy throughout its range. It was long considered an annual variety of *F. squarrosa* yet differs from that species in several morphological respects (Kral 1978).

Total range: This North American plant has been documented in the province of Ontario and in 21 U.S. states. It is primarily a species of the Atlantic coastal plain from Texas east to Florida north to Massachusetts and New York. From there, it is disjunct to the western Great Lakes Region where it occurs in Michigan, Indiana, Illinois, and Wisconsin. It is Presumed Extirpated in Ontario; Possibly Extirpated in Arkansas; Critically Imperiled in Rhode Island and Wisconsin; Imperiled in Indiana, Maryland, Michigan, and New York; and Vulnerable in Massachusetts, Mississippi, and Delaware. In the 11 other states within its range, it is Apparently Secure or Unranked (NatureServe 2025).

State distribution: Umbrella grass is primarily found in the southwestern Lower Peninsula, where it has been documented in eight counties, from Cass and St. Joseph north to Kent and Muskegon. It has also been documented in two southeastern counties: Wayne and Washtenaw (MNFI 2025). There are 22 known

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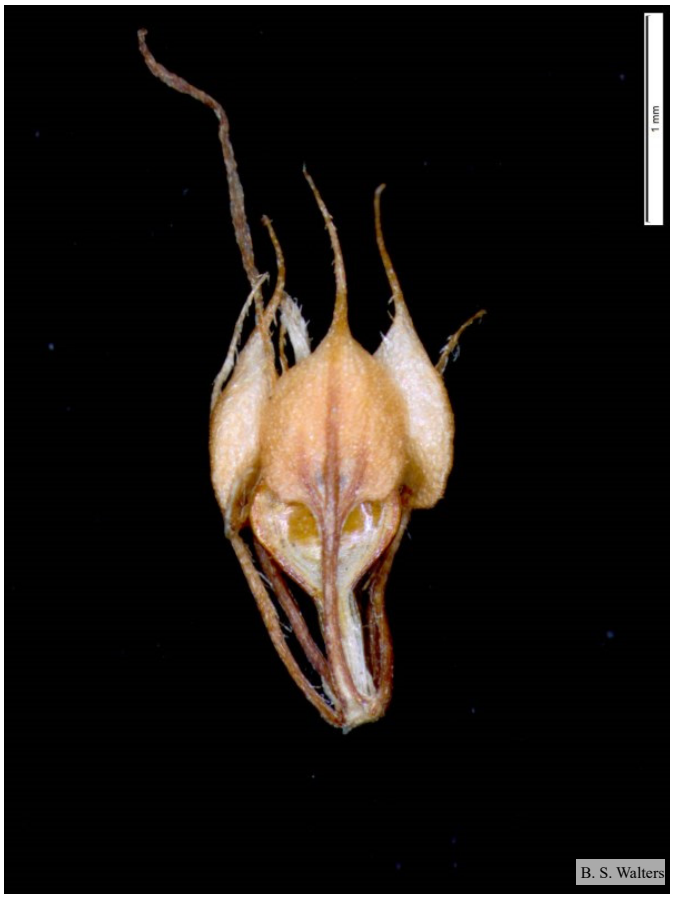
occurrences of umbrella grass in Michigan. The viability of three occurrences is estimated as Excellent. The estimated viability of most other occurrences is Fair to Good. Many occurrences have not been documented recently. Three occurrences were last observed in the 2020s, two in the 2000s, two in the 1990s, eight in the 1980s, four in the 1970s, one in the 1960s, one in the 1950s, and one in the 1830s.

Recognition: Umbrella grass is the only species of *Fuirena* in Michigan, making it relatively easy to identify within an otherwise challenging family. It can be separated from other sedge genera in Michigan based on its cespitose habit, **leafy** three-angled culm, three-ranked leaves, terminal spikelets, scales with **outward-curving awns**, bisexual flowers that are spirally arranged (rather than two-ranked as in, e.g., *Cyperus* spp.), three-angled achenes elevated on stalks, and highly reduced perianth consisting of **three narrow bristles and three bristles that are narrow at the base but expanded into a spoon-like tip** (Kral 1978, Wilhelm and Rericha 2017, Reznicek et al. 2024). Several other technical details may assist with identifying this species: it is (8–)20–60 cm tall, sheaths are hispid to glabrescent, bristles are retrorsely barbellate, achenes are deep-brown to red-brown, inflorescence is subtended by involucral bracts with the principal bract mostly exceeding the inflorescence, and leaves are 5–12 mm long and 3–5 mm wide (Kral 2002, Wilhelm and Rericha 2017).

Best survey time/phenology: Flowering populations of *Fuirena pumila* have been documented between the second week of July and the first week of September. Fruiting populations have been documented between the fourth week of July and the fourth week of October. Overall, flowering and fruiting populations are most frequently documented between the first week of August and the fourth week of September. The survey window for plants on exposed sandy-mucky shores is dependent upon water levels, and in many years suitable habitat will not be exposed. The window for plants on floating peat mats is more consistent (MNFI 2025).

Habitat: Among MNFI natural communities (Cohen et al. 2020), *Fuirena pumila* is known from coastal plain marsh and submergent marsh. More specifically, it can be found on sandy-mucky shores and floating peat mats of softwater lakes, especially where the water level has receded. Along sandy-mucky shores, it will only be



found in low-water years when substrate is exposed. It can occur on floating peat mats in any year.
The most frequently documented associated species in Michigan are bluejoint (*Calamagrostis canadensis*), buttonbush (*Cephalanthus occidentalis*), twig-rush (*Cladium mariscoides*), brook nut-sedge (*Cyperus bipartitus*), dwarf-bulrush (*Cyperus subsquarrosus*; syn. *Lipocarpha micrantha*), spike-rush (*Eleocharis flavescens* var. *olivacea*), pipewort (*Eriocaulon aquaticum*), umbrella sedge (*Fimbristylis autumnalis*), water-pennywort (*Hydrocotyle umbellata*), northern St. John's-wort (*Hypericum boreale*), tall beak-rush (*Rhynchospora macrostachya*), tooth-cup (*Rotala ramosior*), bulrush (*Schoenoplectiella smithii*), soft-stem bulrush (*Schoenoplectus acutus*), hardhack (*Spiraea tomentosa*), humped bladderwort (*Utricularia gibba*), and purple bladderwort (*U. purpurea*) (MNFI 2025).

Biology: This is an annual, rhizomatous plant that relies upon seedbanking to maintain population growth in response to interannual fluctuations in water levels (Reznicek 1994, Wilhelm and Rericha 2017).

Conservation/management: To protect umbrella grass,

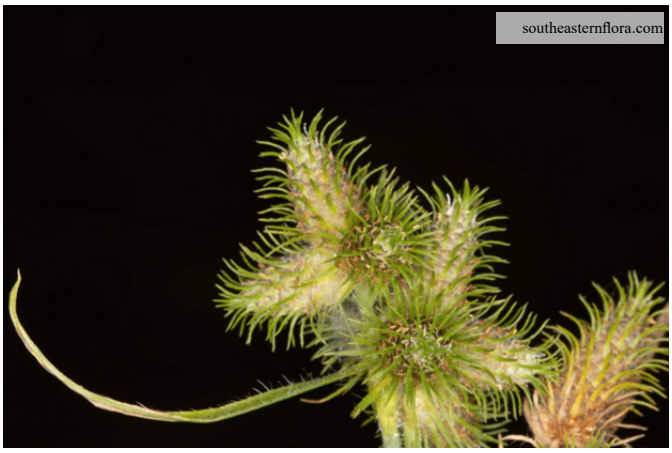
it is essential to protect coastal plain marshes, including those where the species has not been documented. A site may appear to be unoccupied, particularly during highwater years, even when this species is abundant in the seedbank. In cases where umbrella grass is entirely absent from a site, protecting suitable habitat will allow for the possibility of natural immigration from nearby occupied sites.

Coastal plain marshes are concentrated in southern Michigan and are threatened by development, recreation, invasive species, hydrological alteration, and excess nutrient input. Of 15 umbrella grass occurrences that have been documented since the 1970s, only two occur on water bodies that are entirely protected within the confines of public land. Four occur on water bodies surrounded by a mix of unprotected private property and protected land (national forest, state recreation area, land conservancy, and non-profit youth camp). The remaining nine are on water bodies surrounded mostly by private land. Of these nine, the land immediately surrounding the water bodies grades from highly developed to mostly undeveloped.

The globally imperiled coastal plain marsh is one of the features of the Great Lakes region with the highest conservation value, due to inherent rarity of the natural community and the disproportionate number of rare species that the natural community supports. It is imperative to protect the hydrology of coastal plain marshes, the diversity of which is due to seasonal and year-to-year variability in water level (Keddy and Reznicek 1982, Schneider 1994). Landowners along these water bodies should avoid installing water-control structures, dredging, and other practices that impair hydrological fluctuations.

Landowners and managers should be educated on factors promoting the health of coastal plain marshes and submergent marshes. This will be similar to general guidelines for those living along lakes including regular septic tank inspection, maintaining natural shoreline vegetation, avoiding hydrological alteration upstream, practicing low-impact boating, curtailing the introduction of non-native species, and minimizing the use of pesticides, herbicides, and fertilizers (O'Neal and Soulliere 2006).

At least four occurrences of umbrella grass in Michigan have been subject to illicit off-road vehicle (ORV) traffic (MNFI 2025). ORVs compact soil and create tracks which disrupt the local hydrology and replace vegetation (Wisheu and Keddy 1989).



Comments: A good way to find suitable habitat for this plant would be to search the Michigan Flora Online Database for relatively common plants with a strong affinity to coastal plain marshes, particularly umbrella sedge, water-pennywort, tooth-cup, slender goldentop (*Euthamia caroliniana*), hyssop hedgenettle (*Stachys hyssopifolius*), brown-fruited rush (*Juncus pelocarpus*), pipewort, and purple bladderwort (Kost and Penskar 2000, Reznicek et al. 2025).

Research needs: Many records have not been updated in several decades (MNFI 2025). A status survey would help to inform management and conservation of this species. Umbrella grass has never been documented north of Kent and Muskegon Counties, despite suitable habitat being relatively common northward in Newaygo County.

Related abstracts: Coastal plain marsh, intermittent wetland, meadow-sweet, rosepink

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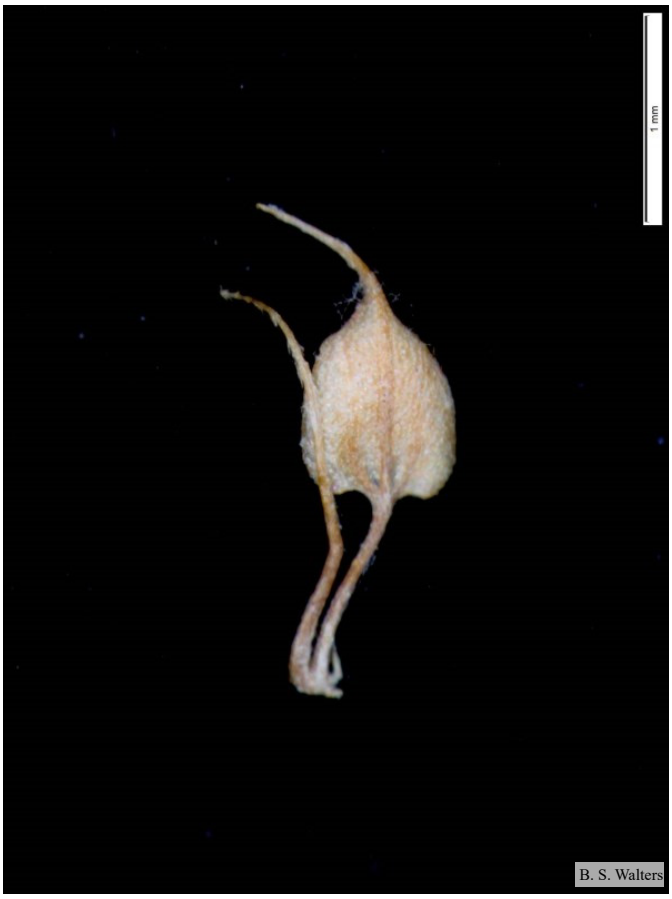

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Abstract citation: Warner, S. M. and T. J. Bassett. 2025. Special plant abstract for *Fuirena pumila* (umbrella grass). Michigan Natural Features Inventory. Lansing, MI.

Funding for abstract provided by Michigan Department of Transportation.