Sporobolus heterolepis (Gray) Gray — prairie dropseed

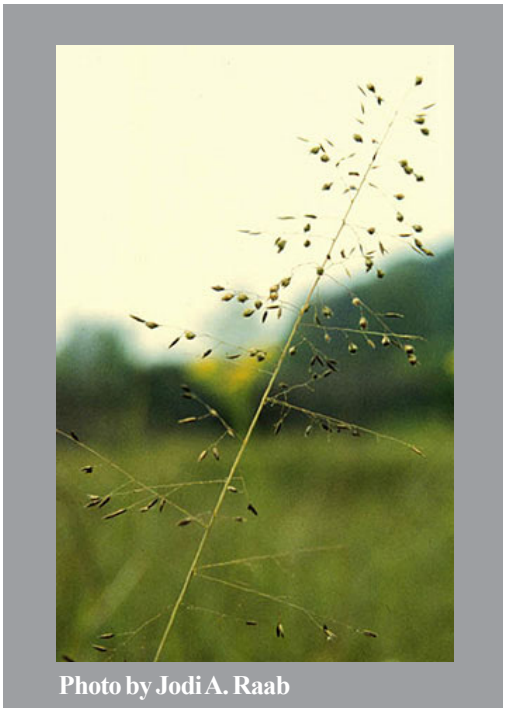
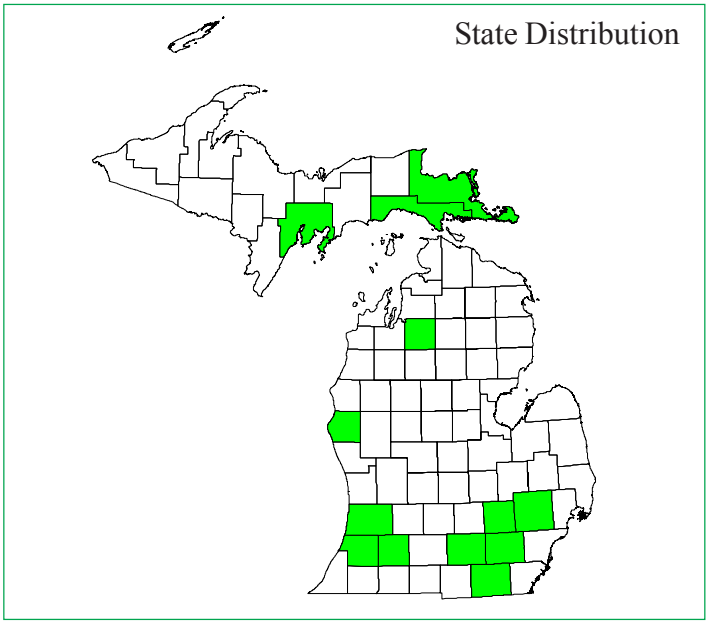
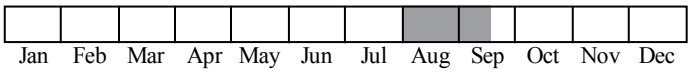


Photo by Jodi A. Raab



Best Survey Period



Status: State special concern

Global and state rank: G5/S3

Other common names: Northern dropseed

Family: Poaceae (also known as Graminae; grass family)

Total range: A prairie species at the heart of its range in central United States, prairie dropseed ranges north into Saskatchewan and Manitoba, south to Texas and Arkansas, and west to Colorado and Wyoming. Widely scattered, localized populations occur eastward from Ontario, Quebec, and New York to Michigan, Ohio, Kentucky, North Carolina, and Louisiana.

State distribution: Prior to 1994 in the Lower Peninsula, this grass was known only from a dozen or so sites in the southern three tiers of counties where it is frequent to locally common. In 1994, a large population was discovered in Crawford County, in northern Lower Michigan, during an intensive floristic inventory of Camp Grayling Military Reservation (Higman et al. 1994). Upper Peninsula occurrences of prairie dropseed are restricted to highly localized areas where it is a dominant component of the bedrock grassland (alvar) communities along the Escanaba River and on the expansive exposed bedrock on Drummond Island.

Recognition: *Sporobolus heterolepis* **grows in dense, roundish clumps** or tufts, forming a turf when abundant. The tall, waist-high stems, reaching 4-10 dm in height, bear **elongate, usually narrow and somewhat inrolled leaves**, the basal ones up to one-half as long as the stems. The **ligule** (at the inner juncture of leaf sheath and blade) consists of **a fringe of short hairs**. Fertile stems are terminated by an open to ovoid inflorescence with spreading to ascending branches. Each one-flowered spikelet is about 3.5-6.5 mm in length, and the glumes (tiny, leaf-like scales at the base of the spikelet) are distinctly unequal, the first about one-half as long as the second. The lemma and palea (tiny bracts at the base of an individual floret) are glabrous and lack lateral nerves. Perhaps most distinctive of this species is the **characteristic fruit, a somewhat shiny, yellowish, spherical grain** (2 mm in diameter) that when mature splits the palea and spreads open the parts of the spikelet. *Panicum virgatum* (switchgrass) superficially resembles prairie dropseen in general aspect, but the glumes are conspicuously nerved and it lacks spherical fruits.

Best survey time/phenology: The characteristic spherical fruits are unmistakable in this species, thus the optimal survey time is when the species is fruiting, typically during August and into early September. With experience, one can learn to distinguish the dense basal tufts of narrow, inrolled leaves characterized by a short fringe of hair at the ligule. For the very experienced, the rather delicate inflorescence, prior to fruiting, can also be keyed in on, noting characteristics of the glumes, lemma, and palea, within the context of appropriate habitat.

Habitat: In the Upper Peninsula, prairie dropseed is characteristic of alvar, becoming a dominant, turf-forming plant of that thin-soil, limestone and dolomite bedrock community. On Drummond Island, prairie dropseed was found to be the most abundant species of the Maxton Plains

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alvar, dominating in pavement and other grassland sites (Stephenson and Herendeen, 1986). Its common associates include *Carex scirpoidea* (bulrush sedge), *Eleocharis compressa* (flattened spike-rush), *Senecio pauperculus* (ragwort), and *Andropogon scoparius* (little bluestem). The northern Lower Michigan population consists of hundreds of plants that occur in pockets along a linear, mesic sand prairie-like wetland. It appears to follow a pro-glacial lakeplain resulting from the receding Wisconsin glaciation. This rather unique site includes other rarities such as *Solidago houghtonii* (Houghton's goldenrod), *Scirpus clintonii* (Clinton's bulrush), and *Juncus vaseyi* (Vasey's rush), *Viola novae-angliae* (New England violet) as well as additional species characteristic of the Great Lakes shore such as *Deschampsia cespitosa* (hair grass) and *Castelleja coccniea* (Indian paintbrush). In southern Michigan, *S. heterolepis* occurs primarily in calcareous wetlands (prairie fens), where it may be a frequent to dominant plant with *Andropogon gerardii* (big bluestem), *Andropopgon scoparius*, *Sorghastrum nutans* (Indian grass), *Muhlenbergia richardsonis* (mat muhly), *Carex stricta*, and a number of other prairie fen associates. Within the main body of its range, prairie dropseed occurs in upland and lowland mesic prairies, dry open ground, and in open woods.

Biology: Prairie dropseed is a perennial, fruiting primarily during August, though fruiting specimens have been collected from early July through September. As with many other prairie plants, fire is an important component of this species' biology and ecology. Research conducted on burned and unburned prairies sites, where *S. heterolepis* was a dominant component, has demonstrated that fire greatly enhances productivity, both in biomass and flowering (Ehrenreich and Aikman, 1957; Dix and Butler, 1954). The beneficial effects of fire largely result from the removal of deep litter layers, improving nutrient cycling, raising soil temperatures (which stimulates nitrifying bacteria), and eliminating competing vegetation (Wright, 1980). In the alvar communities of Upper Michigan, however, fire may not be a critical environmental factor. Stephenson (1983) suggests that drought rather than fire has prevented the succession of invading vegetation, particularly competing woody plant species. Stephenson and Herendeen (1986) found drought to have profound effects on the alvar species of the Maxton Plains, where following a significant decrease in rainfall, prairie dropseed failed to grow and successfully flower over large portions of the communities it dominated.

Conservation/management: Much of the Maxton Plains alvar is under protection of The Nature Conservancy and the DNR with a portion of the state land proposed for Natural Area dedication. One southern Michigan population also lies within a Nature Conservancy preserve (Ives Road Fen), and at least portions of two other localities are in Michigan Nature Association sanctuaries (Harvey's Rocks and Little Goose Lake Fen). A fifth locality is within a Washtenaw County park. Hydrologic alterations can degrade or destroy prairie dropseed's habitat, as can woody encroachment due to fire supression in southern Michigan fens.

Research needs: Attempts to locate additional inland locations in northern Lower Michigan, similar to the Camp Grayling site, may provide insight into the ecological requirements of this species and could possibly lead to the discovery of additional rarities.

Related abstracts: Prairie fen, English sundew, mat muhly, prairie Indian plantain, small white lady's-slipper, Eastern massasauga, Mitchell's satyr.

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Abstract citation:

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