Natural Heritage & Endangered Species Program

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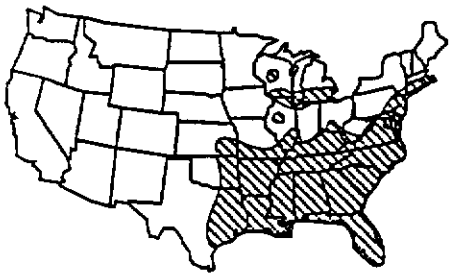
THREATENED PLANTS OF MASSACHUSETTS

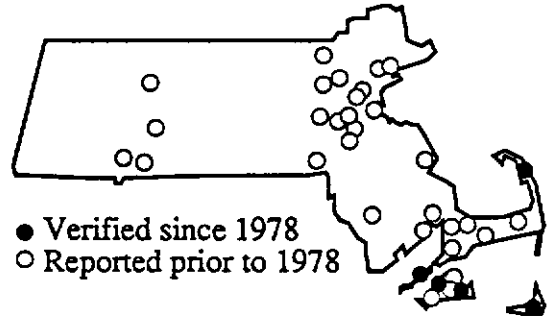
Purple Needlegrass
(*Aristida purpurascens* Poir.)

BLOMQUIST, H.L.1948. The Grasses of North Carolina. Duke University Press

DESCRIPTION:
Purple Needlegrass is a densely tufted perennial belonging to a distinctive genus of mostly xerophytic (drought adapted) grasses which are easily recognized by their long-awned "bottlebrush" flower spikes. Purple Needlegrass has smooth, upright stems from 1 to 1 1/2 ft. (30-75 cm) high which branch from the lower nodes of a hard, closely sheathed base. The narrow leaf blades are flat and smooth below, but slightly hairy with rolled in margins above. As the leaves mature they become curled and more slack. The flowers first appear in a dense, narrow, dark purple-brown panicle whose length is as much as 1/3 to 1/2 the height of the plant. Each flower of the inflorescence is borne in a single, 7-10 mm long, pointed spikelet which consists of several narrow, overlapping chaffy bracts (modified floral parts) with a conspicuous three-forked awn projecting from one of the inner bracts. In Purple Needlegrass all three awns are straight, erect, and about equal in length (1.5-3 cm). As the inflorescence matures from mid-August on, the awns spread open so that they are widely and equally separated from each other and horizontal to the axis of the flower spike. At this time the maturing inflorescence loses its purple coloration and turns a pale straw color.



Range of Purple Needlegrass



Distribution in Massachusetts by Town

Similar Species

In most cases, species of *Aristida* may be distinguished by differences in the general arrangement or shape of the inflorescence. For them to be positively identified, however, comparison of the relative length and divergence of the fully-developed awns from mature plants is required. Northern Poverty Grass *(Aristida longespica)* is an annual with smaller and narrower flower spikes having flowers with two erect lateral awns that are shorter than the horizontally positioned middle awn. It also tends to grow in seasonally moist habitats. Prairie Three-awn*(A. oligantha)* is a soft-based perennial and roadside weed with a fewer-flowered panicle and spikelets with 3 equal and much longer (3.5-7 cm) divergent awns. Beach Needlegrass *(A. tuberculosa)* is a rare coastal dune annual which can sometimes occur inland on sandy scrapes. The "bottlebrush" flower panicles are shorter, more open, and wider due to long, (3-5 cm) widely spreading awns which are also spirally twisted at their base.

Range

Purple Needlegrass is found in a variety of open, sandy habitats, including prairies, which attributes to its wide distribution throughout eastern North America from Massachusetts to Florida and Texas, and inland and north to Ohio, Missouri, and eastern Kansas. Disjunct from the main range is a small, northern distribution that includes southern Michigan and Wisconsin.

Habitat in Massachusetts

Purple Needlegrass is usually found in the dry, nutrient-poor, sandy habitats known as heathlands and sandplain grasslands. These rare and local plant communities are scattered along the N.E. coastline, persisting where human land use practices and natural stresses from salt spray, fire and storms inhibit the growth of woody shrubs and trees. Purple Needlegrass can also grow in maintained or disturbed areas such as grazed pastures, firelanes, and powerline openings as long as trees are excluded. Sandplain grasslands are dominated by ubiquitous prairie bunch grasses like Little Bluestem, Big Bluestem, Poverty Grass, Redtop and Indian Grass. Also characteristic of and often restricted to grasslands are low, broadleaved herbs such as bush-clovers, asters, Golden Heather and Bushy Rockrose. Grassy Heathlands are highly stressed, xeric, sparsely vegetated low shrub communities found on sandy coastal headlands and in openings in Pitch Pine/scrub oak barrens. Inhospitable to most plants, these areas are successfully vegetated by large patches of Bayberry, Huckleberry, Golden-aster and hardy grass species.

Population Status

Purple Needlegrass is listed as Threatened in Massachusetts because of the widespread succession of grasslands and open fields to forests. This species clearly prefers frequent disturbance and shows intolerance of shade or competition from encroaching woody plants. Changes in human land use practices have had a major part in changing the amount of open land. In the past, grazing, agriculture and fire opened up abundant suitable habitat for this species, as shown by 28 known occurrences from the early records to 1978. Since 1978 only 12 populations of Purple Needlegrass remain, occurring mostly in small remnent patches of habitat. Purple Needlegrass is presently restricted to Cape Cod and the Islands. The sole current mainland population is located in a late successional grassland that is threatened by encroaching pine woodland.