



Natural Heritage & Endangered Species Program

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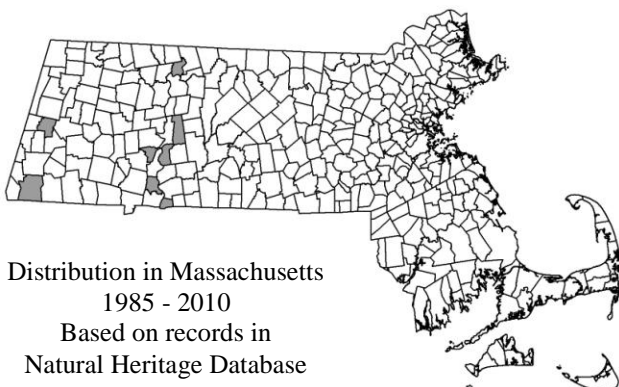
Massachusetts Division of Fisheries & Wildlife

Gray's Sedge *Carex grayi* J. Carey

State Status: **Threatened**
Federal Status: **None**

GENERAL DESCRIPTION: Gray's Sedge (*Carex grayi*) is a perennial sedge (family Cyperaceae) that grows in tufts of solitary or multiple stems up 1.1 m (~3.6 feet) high in rich, mesic soils of forests, calcareous seepage swamps, marshes, banks, and wet meadows, usually within riparian systems. The most recognizable features of this species (which is within *Carex* section Lupulinae), is its unearthly-looking spherical flowering spike, comprising large inflated perigynia (sing. perigynium), which radiate outward in all directions. Gray's Sedge was named in honor of the widely renowned American Botanist Asa Gray (1810–1888).

AIDS TO IDENTIFICATION: Sedges of the genus *Carex* have small unisexual wind-pollinated flowers borne in spikes. The staminate (male, pollen-bearing) flowers are subtended by a single flat scale; the pistillate (female, ovule-bearing) flowers are subtended by one flat scale (the pistillate scale) and are enclosed by a second sac-like modified scale, the perigynium. Following flowering, the achene (a dry, indehiscent, one-seeded fruit) develops within the perigynium. The morphological characters of these reproductive structures are important in identifying plants of the genus *Carex* to species. A technical key is required to ensure correct identification.



Top photo: Gray's sedge flowering spike. Photo by Marybeth Hanley
Bottom photos: Gray's Sedge perigynium and bases of culms showing diagnostic red color. Photos by Marybeth Hanley

Gray's Sedge is a clump-forming plant with short rhizomes and triangular culms (reproductive stems). The pale or gray-green leaves are 4 to 11 mm wide with persistent basal reddish purple sheaths. This species has staminate spikes above pistillate spikes on the same stem. The subtle narrow peduncled staminate spike lies above one or two large spherical pistillate spikes. These

A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

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densely flowered female spikes are subtended by long, usually sheathless leaf-like bracts. The pistillate spike comprises 8 to 35 diamond-shaped radiating perigynia, 12.5 to 20 mm long.

The perigynium surface is dull and strongly veined. Perigynia are subtended by pistillate scales that are roughly egg-shaped and often tipped with a rough awn (~7 mm long). Achenes are sessile, 3-angled and not thickened on angles, with persistent but withering and sometimes contorted styles. Mature perigynia are present throughout much of the summer.

SIMILAR SPECIES: Bladder-sedge (*Carex intumescens*), also a member of *Carex* section Lupulinae, is similar to Gray's Sedge but has fewer perigynia (mostly 1–12 per spike), the perigynia surfaces are lustrous (not dull), and are rounded (not wedge-shaped) at the base.

HABITAT: In Massachusetts, Gray's Sedge inhabits the moist alluvial soils of floodplain forests and adjacent meadow edges of large rivers. Many current populations in the state are found within floodplain forests along oxbows or in low depressions or swales where they favor lower slopes and bottoms. Associated woody species include Silver Maple (*Acer saccharinum*), Green Ash (*Fraxinus pennsylvanica*), the Mossycup-oak (*Quercus macrocarpa*; Special Concern), and native shrubs such as Wild Black Currant (*Ribes americanum*; Watch List). Associated sedges include Stiff Sedge (*Carex amphibola*), Hop-sedge (*Carex lupulina*), Tuckerman's Sedge (*Carex tuckermanii*; Endangered) and Foxtail-sedge (*Carex alopecoidea*; Threatened), and Davis's Sedge (*Carex davisii*; Endangered). Other herbaceous associates include Wood-nettle (*Laportea canadensis*) and Ostrich-fern (*Matteuccia struthiopteris*).

RANGE: Gray's Sedge is known from eastern-central Canada (Ontario, Quebec), the western New England States, south to Florida, southwest to Oklahoma, and throughout much of the Midwest to Kansas.

POPULATION STATUS IN MASSACHUSETTS: Gray's Sedge is listed under the Massachusetts Endangered Species Act (MESA) as Threatened. All listed species under MESA are protected from killing, collecting, possessing, or sale and from activities that would destroy habitat and thus directly or indirectly

cause mortality or disrupt critical behaviors. This species is known from Berkshire, Franklin, Hampden, and Hampshire Counties.

MANAGEMENT RECOMMENDATIONS: The exact management needs of Gray's Sedge are not known. As with all species, however, maintaining habitat quality is essential. Flooding probably plays a role in maintaining habitat quality and is an important dispersal mechanism; thus, land use changes that affect hydrologic regime due should be avoided or carefully evaluated. Further, water quality should be preserved; water quality degradation due to inputs of nutrients from fertilizers or animal waste could change the water and soil chemistry, and favor establishment of exotic or aggressive generalist species. Gray's Sedge habitat should be monitored for exotic invasive species. Invasive plants can out-compete native plants for nutrients and light, excluding them over time. Some invasive plants, such as Garlic Mustard (*Alliaria petiolata*) are allelopathic, meaning they can change the soil chemistry to inhibit the viability native plants. Exotic species of concern in the floodplain plant communities of Gray's Sedge are woody species such as Japanese Barberry (*Berberis thunbergii*), Multiflora Rose (*Rosa multiflora*), and Oriental Bittersweet (*Celastrus orbiculatus*), as well as the herbaceous invasive plants Garlic Mustard, Moneywort (*Lysimachia nummularia*), and Reed Canary Grass (*Phalaris arundinacea*). If exotic plants are invading Gray's Sedge habitat, a plan for control should be constructed. All active management within the habitat of a rare plant population (including invasive species removal) is subject to review under MESA, and should be planned in close consultation with the Massachusetts Natural Heritage & Endangered Species Program.

MATURE PERIGYNIA PRESENT:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Updated 2015

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