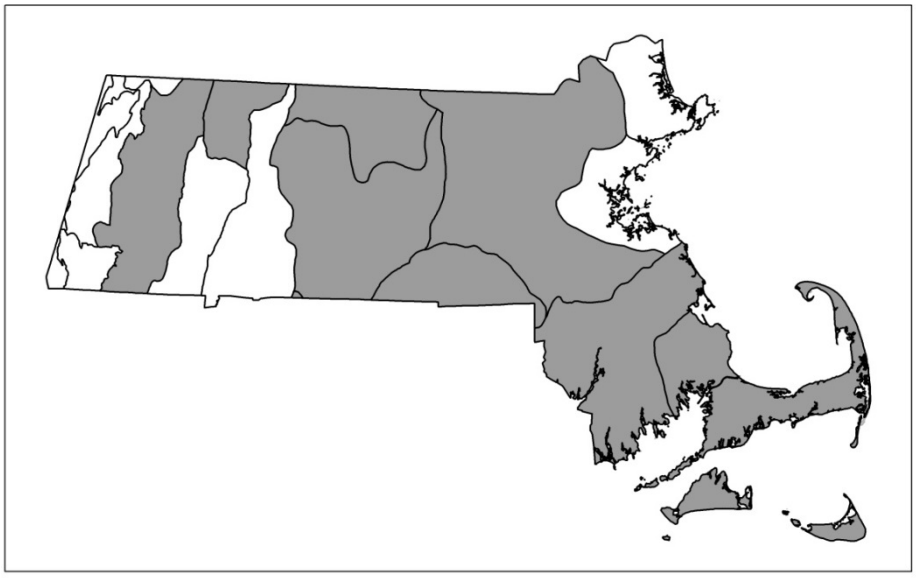
Acidic Graminoid Fen

Community Code: CP2B0B1000

State Rank: S3



Concept: Mixed graminoid/herbaceous acidic peatlands with some groundwater and/or surface water flow but no calcareous seepage. Shrubs occur in clumps but are not dominant throughout.

Environmental Setting: Peatlands, commonly called bogs or fens, are wetland communities on peat, which is an accumulation of incompletely decomposed organic material. Bogs and acidic fens are northern communities; Massachusetts is at the southern limit of the geographic range of acidic peatlands, meaning that climatic conditions are marginal and occurrences are patchy. Acidic Graminoid Fens are sedge- and sphagnum-dominated peatlands that are weakly minerotrophic (mineral-rich). Acidic Graminoid Fens typically have some surface water inflow and some groundwater connectivity. Inlets and outlets are usually present, and standing water is present throughout much of the growing season. Peat mats are quaking and often unstable.

Vegetation Description: Species of sphagnum moss (*Sphagnum* spp.) are the most common plants in all acidic peatlands. As with vascular plants, the particular sphagnum species present vary depending on acidity and nutrient availability. Acidic Graminoid Fens have the most diversity of vascular plants of the acidic peatland communities. Graminoid (grass-like) and herbaceous species are dominant, although they share many shrub species with Acidic Shrub Fens. Typical graminoids include cotton-grasses (*Eriophorum* spp.) and other sedges such as beaked sedge (*Carex utriculata*), woolly-fruited sedge (*C. lasiocarpa* ssp. *americana*), white-beaked sedge (*Rhynchospora alba*), twig-sedge (*Cladium mariscoides*), and pondshore-rush (*Juncus pelocarpus*). Threeway sedge (*Dulichium arundinaceum*) and buckbean

(*Menyanthes trifoliata*), often found at fen edges, are good indicators of particularly minerotrophic (mineral-enriched) conditions. Characteristic herbaceous species include marsh St. John's-wort (*Triadenum virginicum*), arrow-arum (*Peltandra virginica*), and rose pogonia (*Pogonia ophioglossoides*). Large cranberry (*Vaccinium macrocarpon*) can be abundant. There is patchy shrub and tree (usually sapling) cover, including leatherleaf (*Chamaedaphne calyculata*), water-willow (*Decodon verticillatus*), swamp azalea (*Rhododendron viscosum*), sweet pepper-bush (*Clethra alnifolia*), poison sumac (*Toxicodendron vernix*), red maple (*Acer rubrum*), white or pitch pines (*Pinus strobus*, *P. rigida*), and Atlantic white cedar (*Chamaecyparis thyoides*).

Differentiating Occurrences: Natural communities on acidic peatlands all occur on sphagnum peat. The depth, density, and strength of the underlying peat control the structure and composition of each type of peatland community through the extent that plants growing on it are isolated from nutrients carried by groundwater. Acidic Graminoid Fens are differentiated by the dominance of graminoid and herbaceous species and by the lack of extensive shrubs. Threeway sedge (*Dulichium arundinaceum*) and buckbean (*Menyanthes trifoliata*) are characteristic of wet, nutrient-enriched edges of Acidic Graminoid Fens. Sea-level Fens occupy the interface between estuarine marshes and upland seepage slopes, and therefore have a distinct species assemblage including both estuarine and palustrine species. Regionally, three species are identified are considered to be diagnostic of Sea-level Fens: saltmarsh straw-sedge (*Carex hormathodes*), saltmarsh spike-sedge (*Eleocharis rostellata*), and saltmarsh threesquare (*Schoenoplectus americanus*). Twig-sedge (*Cladium mariscoides*) at the edges of salt marshes is also used as an indicator of Sea-level Fens. Interdunal Swales occur as part of a coastal dune system. They are graminoid- or shrub-dominated communities occurring in shallow basins (swales) between dunes. Some are fen-like with cranberries and sedges growing on shallow peat, but occurrence in dune systems is the defining characteristic. Acidic Shrub Fens are composed primarily of low-growing, interwoven shrubs. Dense water-willow and sweet gale are indicative and characteristic. Acidic Shrub Fens are wetter with a less well-developed sphagnum mat than other acidic peatlands. Level Bog communities receive little or no stream flow and are isolated from the water table, making them the most acidic (pH ~ 3 to 4) and nutrient-poor of peatland communities. The sphagnum peat tends to be deep and well-developed, graminoids may be present but not dominant, and shrubs are dominated by leatherleaf. Acidic Graminoid Fen - Spillway Fens are shallow acidic peatlands with mixed graminoid /herbaceous vegetation that develop on spillway bedrock channels associated with large dams.

Associated Fauna: Due to the extended periods of saturation, lack of nutrients, and high acidity and low oxygen content of the water, acidic peatlands are inhospitable to many animal species. Winged animals and large terrestrial animals can use peatlands as part of their habitat and then move on when conditions are unfavorable. Moose (*Alces alces*) and white-tailed deer (*Odocoileus virginianus*) use acidic peatlands for browsing and grazing, and their trails are often evident across the peat mat. Black bears (*Ursus americanus*) are attracted to the cranberries and blueberries in season.

Many bird species use peatlands for part of the year as nesting or foraging habitat. Massachusetts birds that can be found in acidic peatlands include Swamp Sparrows (*Melospiza georgiana*), Common Yellowthroat (*Geothlypis trichas*), Olive-sided and Alder Flycatchers (*Contopus cooperi* and *Empidonax alnorum*), Red-winged Blackbirds (*Agelaius phoeniceus*), and Gray Catbirds (*Dumetella carolinensis*). Many species of dragonflies and damselflies inhabit acidic peatlands, especially where there is adjacent open water; three state-protected rare dragonfly species, the Ringed Boghaunter (*Williamsonia lintneri*), Ebony Boghaunter (*W. fletcheri*), and Kennedy's Emerald (*Somatochlora kennedyi*) are limited to acidic peatlands in Massachusetts. Acidic peatlands are an important component of the habitat of several other uncommon animal species. Southern Bog Lemmings (*Synaptomys cooperi*) are limited to acidic peatlands in Massachusetts. Four-toed Salamanders (*Hemidactylium scutatum*) breed in nests in sphagnum moss. Spotted turtles (*Clemmys guttata*) occupy a variety of wetland habitats in Massachusetts, including acidic peatlands. Larvae of the Pitcher Plant Borer moth (*Papaipema appassionata*) feed on the stems and roots of pitcher plants, and larvae of the Chain Fern Borer (*P. stenocelis*) feed on the rhizomes of Virginia Chain Fern. These two moths are limited to sites where those plant species occur.

Public Access: Tully Lake Reservation (US Army Corps of Engineers), Royalston; Quaboag WMA, Brookfield; Noquochoke WMA, Dartmouth; Hockomock Swamp WMA, Bridgewater; Grassy Pond Conservation Area, Acton.

Threats: Nutrient enrichment from runoff from roads, lawns, septic systems, and agricultural fields. Other threats are alterations to the natural hydrology and trampling.

Management Needs: Cattails appear to proliferate in areas that experience road and/or lawn runoff. Efforts should be made to minimize runoff into these communities.

USNVC/NatureServe: In part *Chamaedaphne calyculata*/*Carex lasiocarpa-Utricularia* spp. Shrub Herbaceous Vegetation but leatherleaf not dominant.