



Sea-level Fen

Community Code: CP2BOB3000

State Rank: S1



Concept: Herbaceous/graminoid peatlands that occur at the upland edges of tidal marshes. The combination of upland freshwater seepage and infrequent salt or brackish overwash produces a mixed plant community of freshwater and estuarine species.

Environmental Setting: Sea-level Fens are herbaceous/graminoid peatlands just above normal high tide at the upland edge of estuarine tidal marshes. Periodic brackish overwash mixed with freshwater seepage from sandy uplands produces a plant community of mixed freshwater and estuarine species on sedgy peat over sand or gravel. Sea-level Fens are near their northern limits in Massachusetts and are better developed to the south, where they include more specialized species.

Vegetation Description: Sphagnum moss (*Sphagnum* spp.) is common in all acidic peatlands, forming a mat that the vascular plants grow on, and producing much of the peat that underlies the community. In Sea-level Fens, sphagnum peat is mixed with peat derived from sedges. Three species diagnostic of Sea-level Fens are identified in regional descriptions: 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. Other common species include New York aster (*Symphotrichum novi-belgii*), spatulate-leaved sundew (*Drosera intermedia*), Canada rush (*Juncus canadensis*), pondshore-rush (*Juncus pelocarpus*), swamp-candles (*Lysimachia terrestris*), native and invasive exotic subspecies of common reed (*Phragmites australis*), white beak-sedge (*Rhynchospora alba*), swamp-rose (*Rosa palustris*), common threesquare (*Schoenoplectus pungens*), poison ivy (*Toxicodendron radicans*), marsh St. John's-wort (*Triadenum virginicum*),



and large cranberry (*Vaccinium macrocarpon*). Occasional shrubs include poison sumac (*Toxicodendron vernix*), swamp azalea (*Rhododendron viscosum*), bayberry (*Morella pensylvanica*), groundsel-tree (*Baccharis halimifolia*), and eastern red cedar (*Juniperus virginiana*).

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 because plants growing on it are isolated from nutrients carried by groundwater. Sea-level Fens are most identifiable by location: they occupy the interface between estuarine marshes and upland seepage slopes, and therefore have a distinct species assemblage including both estuarine and palustrine species. Three species diagnostic of Sea-level Fens are identified in regional descriptions: 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. Acidic Graminoid Fens are differentiated by the dominance of graminoid and herbaceous species and the lack of extensive shrubs. Threeway sedge (*Dulichium arundinaceum*) and buckbean (*Menyanthes trifoliata*) are characteristic of wet, nutrient-enriched edges of Acidic Graminoid Fens. Interdunal Marshes/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.

Associated Fauna: Few animals are likely to differentiate between Sea-level Fens and other wetlands. Species sensitive to salt would avoid Sea-level Fens during and after saltwater incursions; at other times, the fens would be part of the habitat of mobile wetland and upland animals. Songbirds use shrubby parts of the community for nesting and foraging, particularly when the surrounding areas also have dense shrubs.

Public Access: None of the known sites are entirely in conservation ownership. If visited, care should be taken not to create trails across the easily damaged peat surface.

Threats: Rozsa (2014) mentions that this community degrades every ~20 years (metonic cycle). During the first half of the metonic cycle, the tidal range increases about 6 cm. This causes the anaerobic peat-building phase. Then the tide range decreases and in the aerobic phase *Juncus* returns and becomes dominant. Finally, groundwater discharge washes away the decomposing peat. In some places, the eroded edge resembles a pedestrian path. Alteration to the natural hydrologic regime. Development in the uplands may have negative effects on upland seepage. Invasive phragmites, particularly in areas with native populations.

Management Needs: Maintain natural hydrology and upland buffer.



USNVC/NatureServe:

Cladium mariscoides-*Drosera intermedia*-*Eleocharis rostellata* herbaceous
vegetation [CEGL006310]. G1 (2014).