



## Natural Heritage & Endangered Species Program

Massachusetts Division of Fisheries & Wildlife

Route 135, Westborough, MA 01581

tel: (508) 792-7270, ext. 200; fax: (508) 792-7821

www.state.ma.us/dfwele/dfw/nhesp

## Freshwater Tidal Swamps and Shrublands

State Status: None

Federal Status: None

**Description:** Freshwater tidal swamps and shrublands occur along free-flowing coastal rivers, and are influenced daily by the incoming tides. Although they are flooded by the tides, they are located well upstream of the salt front, with the river essentially becoming backed up as it meets resistance from high tides. Freshwater tidal swamps are characterized by low stature trees, a dense shrub understory and unusually rich herbaceous layer. Freshwater tidal swamps are considered a globally rare habitat, they support several rare species, and they are tracked by the Natural Heritage and Endangered Species Program as a high priority natural community.

**Environment:** Freshwater tidal swamps and shrublands occur upslope of freshwater tidal marsh, within the upper limits of tidal influence. The community represents a transition from tidal marsh to more typical non-tidal forested wetlands. Another variation of this community occurs along smaller streams at the upper limit of tidal influence. Tidal amplitude may range from 0 to 40 cm or more (estimated), the habitat is flooded (usually twice) daily. Average annual salinity is less than 0.5 parts per thousand. Brackish occurrences are also believed to occur, although more study is required. Freshwater tidal swamps represent the upper end of a gradient, ranging from coastal salt marsh, to brackish tidal marsh, to freshwater tidal marsh to tidal shrublands and swamps.

**Characteristic Plant Species:** In tidal swamps, swamp white oak (*Quercus bicolor*), red maple (*Acer rubrum*) and occasionally green ash (*Fraxinus pennsylvanica*) occur on elevated hummocks, and form an open forest canopy. The shrub layer is often very dense, and typically includes arrowwood (*Viburnum dentatum* var. *lucidum*), winterberry holly (*Ilex verticillata*), swamp rose (*Rosa palustris*) and

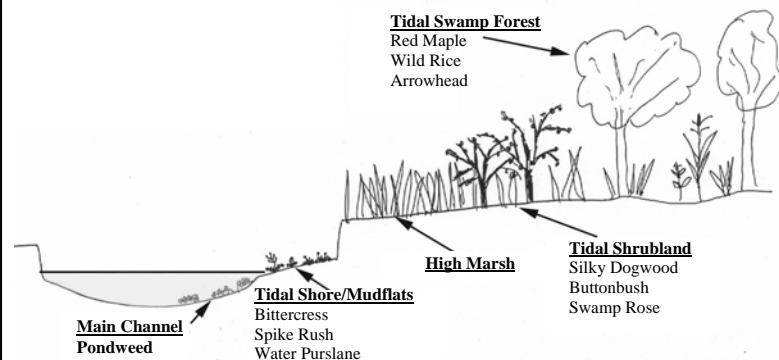


Diagram of Tidal Freshwater Wetlands:  
Showing channel and shore vegetation and  
transition from marsh to forest.

silky dogwood (*Cornus amomum*). Large mucky hollows flooded by daily tides support a diverse assemblage of herbs and graminoids. Most of these are typical of the nearby freshwater tidal marsh habitat, and include jewelweed (*Impatiens capensis*), sensitive fern (*Onoclea sensibilis*), blue joint (*Calamagrostis canadensis*), smartweeds & tearthumbs (*Polygonum punctatum*, *P. arifolium*), arrow arum (*Peltandra virginica*) and wild rice (*Zizania aquatica*). Plants typical of tidal mudflats, such as water purslane (*Ludwigia palustris*) and bittercress (*Cardamine* spp.) are found in the rich mucky hollows between trees. Atlantic white cedar (*Chamaecyparis thyoides*), previously reported only from Delaware as a rare tidal swamp association, is a frequent canopy tree in tidal swamp forests along the North River, often forming dense stands. Tidal shrublands lack canopy trees, but are otherwise similar in plant composition. In coastal plain rivers, sweet gale (*Myrica gale*) may dominate tidal freshwater wetlands (Mashpee River).

**Characteristic Animal Species:** Freshwater tidal swamps and shrublands provide habitat for nesting Gray Catbird (*Dumetella carolinensis*), Common Yellowthroat (*Geothlypis trichas*), Swamp Sparrow (*Melospiza georgiana*), Wood Duck (*Aix sponsa*), Marsh Wren (*Cistothorus palustris*), and Veery (*Catharus fuscescens*). The habitat is also used as roosting areas by resident Great Blue Heron (*Ardea herodias*), Green Heron (*Butorides striatus*), Red Tailed Hawk (*Accipiter jamaicensis*) and other raptors.

**Associated Rare Plant Species:** The freshwater tidal swamp community includes several state listed rare species. Long's bittercress (*Cardamine longii*) (E), hemlock parsley (*Conioselinum chinense*) (SC) occur in both tidal swamps and shrublands. Stalked water horehound (*Lycopus rubellus*) (E) occurs along a tidal swamp bordering a stream.

*SC = Special Concern; E = Endangered*

**Range:** Freshwater tidal swamps and shrublands are very rare natural communities. The North River, at the confluence with 4th Herring Brook, provides the best studied example in Massachusetts. The community occurs along the edge of a freshwater tidal marsh, at the transition to a large Atlantic white cedar swamp. Small patches of tidal swamp habitat may be present in other river systems, particularly along smaller streams at the upper limit of tidal influence. The North River occurrence was strongly influenced by the 1898 breach of the barrier beach in Scituate, and may in part represent a transitional habitat.

**Management Considerations:** Alteration of river hydrology may threaten this plant community. The extent of tidal influence in freshwater tidal wetlands depends in part on the amount of water flowing downstream. Excessive water withdrawal, either due to large municipal wells upstream, or the cumulative impact of smaller withdrawals, could have profound impacts on the natural development of this vegetation community. The hydrologic requirements for this community need to be determined, and a system for monitoring hydrologic stress to the river system is recommended. More investigation is needed for occurrences along small streams and in brackish wetlands.