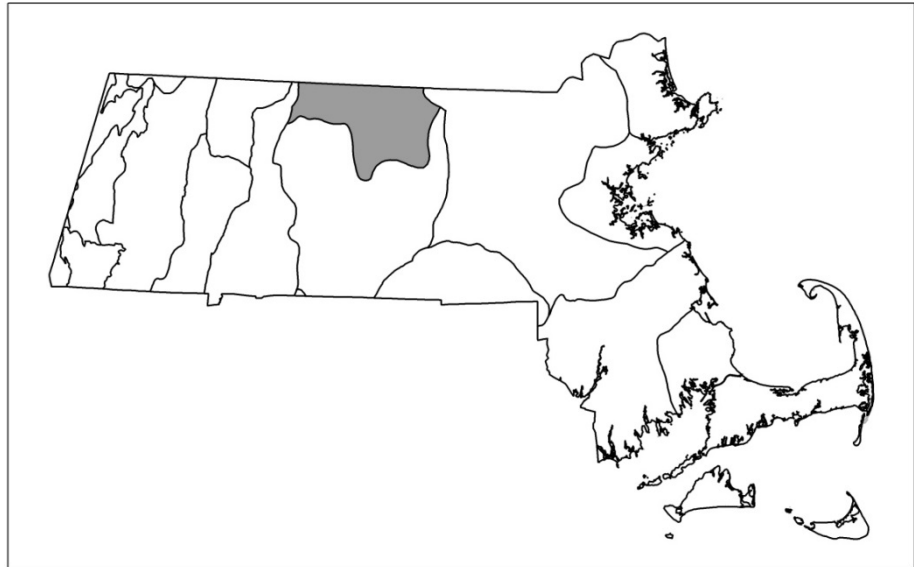




## Northern Atlantic White Cedar Swamp

**Community Code:** CP1B1A3000

**State Rank:** S1



**Concept:** A variant of spruce swamps in which Atlantic white cedar is an associate in the tree canopy.

**Environmental Setting:** Northern Atlantic White Cedar Swamps are restricted to basins at high elevations, over 1100 feet, the highest known elevation for Atlantic white cedar in the state. As with all Atlantic white cedar swamps, water-saturated peat overlies the mineral sediments, and standing water generally occurs for half of the growing season or longer. The water and soil are nutrient-poor, and particularly low in nitrogen and phosphorus. There is a high iron content in the soil; the iron (called "bog iron") was mined in the early days of manufacturing. Soil pH is acidic (3.1-5.5) and leaf litter decomposition is slow.

**Vegetation Description:** Atlantic white cedar swamps are defined as having >25% cover of Atlantic white cedar in the canopy; Atlantic white cedar is usually mixed with red maple (*Acer rubrum*). Most Atlantic white cedar swamp occurrences include highbush blueberry (*Vaccinium corymbosum*) and swamp azalea (*Rhododendron viscosum*). The ground layer is dominated by *Sphagnum* spp. mosses. Northern Atlantic White Cedar Swamps are dominated by northern conifers such as black and red spruce (*Picea mariana* and *P. rubens*) and balsam fir (*Abies balsamea*); Atlantic white cedar occurs as an associate. Shrubs and herbs also include species of cool northern areas, such as mountain holly (*Ilex mucronata*), creeping snowberry (*Gaultheria procumbens*), and bunchberry (*Chamaepericlymenum canadense*) (also found in the high-elevation variant of Inland Atlantic White Cedar Swamp). Labrador tea (*Rhododendron groenlandicum*) and rhodora (*Rhododendron canadense*) are



common in the single documented Northern Atlantic White Cedar Swamp occurrence.

**Differentiating Occurrences:** Although each of the Atlantic white cedar swamp community types has a characteristic vegetation structure and composition, as with all natural communities, transitions and mixes do occur. Northern Atlantic White Cedar Swamps are restricted to basins at high elevations with the single documented example at >1100 ft. Northern Atlantic White Cedar Swamps are codominated by northern conifers such as black and red spruce (*Picea mariana* and *P. rubens*) and balsam fir (*Abies balsamea*). Shrubs and herbs include typically northern species such as Labrador tea (*Rhododendron groenlandicum*) and rhodora (*Rhododendron canadense*), as well as creeping snowberry (*Gaultheria hispidula*) and bunchberry (*Chamaepericlymenum canadense*), that also are found in high-elevation variant Inland Atlantic White Cedar Swamps. Inland Atlantic White Cedar Swamps typically occur at elevations <1000 ft. and lack the full set of northern species. Red Spruce Swamps may occur near Northern Atlantic White Cedar Swamps, but red spruce (*Picea rubens*) is dominant in the overstory and Atlantic white cedar is seldom present, and then <25% canopy cover. Atlantic White Cedar Bogs are relatively open peatland communities with tree canopy cover <25%. They may have scattered black spruce, but lack red spruce.

**Associated Fauna:** Atlantic white cedar swamps contribute variation to the habitats of wide-ranging wildlife species. Young Atlantic white cedar thickets provide excellent cover for deer, rabbits and birds. Atlantic white cedar foliage and twigs are preferred winter browse for white-tailed deer, while rabbits and mice can feed on cedar seedlings. Although no bird species appear to be restricted to Atlantic white cedar communities, dense conifer forests are important bird habitat. Swamps function as vernal pool habitat if water remains standing for 2-3 months and they lack fish; these areas provide important amphibian breeding habitat.

**Public Access:** Westminster State Forest, Westminster.

**Threats:** The two greatest threats to Atlantic white cedar swamps are land clearing for agricultural, commercial and residential development, and interference of normal hydrological functioning as a result of development. Atlantic white cedar has been cut extensively for posts and shingles for over three centuries. In an extensive statewide vegetation inventory funded by NHESP in 1990, no uncut stands were found, but several sites contained cedars that were 100-200 years old. Selective cutting is detrimental to the persistence of Atlantic white cedar swamps, because hardwoods, such as red maple, out-compete and replace Atlantic white cedar. Any alteration to the natural hydroperiod of Atlantic white cedar swamps threatens their persistence.

**Management Needs:** Due to the limited distribution of Atlantic white cedar swamps, it is recommended that no clearing or filling of these wetlands be allowed. Atlantic white cedar will regenerate best following catastrophic disturbance events such as hurricanes and fires. Data suggest that in the absence of disturbance, red maple and shrubs



increase in abundance at the expense of Atlantic white cedar. Fire suppression negatively threatens the long-term persistence of Atlantic white cedar swamps, and controlled burning practices may be an appropriate restoration tool in many areas. Controlled burning should be accompanied by small-patch clearcuts to be most effective. By clear-cutting small patches, generally 20 m x 20 m, and removing the slash and competing vegetation, pure, even-aged stands of Atlantic white cedar are able to regenerate. Atlantic white cedar swamps require a natural cycle of wet and dry periods for their survival and reproduction. Standing water for much of the year is unfavorable for both seed germination and seedling survival, and young seedlings are killed by both drowning and drought. It is recommended that any alterations in water levels be avoided; this includes development and road construction in uplands surrounding Atlantic white cedar swamps which can alter water levels. Where cedar wetlands are associated with river systems, it is important to maintain the normal hydrologic regime of the river.

**USNVC/NatureServe:**

*Chamaecyparis thyoides* Northern Peatland Alliance [A3400] -- *Chamaecyparis thyoides*-*Picea rubens*/*Gaylussacia baccata*/*Gaultheria hispidula* forest [CEGL006363].