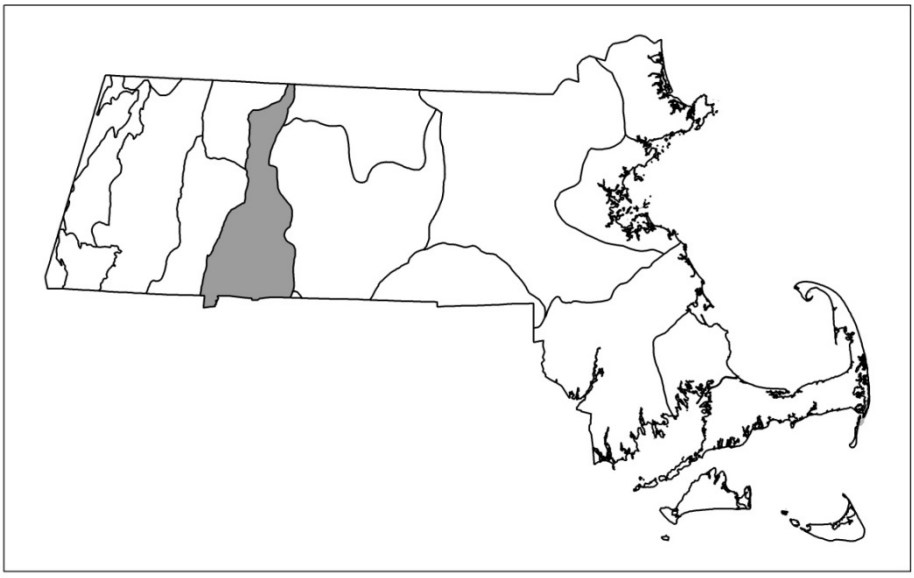
Black Gum – Pin Oak – Swamp White Oak Perched Swamp

Community Code: CP1A2A3000

State Rank: S1



Concept: A red maple-dominated basin swamp, in which black gum, pin oak, and swamp white oak are important components of the overstory. This vegetation association is limited to lakebed sediments of glacial Lake Hitchcock in the Connecticut Valley.

Environmental Setting: Black Gum - Pin Oak - Swamp White Oak Perched Swamps (perched swamps) are closed-canopy deciduous forests that occur on the flat lakebed of glacial Lake Hitchcock in the Connecticut River valley. The glacial lake substrate includes layers of clay overlain by varying depths of silt and sand. The relatively impermeable nature of the clay layer produces a locally perched water table that is not directly connected with the regional water tables, and supports this wetland community that is not found in the active floodplains of the river. There may be some connection to the groundwater along the margins of these wetlands or, to a more limited degree, through slow vertical movement. The surface topography is hummock and hollow with the hummocks about 0.5 m (about 1.5 ft.) high. With the exception of some sedges most of the vegetation is confined to the hummocks. The sites are wet at least seasonally, flooding in the spring and drying out over the summer. Periodic flooding occurs as indicated by the lack of organic matter accumulation.

Vegetation Description: The forest canopy is generally closed, but ranges from 50 to 100% closure. The stands are a mosaic of microsites with different degrees of wetness supporting slightly different species mixes. In general, red maple (*Acer rubrum*) dominates the overstory, but the species giving their names to the community that are at or near the northern limits of their ranges in the Connecticut River Valley of Massachusetts are generally present, often in abundance: these are black gum (*Nyssa sylvatica*),

pin oak (*Quercus palustris*), and swamp white oak (*Q. bicolor*). Other hardwoods, including ashes (*Fraxinus* spp.), regularly occur as scattered individuals. Drier sites include eastern hemlock (*Tsuga canadensis*) as a common associate with yellow birch (*Betula alleghaniensis*) consistently present at low densities. All sites have a fairly dense shrub layer similar to other red maple swamps. Common species include highbush blueberry (*Vaccinium corymbosum*), northern arrow-wood (*Viburnum dentatum* var. *lucidum*), common winterberry (*Ilex verticillata*), witch hazel (*Hamamelis virginiana*), and serviceberry (*Amelanchier spp.*). The wettest sites also have spicebush (*Lindera benzoin*) or often buttonbush (*Cephalanthus occidentalis*). Mountain laurel (*Kalmia latifolia*) is found in the drier sites, often in dense thickets. The herbaceous layer is variable, but cinnamon fern (*Osmundastrum cinnamomeum*) occurs at all known sites. Other common herbaceous species are Canada mayflower (*Maianthemum canadense*), goldthread (*Coptis trifolia*), Indian cucumber-root (*Medeola virginiana*), and various fern and sedge species (*Carex* spp.), particularly in the wetter sites. One of the most striking characteristics of this swamp forest is the high coverage of ferns. Netted chain-fern (*Woodwardia areolata*), a southern coastal plain species, occurs at some of the sites.

Differentiating Occurrences: Black Gum - Pin Oak - Swamp White Oak Perched Swamps are known only from the Connecticut River Valley in areas underlain by clays in lakebed sediments of glacial Lake Hitchcock. The presence of fairly high proportions of black gum, pin oak, and swamp white oak in the canopy, in addition to the topographic setting, distinguish the type. Red Maple - Black Gum Swamps are generally in small, topographically constrained basins surrounded by upland forests. Black gum needs to be dominant or codominant in large areas of the swamp for the occurrence to be a black gum swamp, but they don't have high proportions of pin oak or swamp white oak. Red Maple Swamps may have black gum, or occasional pin oak or swamp white oak in low proportions in the canopy, but not as dominants or codominants.

Associated Fauna: Perched swamps can 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: Lawrence Swamp Conservation Area, Amherst; Great Swamp WMA, Whately.

Threats: It is likely that this community type once covered a larger area of the Connecticut Valley, but much of the lake bottom has been cleared and converted to agriculture. Only patches of these perched swamps remain. Current threats include alteration of water chemistry from road and farm runoff (in particular, the accumulation of road salts), ditching by land owners to drain water, and logging.

Management Needs: Disturbed areas appear to have large amounts of glossy buckthorn (*Frangula alnus*). Efforts to prevent further disturbance may prevent the spread of this invasive plant species.

USNVC/NatureServe: Not described; related to *Quercus palustris - Quercus bicolor - Acer rubrum* Flatwoods Forest (CEGL005037). Also related to *Quercus palustris - Quercus*

bicolor - *Nyssa sylvatica* - *Acer rubrum* Sand Flatwoods Forest (CEGL002100);
System: North-Central Interior Wet Flatwoods (CES202.700)