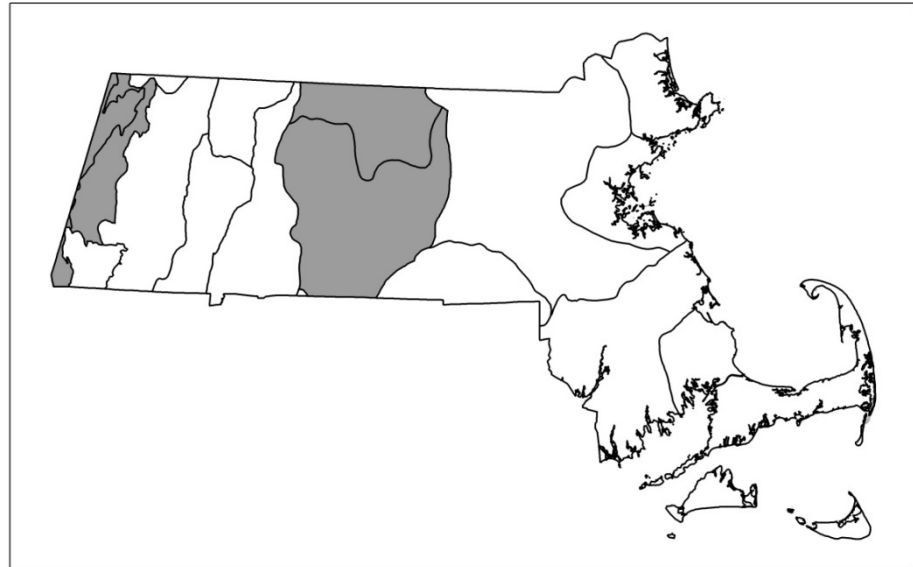




### Oak – Hemlock – White Pine Forest

**Community Code:** CT1B100000

**State Rank:** S5



**Concept:** A mixed conifer-hardwood forest normally occurring in the southern part of the state or on south-facing slopes, often on somewhat dry, acidic slopes. The matrix forest of much of the state.

**Environmental Setting:** The Oak - Hemlock - White Pine Forest is the broadly defined matrix forest of lower-elevation areas of eastern and south-central Massachusetts, with extensions north and west on warm south-facing slopes. Oak - Hemlock - White Pine Forests are commonly on mid- and upper slopes on acidic soils. Reforestation after farm abandonment and ongoing human land use establish and maintain early- and mid-successional forests, as well as blurring the line between the Oak - Hemlock - White Pine Forest and northern hardwoods-dominated forests in cooler areas. Within the general Oak - Hemlock - White Pine Forest type, specific recurrent variants are named: many are successional stages, some are distinct species mixes of particular conditions. Many of the sites called Oak - Hemlock - White Pine Forest lack distinctive characteristics of named subtypes.

**Vegetation Description:** Oaks (*Quercus alba*, *Q. coccinea*, *Q. montana*, *Q. velutina*, *Q. rubra*), black birch (*Betula lenta*), American beech (*Fagus grandifolia*), black cherry (*Prunus serotina*), and red maple (*Acer rubrum*), in association with scattered hemlock (*Tsuga canadensis*) and white pine (*Pinus strobus*). Relative proportions of the species vary greatly among sites. Either conifer may occur in small patches. In pre-settlement forests, white pine would have been present in lower numbers than today. Some white pines emerge above the deciduous canopy. American chestnut (*Castanea dentata*) sprouts are common. The shrub layer is generally patchy and sparse, with



witch-hazel (*Hamamelis virginiana*), mountain laurel (*Kalmia latifolia*), lowbush blueberry (*Vaccinium angustifolium*), huckleberry (*Gaylussacia baccata*), and maple-leaved viburnum (*Viburnum acerifolium*) characteristically present. The herbaceous layer also tends to be somewhat sparse with little diversity. Indian cucumber (*Medeola virginiana*), wintergreen (*Gaultheria procumbens*), wild sarsaparilla (*Aralia nudicaulis*), wild oats (*Uvularia sessilifolia*), starflower (*Lysimachia borealis*), fringed bindweed (*Fallopia cilinodis*), and Canada mayflower (*Maianthemum canadense*) are typical.

**Differentiating Occurrences:** Oak - Hemlock - White Pine Forest is the most broadly defined of a continuum of oak-dominated forests, with more specific types split out from this matrix type. Oak - Hemlock - White Pine Forest is dominated by a mix of tree oaks with scattered white pine and hemlock, either of which may be in local dense patches. Occurrences have a large amount of internal variation. White Pine - Oak Forest has >25% cover of white pine overall (not just local patches). The rest of the related forest types in the oak continuum lack significant conifer presence. Oak - Hickory Forest is on the less acidic and moister end of the continuum of oak communities; it has hickories in at least low percentages in the canopy. Flowering dogwood and hop hornbeam are often present in the subcanopy. It generally has diverse shrub and herbaceous layers. Dry, Rich Oak Forest/Woodland is also on the less acidic end of the continuum of oak-dominated communities; it includes low percentages of sugar maple and white ash, and has a diverse herbaceous layer that includes false foxgloves and multiple legumes. Mixed Oak Forest/Woodland tends to be on dry, acidic soils and exposed slopes, with an open canopy (<75% cover) and an understory dominated by heath species. Coastal Forest/Woodland is within a few miles of the coast at <~60 ft. elevation and receives storm winds and spray. The diverse canopy includes oaks, but also often has American holly, sassafras, and black gum. In the northern part of its range, the Oak - Hemlock - White Pine Forest tends to be on south-facing slopes and is surrounded by Northern Hardwood - Hemlock- White Pine Forest that is dominated by sugar maple and white ash. In Northern Hardwood - Hemlock- White Pine Forest, the only oak is red oak and the only hickory is bitternut hickory, which is not common in Oak - Hemlock - White Pine Forest.

**Associated Fauna:** The fauna of this community is richer than but overlaps with that of the mixed oak communities. There is a large suite of neotropical migrant birds that are more likely to be found here, in some of the larger sites, including about 15-16 species of warblers, Eastern Wood-Pewee (*Contopus virens*), and Great Crested Flycatcher (*Miarchus crinitus*). Where mountain laurel occurs with beech trees, Black-throated Blue Warblers (*Setophaga caerulescens*) may occur, and if there are low spots with large trees and fairly dense shrubs, Canada Warblers (*Wilsonia canadensis*) often occur. In large sites, large mammals, such as bear and moose, occur with the forest as part of their habitat. Common small mammals include smoky shrew (*Sorex fumeus*), masked shrew (*S. cinereus*), short-tailed shrew (*Blarina brevicauda*), woodland jumping mouse (*Napaeozapus insignis*), white-footed mouse (*Peromyscus leucopus*), gray squirrel (*Sciurus carolinensis*), chipmunk (*Tamias*



*striatus*), and red squirrel (*Tamiasciurus hudsonicus*), where hemlock are dominant. Amphibians would include the ubiquitous northern redback salamanders (*Plethodon cinereus*) and red efts, the juvenile stage of red-spotted newts (*Notophthalmus v. viridescens*). All of the upland forest types provide valuable structural attributes, such as tree cavity den sites (which are utilized by a variety of bird and mammal species) and large woody material (which is utilized by various amphibian, reptile, and invertebrate species). Perhaps the biggest difference in wildlife habitat between forest types in Massachusetts is that oak acorn production, an important source of wildlife food, is substantially greater in oak forest types than in northern forest types, while beech nut production is greater in northern hardwood types. Oaks and acorns play a fundamental role in the organization and dynamics of eastern wildlife communities.

**Public Access:**

Hiram Fox WMA, Worthington; East Brimfield Lake Flood Risk Management Project (US Army Corps of Engineers), Brimfield; Conant Brook Dam Flood Risk Management Project (US Army Corps of Engineers), Monson; Wolf Swamp WMA, Brookfield; 19<sup>th</sup> Hill WCE, Winchendon.

**Threats:**

Exotic invasives, including insects such as gypsy moth. Red maple has become more abundant in the forest type with reduction of fires and from being a less desirable wood for human use.

**Management Needs:**

**USNVC/NatureServe:**

A2080 *Pinus strobus* - *Quercus prinus* Appalachian Forest Alliance - *Quercus (rubra, velutina, alba)* - *Betula lenta* - (*Pinus strobus*) Forest [CEGL006454] (mid successional); A4128 *Pinus strobus* - *Quercus alba* Allegheny Forest and Woodland Alliance - *Pinus strobus* - *Quercus (rubra, velutina)* - *Fagus grandifolia* Forest [CEGL006293].