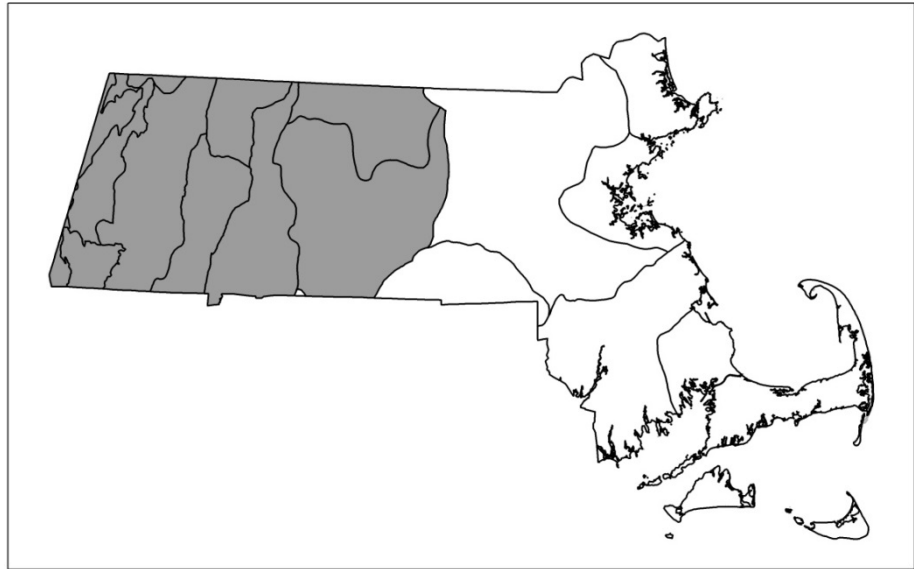




### Northern Hardwoods – Hemlock – White Pine Forest

**Community Code:** CT1C000000

**State Rank:** S5



**Concept:** A matrix forest of northern areas, with a closed canopy dominated by a mix of deciduous and evergreen trees, with sparse shrub and herbaceous layers.

**Environmental Setting:** The Northern Hardwoods - Hemlock - White Pine Forest is the prevailing, or matrix, forest in higher elevations of western and north-central Massachusetts, with smaller occurrences throughout on north-facing slopes and in ravines. It is an uneven-aged forest with a closed canopy dominated by a mix of long-lived deciduous and evergreen trees, with sparse shrub and herbaceous layers. The forest structure is dominated by single tree falls and replacements, with occasional small to medium blowdown events; stand replacement events are uncommon. The community occurs on neutral to moderately acidic soils with moderate levels of nutrients that retain some moisture except during extreme droughts. Sugar maple leaf litter is relatively high in nitrogen and decomposes rapidly which leads to a shallow layer of leaf litter and rapid turnover of nutrients.

**Vegetation Description:** Dominant and characteristic species of Northern Hardwoods - Hemlock - White Pine Forests occur in different combinations between and within occurrences: occurrences are generally predominantly deciduous with scattered hemlocks and white pines, but may have internal patches of nearly pure conifers. Canopies include variable combinations of sugar maple (*Acer saccharum*), white ash (*Fraxinus americana*), yellow birch (*Betula alleghaniensis*), American beech (*Fagus grandifolia*), black cherry (*Prunus serotina*), red oak (*Quercus rubra*), bitternut hickory (*Carya cordiformis*), eastern hemlock (*Tsuga canadensis*), and, usually, emergent white pine (*Pinus strobus*). There are often scattered red maple (*Acer rubrum*), paper birch (*Betula papyrifera*), and aspen (*Populus tremuloides*). A



subcanopy may include any of the tree species, particularly the successional species, as well as hop-hornbeam (*Ostrya virginiana*) or striped maple (*Acer pensylvanicum*). The shrub layer is usually open, but often has scattered clumps of hobblebush (*Viburnum lantanoides*), striped maple, red-berried elderberry (*Sambucus racemosa*), or fly-honeysuckle (*Lonicera canadensis*). The herbaceous layer is sparse, but fairly diverse, with intermediate wood fern (*Dryopteris intermedia*), Christmas fern (*Polystichum acrostichoides*), clubmosses (*Dendrolycopodium*, *Diphasiastrum*, *Huperzia*, and *Lycopodium* spp.), Canada mayflower (*Maianthemum canadense*), white wood aster (*Eurybia divaricata*), and wild oats (*Uvularia sessilifolia*). Occasional spring herbaceous species include painted or purple trilliums (*Trillium undulatum* and *T. erectum*), early yellow violet (*Viola rotundifolia*), broad-leaved spring beauty (*Claytonia caroliniana*), and trout-lily (*Erythronium americanum*).

**Differentiating Occurrences:** Northern Hardwoods - Hemlock - White Pine Forests are the generalized northern deciduous forests. They lack the abundant spruce and/or fir found to the north and upslope in Spruce - Fir - Northern Hardwoods Forests. Red spruce (*Picea rubens*) and/or balsam fir are abundant in Spruce - Fir - Northern Hardwoods Forests, and white pine uncommon. Within the matrix of Northern Hardwoods - Hemlock - White Pine Forest, subtypes with distinct species assemblages that occur in specialized conditions are named separately. All types of northern hardwood forests, including Northern Hardwoods - Hemlock - White Pine Forest, are dominated by sugar maple with white ash, yellow birch, American beech, and red oak, with low cover of white pine and hemlock. Successional Northern Hardwood Forests are best distinguished by the abundance of white birch and / or aspens in the canopy and northern hardwood species generally occurring in the subcanopy or shrub layer, not the canopy. Rich, Mesic Forest is a nutrient- and species-rich large-patch community, usually within the Northern Hardwoods - Hemlock - White Pine Forest area. Rich, Mesic Forests lack conifers, beech, and red oak. The understory has dense spring ephemerals and very little evergreen wood fern, Christmas fern, or wild sarsaparilla. Red Oak - Sugar Maple Transition Forest has red oak as a dominant, with sugar maple, American beech, and black birch (*Betula lenta*). Other northern hardwoods are occasional associates. Spring ephemerals are not abundant. Oak - Hemlock - White Pine Forests occur to the south and in warmer areas; they are dominated by a mix of oak species that except for red oak do not occur in Northern Hardwoods - Hemlock - White Pine Forest, plus sugar maple is lacking. Blueberry and huckleberry usually are significant in the understory of Oak - Hemlock - White Pine Forests, but absent or nearly so in Northern Hardwoods - Hemlock - White Pine Forest.

**Associated Fauna:** Northern Hardwoods - Hemlock - White Pine Forests are the common type of forest in the cooler parts of the state and provide habitat for many common wide-ranging species. Geographical variation, structure, size, and local conditions will affect which actual species are present. The best occurrences of Northern Hardwoods - Hemlock - White Pine Forest are large and incorporate variation in species and structure, including multiple layers of vegetation, snags, tree cavity den



sites (used by a variety of bird and mammal species), and fallen large woody material (used by various amphibian, reptile, and invertebrate species). Covering large areas means inclusions of variation such as interior forest, dense conifer stands, beech seed production, seeps, pockets of wetland, and small patches of dense, earlier successional shrub species. Many species of neo-tropical migrant songbirds nest in large numbers in larger occurrences, including a variety of warblers. Northern Goshawk (*Accipiter gentilis*), Barred Owl (*Strix varia*), and Pileated Woodpeckers (*Dryocopus pileatus*) are also to be expected. It is hard to overstate the wildlife value of beechnuts in Northern Hardwoods - Hemlock - White Pine Forest for black bear (*Ursus americanus*) and other seed-eating omnivores and herbivores. Mammals include red squirrel (*Tamiasciurus hudsonicus*), gray squirrel (*Sciurus carolinensis*), chipmunk (*Tamias striatus*), redbacked vole (*Clethrionomys gapperi*), short-tailed shrew (*Blarina brevicauda*), masked and smoky shrews (*Sorex cinereus* and *S. fumeus*), and white-footed mouse (*Peromyscus leucopus*). At elevation, deer mouse (*P. maniculatus*) and woodland jumping mouse (*Napaeozapus insignis*) also occur in the forest type. Amphibians include redbacked salamanders (*Plethodon cinereus*) and wood frogs (*Rana sylvatica*), and expected reptiles include redbelly snakes (*Storeria o. occipitomaculata*).

**Public Access:**

Chalet WMA, Cheshire; Mohawk Trail State Forest, Charlemont; Three Mile Pond WMA, Sheffield; Tully Mtn. WMA, Orange.

**Threats:**

Exotics do well in the community. Hemlock hosts the non-native wooly adelgid, which usually kills a hemlock tree after it is fully infested.

**Management Needs:**

Exotic control where appropriate/possible.

**USNVC/NatureServe:**

A4072 *Tsuga canadensis* - *Betula alleghaniensis* - *Acer saccharum* Forest Alliance - *Acer saccharum* - *Pinus strobus*/*Acer pensylvanicum* Forest [CEGL005005], *Tsuga canadensis* - *Fagus grandifolia* Forest [CEGL006088]; and *Tsuga canadensis* - *Betula alleghaniensis* Lower New England, Northern Piedmont Forest [CEGL006109]; A3301 *Acer saccharum* - *Fagus grandifolia* - *Tilia americana* Forest Alliance - *Acer saccharum* - *Fagus grandifolia* - *Fraxinus americana*/*Arisaema triphyllum* Forest [CEGL006632]; A3302 *Tsuga canadensis* - *Betula lenta* - *Betula alleghaniensis* Forest Alliance - *Pinus strobus* - *Tsuga canadensis* Lower New England/Northern Piedmont Forest [CEGL006328], *Tsuga canadensis* - *Acer saccharum* - *Fagus grandifolia*/*Dryopteris intermedia* Forest [CEGL006639]; A3224 *Acer saccharum* - *Fagus grandifolia* - *Betula alleghaniensis* Forest Alliance - *Acer saccharum* - *Betula alleghaniensis* - *Fagus grandifolia*/*Viburnum lantanoides* Forest [CEGL006631]; A3240 *Acer saccharum* - *Tilia americana* - *Fraxinus americana* Forest Alliance - *Acer saccharum* - (*Fraxinus americana*)/*Arisaema triphyllum* Forest [CEGL006211].