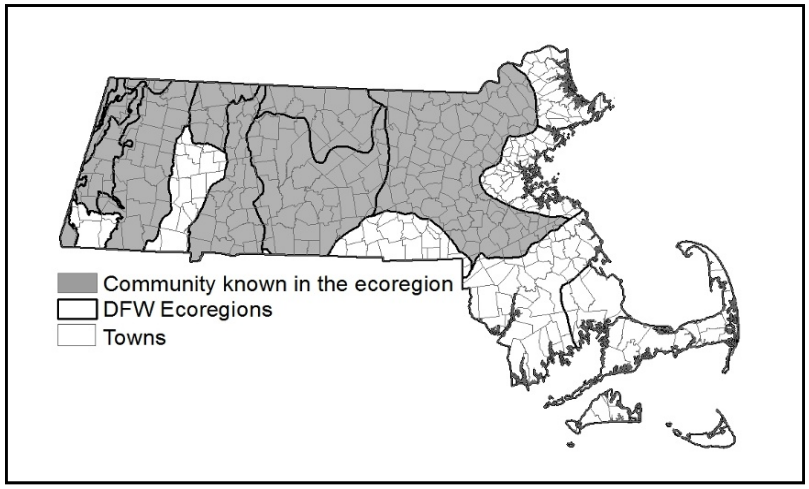
Hemlock Forest

Community Code: CT1C1C0000

State Rank: S4



Concept: Dense canopies with 80 to 100% closure, dominated by hemlocks. Little understory grows in the shade of the hemlocks.

Environmental Setting: Hemlock Forests are broadly defined in Massachusetts. A dense canopy with at least 50% cover of eastern Hemlock is the key characteristic. The closed conifer canopy allows little light through and restricts growth in lower layers. Hemlock Forests are often on rocky, north or north-west facing slopes in sheltered ravines, and along high-gradient streams. The soils are usually acidic and nutrient-poor with a thick, poorly decomposed duff layer. The forest floor is covered by needles, twigs, and small branches.

Vegetation Description: Hemlock Forests are dominated by eastern hemlock (*Tsuga canadensis*). In this widespread community, associated species, all occurring at very low percentages, vary with location: red spruce (*Picea rubens*) or white pine (*Pinus strobus*) may be present with maples (*Acer rubrum*, *A. saccharum*), American beech (*Fagus grandifolia*), yellow or black birch (*Betula alleghaniensis* and lenta), or oaks (scarlet, chestnut, red, white, and black) (*Quercus coccinea*, *prinus*, *rubra*, *alba*, and *velutina*). The shrub layer is sparse with saplings of the canopy species and small patches of mountain laurel (*Kalmia latifolia*), witch hazel (*Hamamelis virginiana*), striped maple (*Acer pensylvanicum*), or hobblebush (*Viburnum lantanoides*) growing in occasional canopy gaps created by windthrows. Eastern hemlock saplings may persist in the understory for many decades, to be released to grow into maturity when canopy gaps occur. The herbaceous layer is essentially non-existent except in scattered opening that may have Canada Mayflower (*Maianthemum canadense*), starflower (*Lysimachia borealis*), wild sarsaparilla (*Aralia nudicaulis*), rock polypody (*Polypodium virginianum*), hay-scented fern (*Dennstaedtia punctilobula*), intermediate wood fern (*Dryopteris intermedia*), or mountain wood fern (*D. campyloptera*) with occasional patches of shining fir-moss (*Huperzia lucidula*). Non-vascular plants may form dense patches. The non-native invasive species hemlock woolly adelgid (*Adelges tsugae*) is killing eastern hemlock across the state: black birch is common following the death of hemlocks.

Differentiating Occurrences: Many forests have eastern hemlock as a component of the canopy but Hemlock Forests are differentiated by having eastern hemlock as the dominant canopy species (>50% canopy cover) throughout the community. Forests with scattered patches of hemlock that are functionally variation in the surrounding forest include Oak - Hemlock - White Pine Forest and Northern Hardwoods - Hemlock - White Pine Forest. These mixed forests have much greater diversity in all layers than do Hemlock Forests. Hemlock Swamps are also dominated by eastern hemlock, but are wetlands; Hemlock Forests are upland communities.

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Habitat Values for Associated Fauna:

Birds that nest or forage in canopies or mid sections of conifers don't differentiate between wet or dry sites: many birds of upland conifer forest also use conifer swamps. Acadian Fly-catchers (*Empidonax virescens*) are a near obligate of Hemlock Forests in Massachusetts, although their habitats are broader to the north. Other species that use Hemlock Forest tend to be northern or conifer preferring forest species, including birds such as Black-throated Green Warbler (*Dendroica virens*), Blackburnian warbler (*D. fusca*), Louisiana Waterthrush (*Parkesia motacilla*), and Winter Wren (*Troglodytes hiemalis*). In the winter, mixed flocks are common with chickadees (*Poecile atricapillus*), kinglets (*Regulus* spp.), and nuthatches (*Sitta* spp.). Mammals include those that are widespread and typical of northern and coniferous forests: red squirrels (*Tamiasciurus hudsonicus*), red-backed voles (*Clethrionomys gapperi*), smoky shrew (*Sorex fumeus*), and white-footed mouse (*Peromyscus leucopus*).

Threats:

Hemlock hosts the non-native Hemlock Woolly Adelgid (*Adelges tsugae*), which usually kills a hemlock tree after it is fully infested. Elongate hemlock scale (*Fiorinia externa*) is another non-native insect that can cause death to hemlocks.

Management Needs:

USNVC/NatureServe:

A3251 *Pinus strobus* - *Tsuga canadensis* Forest Alliance - *Tsuga canadensis* - (*Betula alleghaniensis*) - *Picea rubens* / *Cornus canadensis* Forest [CEGL006129] and *Tsuga canadensis* - *Betula alleghaniensis* - *Acer saccharum* / *Dryopteris intermedia* Forest [CEGL006638]; A3302-*Tsuga canadensis* - *Betula lenta* - *Betula alleghaniensis* Forest Alliance - *Pinus strobus* - *Tsuga canadensis* Lower New England, Northern Piedmont Forest [CEGL006328].