

# High Elevation Spruce - Fir Forest/Woodland

State Rank: S1 – Critically Imperiled



High Elevation Spruce - Fir Forest/Woodland with wind swept trees and adjacent opening. Photo: Bruce A. Sorrie, NHESP.

**Description:** High Elevation Spruce - Fir Forests/Woodlands are very uncommon in Massachusetts, occurring only above 915 m (3000 ft.) at the highest elevations in the state on the upper and often very steep northern slopes of the Mt. Greylock massif. Strong winds and heavy winter snow and ice, sculpt and stunt plant growth producing a dense, short (approximately 5-10m (15-33 ft.)), and often patchy tree canopy. The soils are generally thin, acidic, and nutrient poor and often there are areas of exposed bedrock. Due to the cold temperatures and acidity of the habitat and conifer needles, decomposition of the organic matter is

High Elevation Spruce - Fir Forests/Woodlands are found on the tallest, most exposed mountains in Massachusetts. Dense thickets of balsam fir and red spruce, dwarfed from high winds and exposure, characterize this community.

slow, resulting in a thick humus layer. Species diversity is naturally low, but includes plants and animals that, like the community, are very rare in Massachusetts but more common to the north.

**Characteristic Species:** High Elevation Spruce - Fir Forests/Woodlands are low diversity coniferous forest of high elevations, usually on steep stony, upper slopes or level ridgetops. Balsam fir is dominant, associated with red spruce. Paper birch, heart-leaf paper birch, and yellow birch occur in lower numbers. Where there is light, shrubs such as mountain maple, mountain holly, American mountain ash, and hobblebush may grow. A few sedges are present in low amounts, including northern stalked sedge and New England sedge. Blue-bead lily, mountain wood-sorrel, bunchberry, bristly clubmoss, and shining fir-moss grow scattered on a thick layer of needles or on mosses that form thick mats on fallen logs and on the forest floor.



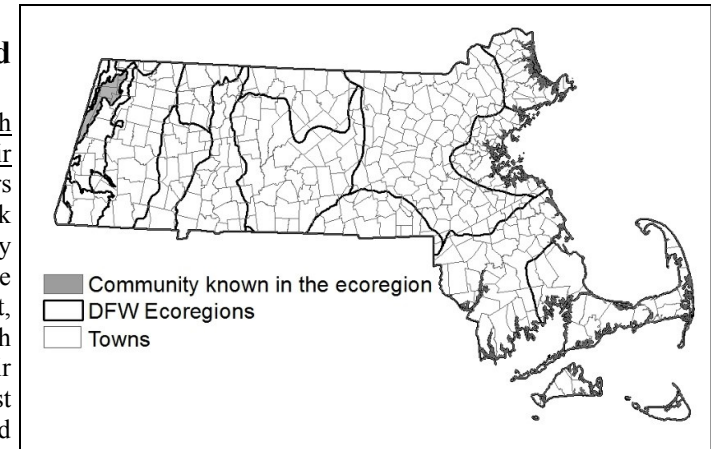
Heart-leaf paper birch leaves and catkins. Photo: Donald Cameron.

## Differentiating from Related Communities:

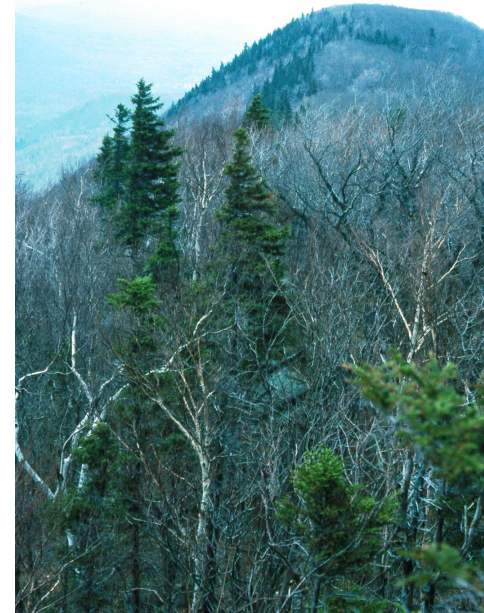
In Massachusetts, High Elevation Spruce - Fir Forest/Woodland occurs only on the Greylock massif at the very highest elevations in the state, and has short, sculpted trees with >75% spruce and fir combined, with the rest of the canopy dominated by birches with other northern hardwoods. Downslope they grade into Spruce - Fir - Northern Hardwoods Forests (SFNHF) that occur at slightly lower elevations in the Berkshires and also in the higher elevation areas of the northern Worcester Plateau. SFNHF has taller, less windswept trees; red spruce is a dominant or at least present with other conifers including balsam fir and eastern hemlock. If spruce or fir is present in Northern Hardwoods - Hemlock - White Pine Forests or Successional Northern Hardwood Forests, it is as scattered individuals, <25% cover.

## Habitat for Associated Fauna:

The top of Massachusetts's highest, most exposed mountain provides habitat for some northern birds such as Swainson's Thrush and Yellow-bellied Flycatcher, as well as several state-protected species. Also expected would be more widespread animals that use conifer forests, such as snowshoe hare, porcupine, northern flying squirrel, deer mouse, and birds such as Olive-sided Flycatcher.



**Examples with Public Access:**  
Mt. Greylock SR, Adams.



High Elevation Spruce - Fir Forest/Woodland. Photo: Bruce A. Sorrie, NHESP.

