

## What does it look like?

This forest is characterized by its darkness. The evergreen canopy blocks out sunlight, keeping the air cool in summer. In winter, Hemlock branches intercept the elements, creating a sheltered environment below. Hemlock Forests tend to be quiet, as there is not much rustling of wind in the leaves above.



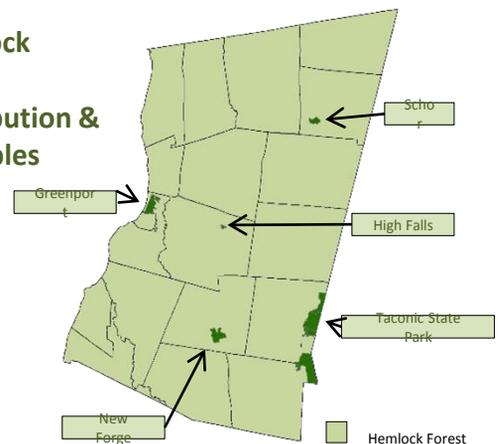
*Above: Inside a steep-sloped Hemlock Forest. Left: The Hemlock-covered North side of a hill in the Taconics.*

## Where do you find it?

Hemlock Forest is found throughout Columbia County. Although it can be found on level ground, it is more often associated with gentle or steep slopes, which usually face north or west, and rarely east. We never find it on southern slopes.

It is also found in cool ravines, along rocky headwater streams, and on the edge of swamps or seeps. It tends to grow on thin, dry soils, but occasionally occurs on deep and poorly drained soils. It occurs on sedimentary and metamorphous bedrock, both acidic and calcareous, and is mostly associated with till or outwash gravel.

### Hemlock Forest Distribution & Examples



## Where & When to Visit

Three examples of public areas with large Hemlock Forests are High Falls in Philmont, New Forge in Taghkanic and Taconic State Park in Copake. Many other public areas like the Schor Conservation area in Canaan and the Greenport Conservation Area in Greenport have smaller patches that can be explored. Visit year-round!

# Characteristic/Common Plants

Not surprisingly, Eastern Hemlock is the most common tree in the canopy, as well as the understory of Hemlock Forest. Black Birch, Red Oak, Red Maple, Sugar Maple, White Pine, Hophornbeam, and Chestnut Oak often are mixed in with the Hemlock. Other tree species might occur in the canopy in smaller numbers. The understory is sparse and consists mostly of Hemlock, Black Birch, Sugar Maple, Hophornbeam, Witchhazel, and Striped Maple.



*The bark and needles of a mature Eastern Hemlock.*



*The sparse ground flora of a Hemlock Forest.*

Hemlock Forests tend to have very few shrubs and the forest floor is mostly covered by leaf litter (composed of dry needles and oak leaves), rather than herbaceous plants. The sparse ground flora is mostly composed of two evergreen ferns (Marginal and Evergreen Wood Fern), Canada Mayflower, seedlings of Maple-leaved Viburnum, and Hemlock seedlings.

No plant species occurs exclusively in Hemlock Forests in Columbia County and even Hemlock trees do occur in small groups or as individual trees scattered throughout other forest types.

## Table of Characteristic/Common Plants

### Canopy

Eastern Hemlock	<i>Tsuga canadensis</i>
Black Birch	<i>Betula lenta</i>
Red Oak	<i>Quercus rubra</i>
Red Maple	<i>Acer rubrum</i>
Sugar Maple	<i>Acer saccharum</i>
White Pine	<i>Pinus strobus</i>
Hop Hornbeam	<i>Ostrya carolinense</i>
Chestnut Oak	<i>Quercus montana</i>

### Understory

Eastern Hemlock	<i>Tsuga canadensis</i>
Black Birch	<i>Betula lenta</i>
Sugar Maple	<i>Acer saccharum</i>
Hop Hornbeam	<i>Ostrya carolinense</i>
Witch hazel	<i>Hamamelis virginiana</i>
Striped Maple	<i>Acer pensylvanicum</i>

### Ground Flora

Marginal Wood Fern	<i>Dryopteris marginalis</i>
Evergreen Wood Fern	<i>Dryopteris intermedia</i>
Canada Mayflower	<i>Maianthemum canadense</i>
Maple-leaved Viburnum	<i>Viburnum acerifolium</i>
Eastern Hemlock	<i>Tsuga canadensis</i>

# What is ecologically special about this habitat?

Hemlock Forests can play an important role in maintaining clear, cool, oxygen-rich, and permanently flowing headwater streams which are prime habitat for Brook Trout. Hemlock Forests themselves are generally species-poor, with few ants, ground beetles, small mammals, amphibians, and birds.

However, owls prefer this habitat for roosting and White-tailed Deer use it for winter cover. Reportedly, Fisher and Bobcat also seek out Hemlock Forests in the winter and Porcupines, Red Squirrels and mice feed on Hemlock.



*The Blackburnian Warbler*

Hemlock Forests are reportedly the preferred breeding habitat for the regionally scarce Black-throated Green and Blackburnian Warbler, Dark-eyed Junco, Hermit Thrush, Golden-crowned Kinglet, and Northern Saw-whet Owl (which is known historically from the County, but has not recently been documented).

A few locally rare plants occur occasionally in Hemlock Forests. These include Spotted Coralroot, a parasitic orchid which does not photosynthesize and therefore seems to be quite tolerant of shade, and the northern species White Wood-sorrel and Carolina Spring Beauty, which might be attracted to the cool micro-climate.

## Table of Rare Plants and Animals

Rare Plants		
Spotted Coralroot	Corallorhiza maculata	Regionally rare
White Wood-sorrel	Oxalis montana	Locally rare
Red Oak	Carolina	Locally rare
Rare Animals		
Black-throated Green Warbler	Dendroica virens	Regionally scarce
Blackburnian Warbler	Dendroica fusca	Regionally rare
Dark-eyed Junco	Junco hyemalis	Regionally scarce
Hermit Thrush	Catharus guttatus	Regionally scarce
Golden-crowned Kinglet	Regulus satrapa	Regionally rare
Northern Saw-whet Owl	Aegolius acadicus	Regionally rare throughout New York



*White Wood-sorrel*

# Hemlock History and Human Use

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## Origin of the Habitat

Hemlock Forest is one of the forest types which naturally develop in undisturbed areas of suitable soil conditions. Once established, the Hemlock Forest tends to perpetuate itself, with its shade-tolerant seedlings and young trees persisting for decades under the canopy of their parents, ready to quickly fill in any canopy opening left by a dying or fallen tree.

Hemlock Forests take time to get established and are thought of at the end point of a successional sequence which leads from an abandoned field through a variety of forest types. Most examples of Hemlock Forests found in our landscape today seem to represent ancient forests which might never have been cleared for agriculture. Therefore, they resemble islands of relatively unaltered nature surrounded by a sea of recently



*The tendency of Hemlock Forests to be on steep, rocky slopes helps explain why they were not as often cleared for agriculture or settlement as other forest types.*

## History of Human Use



*The Tannery at Mount Lebanon Shaker Village*

*"I make my [tanning] liquors of hemlock bark, ground and put in leeches [soaking vats]." – Fred Sizer, Shaker tanner at Mount Lebanon, 1860s*

Hemlock Forests have a mixed recent history in our landscape. On the one hand, their tendency to be on rocky slopes, thin soils and ravines mean that they were more often spared the brunt of early land clearing for agriculture – they simply did not tend to grow on good farmland. In addition, Hemlock was apparently a generally mediocre timber and firewood, although not unusable. It did find some particular applications such as in lathing but, in general, was not as sought out as some of our other woods.

On the other hand, its bark was favored by tanners. We estimate that, during the first half of the 1800s, Columbia County tanneries used the equivalent of about 5,600 acres of Hemlock. Certainly, Hemlock was not the only tree species actually used (Chestnut and Oaks, for example, were also employed), and not all bark may have been harvested in the County, but the estimate does suggest that, at least around certain tanneries, there was probably an appreciable Hemlock harvest. Such was certainly true in the Catskills.

## As Inspiration: residents past and present

*Here I saluted the well-known trees, especially those two tall lovers the Oak and the Hemlock.*

– John Cowper Powys 1932, Harmlemville

In Columbia County, Hemlocks stand out as being both well-known and well-loved.

*“There was a sense of comfort and shelter”* one participant in our habitat outings described about our visit to a Hemlock Forest, pointing to the juxtaposition of an open feel, in the sparse understory, yet enclosure, with such towering trees. She was not alone; in our photo survey of people’s perspectives on 20 different habitats in the County, the Hemlock Forest received the highest rating for familiarity, and was one of the habitats people responded to most positively – finding it likeable, peaceful, and inviting.

These qualities have often made Hemlock groves special places for people. One participant in the habitat outing described her experience of the Hemlock Forest: *“The smell of Hemlocks reminds me of when I was a child visiting my grandmother. There was a Hemlock grove where she worked that was a place where people got married. It was a very beautiful, special place.”*

## As Habitat for Deer: the poet and the hunter

*White sky, over the hemlocks bowed with snow,  
Saw you not at the beginning of the evening the antlered buck  
and his doe*

*Standing in the apple-orchard? I saw them. I saw them  
suddenly go,*

*Tails up, with long leaps lovely and slow,  
Over the stone-wall into the wood of hemlocks bowed with  
snow.*

– Edna St. Vincent Millay, excerpt from *The Buck in Snow*



*Habitat Outing participants exploring the Hemlock Forest on Phudd Hill (Left) and a hunter pointing out signs of deer bedding under a Hemlock.*

Writing these lines from her home in Austerlitz in the late 1920s, Edna St. Vincent Millay captures a central role of the Hemlock in winter that we heard about from many of the hunters we talked to: they provide a sheltered place for deer to bed down. One hunter we spoke with explained, that in tracking deer:

*“You have to really know the terrain and where the deer would go. You have to know what bedding areas are around – where would the deer go to bed down? The bucks usually like large trees, and in the winter they look for Hemlock Trees because there is some open area at the base of the tree where they can comfortably bed. So when you are tracking deer you are looking to see if you can spot, from a distance, a Hemlock Tree.”*

# Management Considerations

## The Hemlock Woolly Adelgid

Currently, the biggest concern for Hemlock Forests throughout the Northeast is an invasive insect, the Hemlock Woolly Adelgid, which has the capacity to devastate entire Hemlock Forests. Columbia County is currently at the northern edge of the range of the Adelgid, which has been steadily spreading north from Pennsylvania where it was first detected in the 1950s. Since 2013, we have observed Hemlock Woolly Adelgid in all parts of the County except the northeastern corner.

At present there is little that can be done at a forest scale to control this pest. We can, however, provide Hemlock forests the space to take advantage of mitigating factors – isolated forests that might escape the infestation, cold winters that limit the overall damage of the Adelgid, individual trees that may prove resistant, and continued efforts to find biological controls. In order to increase our Hemlock Forests’ chance of survival, we recommend not to do any salvage logging of Hemlocks, and to refrain from clearing any of the remaining Hemlock Forests for housing development, timber or agriculture.

## Interact with this Habitat



### Look for the Hemlock Woolly Adelgid

The Hemlock Woolly Adelgid is still new in the County, and early detection is important. Here are some of the signs of an infestation to look for:

1. Trees that look stressed, are losing needles or have dead branches.
1. White ‘woolly’ egg sacs on the underside of twigs, near the base of needles, as seen in the photos. These are easiest to detect from January through June, and are often on new growth.

Sightings can be reported to the NY DEC through their website ([dec.ny.gov](http://dec.ny.gov)) or forest pest hotline (1-866-640-0652)



## Additional Resources

***Hemlock: A Forest Giant on the Edge.*** Edited by David Foster. Published by Yale University Press, 2014.

