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## "NH Big Tree of the Month – March 2007" Eastern Hemlock – *Tsuga Canadensis*

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Hemlock trees, so ordinary they are hardly noticed, fulfill a unique niche in the northern forest. A tree of the final phase of forest succession, they are the most “shade tolerant” of eastern trees.

Their short flat needles that grow on multiple layers on horizontal branches form a dense canopy that blocks all sunlight to the forest floor. A mature hemlock forest is a silent, spooky woods with no undergrowth to crackle underfoot. Instead, a thick layer of soft dead duff covers the ground creating the woods of scary fairy tales. But at the same time it is the woods of winter refuge for deer who find the tent-like trees that intercept the snow, a perfect shelter for winter deer yards.

Hemlock’s tiny little cones that grow at the tips of the branches produce tiny winged seeds that can germinate in shade. The sprouts and saplings grow in shade too – very slowly. But they grow rapidly if surrounding taller trees succumb to insects, disease or natural disasters and sunlight reaches the little hemlocks in the undergrowth. They are generalists and grow everywhere, but their shallow roots require consistent moisture and they can die under severe drought stress. They don’t tolerate flooding either.

UNH Extension Educator for Forest Resources in Hillsborough County, Jon Nute, notes that hemlock is the third most common forest tree in New Hampshire after white pine and red maple. One reason for its abundance is its low timber value.

Nute explains that “for comparison, a \$35 hemlock tree is the same size as a \$140 white pine and the same size as a \$310 red oak. Hemlock boards have many knots and other defects, which relegates it to lower value uses such as timbers, pallets and paper making. Competition from the much more abundant and higher quality spruce and fir from Canada, and Douglas fir from the west, used for framing construction, will always keep the local hemlock markets depressed. In fact, the only time that hemlock prices were attractive was during the Civil War era when the bark was stripped from the trees and gathered to tan leather hides. This ended with the use of synthetic tanning chemicals after World War I.”

This tannic acid found in the bark helps hemlocks fend off insect infestations, and also limits the growth of moss and lichens on the bark. Tannin makes hemlock logs and stumps slow to rot. Tom Wessels in his book [Reading the Forested Landscape](#), explains that one way of identifying stumps in a forest is to note the pattern of rot. If the stump is rotten in the center, it’s a hardwood tree such as a hollow old maple or oak. If it’s rotting from the outside towards the center, it is likely a softwood conifer. Conifers, including hemlocks, have strong heartwood and rot slowly from the outside. For this reason hemlock timbers do make good railroad ties.

What hemlocks lack in timber value, they make up for in landscape beauty and wildlife habitat value. They are particularly important when growing along the sides of brooks and ponds. The roots control erosion and the branches shade the water to keep it cool, which maintains the water oxygen content to provide a healthy environment for the fish.

A recent threat to the health of hemlock trees is the invasion of an introduced insect called the Hemlock Woolly Adelgid (HWA), discovered in Connecticut and Massachusetts in the 1980s and now moving into southern New Hampshire. Adelgids are small, soft-bodied insects closely related to aphids. They feed on the tips of young branches, cleverly avoiding the tree tannins. They destroy the tree by piercing the twigs and sucking to remove plant sap for food. This eventually causes cessation of tree growth, discoloration and premature drop of needles, the dieback of branches and possible death of the tree in as little as one year.

An interagency monitoring group has been formed in New Hampshire and established quarantine procedures, destruction of some infested trees as well as chemical treatment of others and the introduction of predatory beetles, which are showing promising results. Photographs and information on the current situation can be found at the "Forest Health" section of the NH Division of Forests and Lands web site: [www.nhdfll.org](http://www.nhdfll.org)

When seen in home landscapes as shaped hedges and privacy screens, it is hard to imagine how huge hemlocks can grow. The state champion is 145 feet tall. I have seen hemlocks in the Adirondack Mountains so tall we could hardly see the canopy at the top to tell what kind of tree was growing from the huge trunks. We found some blown-down hemlock trees across the trail that had been sawed, so we could examine the hundreds of tiny growth rings. The toppled trees were at least 300 years old. The national champion in the Great Smoky Mountains National Park is 165 feet tall and 202 inches around with a crown spread of 39 feet.

The NH Big Tree Committee maintains a list of state and county champions; to see the state Big Tree list go to [www.nhbigtrees.org](http://www.nhbigtrees.org) If you notice a huge hemlock that looks over 100 feet tall with a trunk diameter over three feet, contact Carolyn Page, NH Big Tree State Coordinator: [carolyn\\_page@hotmail.com](mailto:carolyn_page@hotmail.com), phone: 603-664-2934, so she can pass your information on to the appropriate county coordinator.

UNH Cooperative Extension and the NH Division of Forests and Lands sponsor the NH Big Tree program in cooperation with the National Register of Big Trees through American Forests.

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