

Silviculture of the Eastern Hemlock Tree

(Tsuga Canadensis)



Majestic Eastern Hemlocks' long reaching limbs appear to dance with the rise and fall with the wind. The terminal leader (top of tree) tends to droop and because it flags away from the direction of the prevailing wind, its orientation towards the east makes the Hemlock a natural compass in the wood.

Wintering deer seek shelter within Hemlock stands and Northern Goshawks love to nest in their branches, high above the forest floor. Underneath the high tree canopy are shrubs including striped maple, fly honeysuckle, mountain maple and beaked hazel and hobblebush.

Canada's First Nations people used the leafy twigs to brew a bitter tea for colds, fevers, diarrhea, stomach ailments and scurvy because the 12% tannin concentration was a good astringent. Twigs were also used to create an aroma for sauna steam baths. The inner, bright red-purple bark was used, after being shredded or pounded, to make poultices to staunch bleeding from wounds and to treat burns and sores.

Because Hemlock is rot resistant and durable, it is used in places where rot may occur. Hemlock from Algonquin Park was used extensively in the construction of Toronto subways. The lumber is used for coarse construction, making boxes, pallets, crates and for railway ties (ties have the reputation of gripping spikes well). Hemlock is also used for pulp and paper manufacture. However, as a timber tree, the wood is not valued because in growth, the wood may split between annual rings (called "ring-shake") or along radial lines ("star-shake"). When cut, the wood splits and warps easily and hard flinty knots quickly dull saws, chip axe blades and deflect nails.

Young trees can be trimmed easily and used for hedges. When burned, it produces sparks and so it must be used with care and close observation. A large Hemlock grove exists at the Devil's Elbow entrance to Massassauga Provincial Park.



Size, Age and Growing Conditions

Eastern hemlock grows slowly and is reproductively mature after 40 years and then for the next 4 centuries. It can reach heights of 25 meters with diameters of 60—90 cm and can live in excess of 200 years with tress of 430 years found in Algonquin Park (Vasiliasukas 1995) and claims of up to 600 years (MNR &F). Hemlock represents 20% of species in the Archipelago. It requires a growing season of at least 80 days with a mean July temperature of at least 17 degrees. Hemlock grows in dry to moist soil conditions on clayey to rocky sites. Hemlocks are a shade tolerant tree and are the only species able to grow under a stand of pure hemlock, thus referred to as a climax species. Growth averages 1 to 2 cm under heavy tree canopies to 45 cm for saplings in full sunlight.



Bark

Hemlock bark is furrowed and brown in colour with the inter bark being deep purple. The bark was used as a source of tannic acid to tan animal hides in the late 1800s. It led to the harvest of large volumes of Hemlock with little or not attempt at regeneration. It resulted in a smaller hemlock population today. Where hemlocks are concentrated around ponds and small lakes, the water becomes stained giving rise to the term of 'hemlock tea lake'.



Needles and Cones (Reproduction)

Hemlock needles are bright green, short (8—17mm) and flat with two thin white lines on the underside.

Hemlocks require 1 year to produce seed; flower buds differentiate one season before spring bud flush. Pollination and cone maturation occur during the next season. Cones can persist on the tree into the second year. Wind pollination of the ovules occurs within 2 weeks of bud burst and fertilization within 6 weeks of pollination.



Cones are oval shaped and about 12 to 20 millimeters long. In the late fall and winter, seeds fall out of the cones onto the ground. Light, wind disperses seeds. Seeds usually fall within 1 tree height of the parent tree because of eastern hemlocks small seed wings. Seeds can, however, drift on crusted snow for up to 1 km. Hemlock seeds require 60 to 90 days of cold stratification to break embryo dormancy (Creasey and Myland 1992) and require low light levels with 15 degrees Celsius in moist areas such as rotten logs, stumps, mounds and moss mats which are warmer and moister than surrounding forest floor. Hemlock does not form root or stump sprouts.

Photos courtesy of Daniel Tigner, Canadian Forest Tree

Contributors and Sources

Celesa Fletcher, SCA Communications Coordinator