

Eastern Hemlock: Irreplaceable Habitat

by David Orwig

The eastern hemlock is a tree species widely distributed across Massachusetts. Most of the state's known old-growth forest is comprised of hemlock, which often live for 300 to 350 years. However, it is much more than just an old-growth specimen. For any of you who have ventured into the midst of an eastern hemlock-dominated forest, you may sense that you entered a special place. The stately, long-lived conifers with drooping, dark green branches aligned in a pyramidal shape, create an environment that is deeply shaded and cooler than surrounding woodlands. These conditions strongly influence wildlife and nearby streams.

Hemlock forests often feel spongy underfoot, due to a thick accumulation of needles that are slow to decompose. Red-backed salamanders and red efts (juvenile red-spotted newts) thrive under fallen wood where they feed on mites, beetles, and other insects. Visit a hemlock forest after a summer rain, and you may see dozens of red efts crawling about. Soil invertebrates are often overlooked, yet many dwell here; while looking for salamanders, you may see several varieties of ants scurrying around the soil surface, going in and out of ground nests.

The same aromatic boughs that cast the deep shade under hemlock trees also harbor many arthropods, including a broad variety of spiders, mites, and moths. Unfortunately, hemlock branches also provide excellent food for two harmful exotic insects introduced into the eastern US in the mid-20th century: the hemlock woolly adelgid and the elongate hemlock scale. These two unwanted pests feed on hemlock at the same time, threatening this species throughout most of its range in eastern North America and creating uncertainty about the future of hemlock in the coming decades.

Many different birds spend at least part of their life cycle in hemlock forests, often feeding on the insects dispersed throughout the dense tree crowns. During late May and early June, the hemlock forest is alive with a chorus of neotropical songbirds, many recently arriving from their winter homes in the south. Black-

throated green warblers are extremely common in the upper branches of the tree, where they feed and nest. Once you get acquainted with its "zoo zee zoo zoo zee" call, you will rarely be within reach of hemlock forest and not hear this species sing to you. Other avian species such as Acadian flycatchers, Blackburnian warblers, Canada warblers and hermit thrushes also are strongly associated with the hemlock habitat. You might also see black-capped chickadees, winter wrens, and red-breasted nuthatches in hemlock stands. Finally, barred owls, northern goshawks and red-shouldered hawks frequently nest in mature to old-growth hemlock forests.



Photo by Don Niebyl

Herds of white-tailed deer congregate under hemlock for precious winter food and cover. The dense branches intercept more snow and ease winter temperatures, reducing the deer's energy requirements, an especially important benefit during harsh winters with deep snow packs. During the winter red squirrels and mice commonly feed on hemlock seeds and snowshoe hares frequently eat hemlock

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Bernardston, MA**

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headlands, Half Moon Beach is perfect for families with young children. Niles Beach, going towards Eastern Point, is a half-hour's walk from the station. With its western exposure, Niles Beach offers wonderful views of the Boston skyline. Good Harbor Beach is also around 30 minutes on foot from Gloucester Station. Gloucester's most popular public beach, Good Harbor has lovely surf, a salt marsh, tidal stream and a small island which is accessible at low tide.

• Front and Back Beaches, Rockport

Front Beach is a broad sweeping sand beach backed by the town of Rockport. Adjacent to the north is Back Beach, a rocky stretch of shore used primarily by divers. A walk through the town of Rockport on the way to the beach takes one past galleries, candy stores, restaurants and T-shirt shops. Several hotels clustered near Front Beach are handy for those not quite ready for a Boston re-entry.

Directions: Front and Back Beaches are about one quarter mile from the Rockport Train Station.

BEACHES SOUTH OF THE CITY

• Wollaston Beach, Quincy

Wollaston Beach is an urban beach with a one and a half mile shoreline. Features include a sea wall, continuous jogging/bicycling trail, concession stand and bathhouse. Caddy Park is located at the southern end of the beach.

Directions: From Wollaston Station on the Red Line, walk directly to the beach or transfer onto the #217 bus.

• Nantasket Beach, Hull

A three-mile long beach that attracts large crowds in the summer, Nantasket Beach Reservation is famous for the Paragon Carousel, bathhouses and concession stands.

Directions: Take the Red Line to Quincy Center and transfer to the #220 (Hingham) bus and then to #714 operated by JBL Buslines.

Elena Saporta is a landscape architect in Cambridge and member of the GBG ExCom.

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Photo by David Orwig

Hemlocks in Harvard Forest, Petersham, MA

foliage. Porcupines eat the tree's bark but because they often completely strip it by doing so these animals often kill young hemlocks. Another common animal in this conifer forest is the elusive fisher, who use these deep woods for den sites in which to raise their kits.

Not only does hemlock create its own environment on land, it also modifies the conditions of wetlands, streams, and creeks on whose banks hemlock frequently grows abundantly. Trout depend on the cool water temperatures that are maintained by dense hemlock cover. In fact, early descriptions of brook trout often referred to them as "hemlock trout." Their vivid coloration — steel blue sides with rows of scarlet dots — was

attributed to the dark pools common in brooks winding through these forests. In small streams, the stable base flows maintained during the summer by hemlocks not only help these fish survive, but also increase the production of aquatic invertebrates that these fish eat.

So, next time an opportunity arises to visit a hemlock forest, take it! Immerse yourself in the fragrant, cool atmosphere among these wonderful trees and relish the experience — for it may be fleeting...

David Orwig, a forest ecologist at Harvard Forest, studies hemlock forests as part of a large research program examining the ecological consequences of disturbance events on forest dynamics.

HWA at the Arnold Arboretum

by Erik Gehring

The eastern hemlock is under assault by two foreign pests introduced to the US in the middle of the last century: the hemlock wooly adelgid (HWA) and the elongate hemlock scale. Of these HWA is far more dangerous, having decimated large swaths of hemlock forest up and down the east coast. At Boston's Arnold Arboretum HWA was first noticed on Hemlock Hill in 1997, at which time the staff started exploring various methods of controlling the pest. Two chemical treatments have proven successful, at least so far: spraying

the entire tree canopy with horticultural oil, a procedure that needs to be repeated every year and can only be done where there is road access; and injecting imidacloprid, aka Merit, directly into the soil surrounding the base of the tree, which can be done in more remote locations and offers two to five years of protection. "The general feeling is that the hemlock is a keystone species — an entire ecosystem surrounds it," explains Richard Schulhof, Deputy Director of the Arnold Arboretum. "These treatments buy time until a non-chemical alternative is developed." ❖