

## Save the Eastern Hemlocks!!

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Eastern hemlocks (*Tsuga canadensis*), sometimes called the redwoods of the east, are majestic trees that may grow to a height of 150 feet or more with a trunk up to 6 feet in diameter. They grow slowly, but may live as long as 900 years. They start producing cones at about 15 years of age and some may produce them when they are as old as 450 years. The leaves are flat evergreen needles and the cones, a half to 1 inch long, look like small footballs hanging from the tips of branches. In the northern hardwood forests, hemlocks are found on low rolling hills and glacial ridges, often with white pine, northern red oak, sugar maple, American beech, yellow birch and white ash. Around Lexington you can see these glorious trees, often in clusters or long rows, in conservation lands, along roads and in many yards. Eastern hemlocks are important to the environment as well as beautiful. They provide habitats for birds, fish, invertebrates, amphibians, reptiles, and mammals. About 90 bird species and more than 40 mammals use hemlocks for cover or food (seeds or needles) in the northeastern US. Hemlocks provide deep shade along creeks that supports trout and other cold-water wildlife.



Beautiful, healthy hemlocks.

Hemlocks are one of the most shade tolerant trees, but they do not do well in soil that is wet or has poor nutrition, nor do they tolerate prolonged heat, windy exposed sites, or air pollution. Drought is harmful to hemlocks, especially younger trees, but now their worst enemy is the hemlock

woolly adelgid (*Adelges tsugae*) (HWA), a tiny insect from East Asia that is almost invisible (about 1/32 inch long). In the US this insect was first found in the Pacific Northwest in the 1920s and in the Washington DC and Richmond VA areas in the 1950s. By 2005, it was established in 16 states from Georgia to Maine. The HWAs, which lack natural enemies in North America, have spread by wind, birds, mammals and infected hemlocks from nurseries.

HWAs are parthenogenetic — all are female and reproduce asexually. Their life cycle has two generations each year. The overwintering generation starts to lay eggs in spring; each adult lays 100 to 300 eggs. The brownish-orange eggs are covered with the fluffy white material secreted by the adult insects to protect the eggs. When the eggs mature, the nymphs begin to feed and increase in size and become mature adults by mid-summer. Adults in the spring generation lay up to 75 eggs per insect. The resulting nymphs survive over the winter and mature to adults in spring. Thus the population can grow quickly.

The HWAs suck fluid from the base of the hemlock needles and may inject toxins while feeding, depleting the tree. Other insects, such as hemlock scale, hemlock borer and spittlebugs, and also fungi and drought can all exacerbate the impact of the HWAs. Some trees die within 4 years, but others may linger several years in a weakened state.

If you have hemlocks in your yard, keep an eye on their health. The first sign of infestation by HWAs is the appearance of fluffy white globs on the twigs. Signs that a tree is deteriorating are previously shiny green needles turning grayish or dropping off and branches falling. If you notice signs of infestation, it would be prudent to contact a tree expert right away to assess the health of the tree and provide appropriate treatment. If HWA infestation is noticed early, the tree is more likely to be saved. Sprays such as horticultural oils or insecticidal soaps are effective if the tree is saturated with them. Systemic treatments have had some dramatic results that may be effective up to 5 years. Looking ahead, several beetle species introduced from Asia that appear to feed only on HWAs may prove to be a longer-term solution. Researchers are also attempting to identify strains of eastern hemlocks that seem to be tolerant to the feeding of the HWAs.



Fluffy, white globs on the needles.

Because the eastern hemlocks provide such a uniquely beneficial habitat for wildlife, some experts believe that the HWA infestation could be a worse ecological disaster than that caused by the chestnut blight that was first seen in the US in the early 1900s. If we are not able to successfully thwart the HWAs in time, the widespread losses of eastern hemlocks will be devastating. Hopefully, the various treatments will save many of these glorious trees from the alien invaders. Be vigilant in checking for the white globs on your hemlocks!



Branches with few needles.

## References

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