

Hemlock Woolly Adelgid (*Adelges tsugae*)

The Hemlock Woolly Adelgid (HWA) is an invasive, aphid-like insect native to Japan. It was first reported in the U.S. in Virginia in 1951. Since its introduction, the HWA has spread along the East Coast from Georgia to Maine and now occupies nearly half the eastern range of native hemlocks. It has caused widespread death and decline of hemlock trees in that region.

Identification

HWA's are very small (1.5 mm) and often hard to see, but they can be easily identified by the white, waxy woolly masses they form on the underside of branches at the base of the needles. These masses, or ovisacs, can contain up to 200 eggs and remain present throughout the year.



HWA Infestation

Steven Katovich, *USDA Forest Service*,
Bugwood.org (above).

HWA Multiple Life Stages

Michael Montgomery, *USDA Forest Service*,
Bugwood.org (right)



Damage

Once hatched, juvenile HWA's, or "crawlers", search for suitable sites on the host tree, usually at the base of the needles. They insert their piercing-sucking mouthparts and begin feeding on the tree's stored starches. HWA's remain in the same spot for the rest of their lives, continually feeding and developing into adults. Their feeding severely damages the canopy of the host tree by disrupting the flow of nutrients to its twigs and needles. This results in premature needle drop, reduced twig growth, and dieback. Tree mortality usually occurs within 4 to 10 years.

All species of hemlock are vulnerable to attack, but severe damage and death typically occurs in Eastern (*Tsuga canadensis*) and Carolina (*Tsuga caroliniana*) hemlocks only.



Integrated Pest Management Program

Plant Science and Landscape Architecture Extension

Signs of an Infestation

- White woolly masses (ovisacs) about one-quarter the size of a cotton swab on the underside of branches at the base of needles.
- Needle loss and branch dieback.
- Gray-tinted foliage.



HWA Damage

USDA Forest Service -
Region 8 - Southern
USDA Forest Service,
Bugwood.org (Left
photo)

Chris Evans, University
of Illinois,
Bugwood.org (Right
photo)

Management Options

This insect is manageable in the landscape and nursery if found early and treated. Forest trees pose a different challenge and thus are almost impossible to treat effectively or economically.

Horticultural Oil. These sprays work extremely well when and where they can be properly utilized. It is important to thoroughly apply the oil throughout the tree. Oil sprays are used for established populations of the HWA but offer no preventative benefits. Hemlocks infested with the HWA should be treated with oil sprays both at the beginning of the growing season and then once again towards the end of summer to insure proper control. Smaller hemlocks (shrubs) may only require one application. Once under control, continue to monitor for future re-infestations and then treat once found.

Chemical control. The best time to effectively manage this pest with insecticides is late September through October. Registered insecticides applied according to label directions during this period target overwintering females. A mid- to late June spray may help reduce the number of developing nymphs. For recommendations of current pesticide products to combat this insect, please contact your local extension center.

References:

Hemlock Woolly Adelgid. New York State Department of Environmental Conservation
<https://www.dec.ny.gov/animals/7250.html>

Hemlock Woolly Adelgid Fact Sheet. Penn State Extension
<https://ento.psu.edu/extension/factsheets/hemlock-woolly-adelgid>

Hemlock Woolly Adelgid Frequently Asked Questions. University of Massachusetts Amherst
<https://ag.umass.edu/landscape/fact-sheets/hemlock-woolly-adelgid-frequently-asked-questions>

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