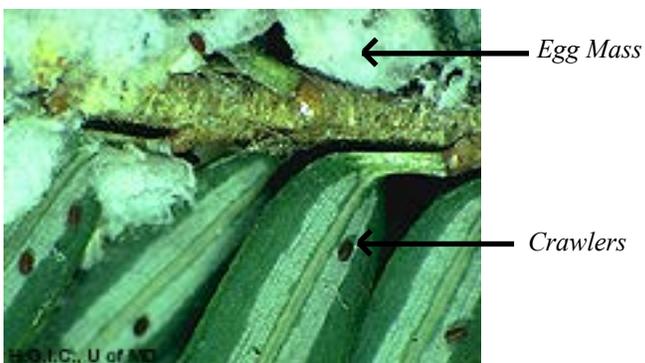


Hemlock Woolly Adelgid

The hemlock woolly adelgid (*Adelges tsugae* (Annand)) is a tiny aphid-like insect that is a serious pest of hemlock in Maryland. It is called a woolly adelgid, because it is covered with a “woolly”, or fluffy white waxy covering for most of its life. It is found primarily on the young branches of hemlock at the bases of the needles. It sucks the sap from the branches and may inject a toxin into the tree during feeding. In heavy infestations the feeding damage results in rapid desiccation and discoloration of the foliage. A heavily infested tree may die within four years. The adelgid attacks and has killed both forest and ornamental hemlock trees.

Hemlock woolly adelgid was originally introduced from Japan and is currently found in both eastern and western North America. It lives on several species of hemlock in Japan, but is not a pest there. The adelgid ranges on the east coast from North Carolina to southern New England. It is cold-hardy and may be dispersed by wind, birds, forest animals, and humans



during nursery, logging, and recreational activities. In western North America it has not caused any significant damage to western and mountain hemlock. However, in the east the adelgid has killed thousands of Eastern and Carolina hemlock in the past 40 years.



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Life Cycle

The adelgids overwinter as adults. In March and April they begin to lay brownish orange eggs underneath the body of the female which is covered with woolly white wax. In Maryland, the eggs hatch in April and May. The crawlers or immature adelgids are reddish brown and are present throughout the summer. The crawler is the dispersal stage and is spread primarily on the wind. Upon finding a suitable place to feed the crawlers settle, generally on branch terminals at the bases of needles. The settled crawler is about 0.3 mm long, and is black with a white filamentous fringe around its outer perimeter and down the center of its back. As the young adelgids grow, they cover themselves with a white woolly wax. If the wool is removed the black color of the insect can be seen. They are all females, and are about 2 mm when fully grown.

There are two generations a year on hemlock in Maryland. All of the adults of the overwintering generation are wingless and remain on hemlock where they lay eggs the following spring. The subsequent spring generation produces mostly wingless adults that remain on hemlock. Some winged individuals may

be produced. These winged adelgids cannot reproduce on hemlock and must migrate to spruce. However, the winged forms of hemlock woolly adelgid do not reproduce on any species of spruce grown in the East. Therefore they are only considered a pest on hemlock.

Control

The hemlock woolly adelgid can be successfully controlled by thorough spraying with a registered insecticide. A dormant rate of horticultural oil may be applied in February or early March before egg laying begins to kill adult females. In the summer, after all the eggs have hatched in mid-June, a thorough spray with a summer rate of horticultural oil, or insecticidal soap will give good control. The key to control is thorough spray coverage of the tree. In situations where there are tight clumps of trees, or if the trees or branches are inaccessible, spraying may not give adequate control. Research has shown that excess nitrogen may enhance adelgid populations on hemlock. So, it is advisable not to fertilize hemlocks, that are infested with the hemlock woolly adelgid.

References:

McClure, M.S. 1991. Control of Hemlock Woolly Adelgid. *Yankee Nursery Quarterly* 1(1).

Johnson, W.T. and H.H. Lyon. 1988. *Insects That Feed on Trees and Shrubs*, 2nd. ed. Cornell University Press. Ithaca.

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Author: Mary Kay Malinoski, University of Maryland Extension Specialist, Home and Garden Information Center

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