

## Hemlock Woolly Adelgid

The hemlock woolly adelgid is a pest of both ornamental and forest hemlocks. This aphid-like insect is native to eastern Asia, and has been in the United States since the 1920s and in Maryland for at least 20 years.

### Identification

Hemlock woolly adelgids are most easily recognized by the white woolly wax they produce on young hemlock twigs. The wool is present all year, but is most abundant and conspicuous during the spring when egg masses are present. Most other stages in the life cycle are much harder to see. Fully grown adults are only about the size of a period (.) on a printed page.

### Hosts

This insect has been found infesting only species of hemlock. In the Eastern United States, it has caused damage on eastern hemlock and Carolina hemlock. In its native Asia, it probably uses an unknown spruce as an alternate host. In North America, no alternate hosts have been found.

### Biology

There are two generations of hemlock woolly adelgid per year. This cool weather species completes most of its development from October through May.

Over wintering adults lay eggs in April and May under the white woolly mass. Nymphs (or crawlers) hatch and within a few days settle on twigs. They will feed and remain attached to the twig through their maturation into adults in late May. Wingless adults settle on hemlock where they lay eggs. Crawlers hatch by July, settle on the new growth and become dormant until October. Nymphs then resume feeding and develop during the winter, maturing by spring. The life history of the hemlock woolly adelgid, like most members of the adelgid family, is very complex. There are four forms, with each form going through six life stages (egg, four nymphal stages and adult). This is a very simplified version of the life cycle.

Feeding injury occurs to the tree as adelgids feed sucking the sap from young twigs (they may also inject a toxic saliva). Needles on infested twigs desiccate, turn pale green and drop from the tree. Buds may also die and, in heavy infestations, dieback of major limbs and tree mortality may occur.

The hemlock woolly adelgid has been found in most Maryland counties where hemlocks are planted or grow naturally. Landscape hemlocks, as well as natural forested stands, have become infested with adelgids, however, hemlocks under stress are more likely to decline and die. Some stands in Maryland have shown signs of decline, especially in those areas affected by drought.

### Control

The treatment of landscape hemlocks to control hemlock woolly adelgid is much easier and more likely to succeed than the treatment of forests areas. In fact, there are few options available for controlling the adelgid in forests. Hemlocks in Maryland are usually found in inaccessible areas, such as along streams. Chemical control in these areas is often impractical or, due to the chance of chemical drift into the water, impossible. Tree injections with insecticides is a new alternative. Maryland Department of Agriculture also is investigating the use of biological control agents as a management tool.

An important part of hemlock woolly adelgid management is early detection; control will be more successful if done before adelgid populations reach damaging levels. Chemical control is often the best option for controlling adelgids in the landscape. Dormant oils can be used from November to March, and insecticides or insecticidal soap can be used from July through October. Whatever treatment is used it is most important to get thorough coverage of all infested parts of the tree. (For insecticide recommendations contact the Coop. Extension Service.) Much of this information was based on: McClure, M. 1995. Managing hemlock woolly adelgid in ornamental landscapes. Conn. Agr. Exp. Sta. Bulletin. 925

