



Individual HWA - www.forestryimages.org



Control - continued

The second method involves spraying the infested hemlocks with insecticidal soaps or horticultural oils. According to the N.C. State University Cooperative Extension, October is the most effective time of year to apply these treatments. This method, while effective, is limited by both water availability and tree height. If you cannot apply soap or oil to the entire tree, select another treatment option or contact an ISA Certified Arborist with equipment that allows the entire tree to be covered. Like the pesticide applications, insecticidal soaps or horticultural oils may not be feasible in heavily forested areas.

Lastly, biological controls are being tested in areas where the first two control methods are not feasible. Biological control refers to the release of natural predators of the HWA to control their populations. There are currently two main beetle species being released for biological control. Research is ongoing to determine the effectiveness of these predators and to find more biological control agents for HWA. Due to high costs and the difficulty of evaluating success, this method of control is not recommended for private landowners.

References:

Baker et al.2008.Hemlock woolly adelgid. Department of Entomology Insect Note. North Carolina State University Cooperative Extension

<http://www.na.fs.fed.us/fhp/hwa/>

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Hemlock Woolly Adelgid *Adelges tsugae* Annand

Scourge
of the
Eastern
Hemlock
Forest

Introduction

This tiny aphid-like insect originated in Asia and was detected in the western United States in the 1920s and later in the eastern United States in the 1950s. The hemlock woolly adelgid (HWA) attacks and kills both eastern and Carolina hemlocks, the only two hemlock species native to North Carolina. The hemlocks usually die within a few consecutive years of infestation.

HWA on hemlock branch
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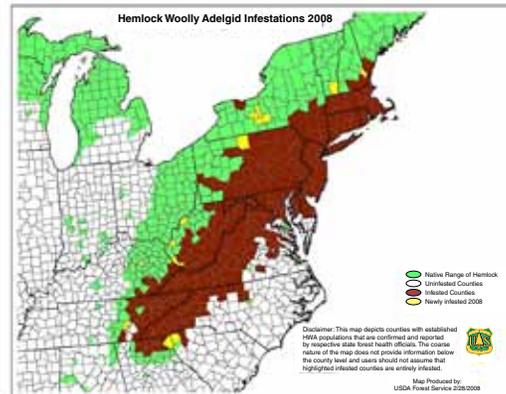


HWA Damage - www.forestryimages.org

Spread

Since first being observed, HWA has quickly spread across about half the range of hemlock in the eastern United States. These insects spread by wind, animals (notably birds) and people.

In 1995, the first detections of HWA in North Carolina were recorded. The insect was found in nearly all counties with hemlocks by 2005. The 2008 HWA extent map is shown below.



Source: <http://na.fs.fed.us/fhp/hwa/maps/2008.pdf>

Identification

The most noticeable symptom of HWA infestation is the greying of the needles and thinning of the crown of the tree. If an infestation is suspected, the signs of

HWA can be seen by looking at the underside of the needles. HWA reproduces twice a year in North Carolina and produces very large numbers of eggs with each generation. At the beginning of each HWA generation, the eggs hatch into tiny reddish-brown crawlers. These crawlers are the only mobile life stage of the adelgid, the nymphs and adults are essentially stationary. Once the crawlers find a suitable place to feed, they remain there to complete their life cycle. Where HWA occurs white, woolly tufts will be seen along the branchlets. (see photo below)

During the adult life stage, HWA is covered by a protective, white, fluffy covering. This covering is where the insect gets the name "woolly." This white covering can be seen throughout the year.



HWA Crawlers - www.forestryimages.org

Hemlock Importance

Hemlocks are an important species in the mountains of North Carolina. If healthy, they can live for 800 years or more and provide a multitude of benefits to the forests around them. They provide shade that helps regulate stream and forest floor temperatures. Shade from hemlocks provides a favorable stream habitat for many native fish, amphibians and aquatic invertebrates. The branches are used by many species of birds as nesting sites, including some birds that are highly dependent on hemlocks, such as the black-throated green warbler.

Impact

No hemlock is safe from HWA. The insect feeds at the base of the needles, preventing an adequate flow of nutrients, and causing the needles to fall from the tree. The tree cannot survive without its needles.

HWA has the potential to cause devastation reminiscent of the chestnut blight that decimated the American chestnut in the early 20th century.

Control

There are three methods of controlling HWA, though not all are applicable in every case. Systemic pesticides can be injected either into the soil or into the tree. This method is applied for very high-value trees, such as those in urban areas and is not economically feasible in heavily forested areas. It is not recommended to use soil drenching or injection near open water or in rocky soils that will drain quickly to open water. Homeowners should contact an International Society of Arboriculture (ISA) Certified Arborist in their area for consultation about applying the proper pesticide for HWA control.