

IMPORTANCE OF HEMLOCK WOOLLY ADELGID

The hemlock woolly adelgid is a serious pest of eastern hemlock and Carolina hemlock. It is believed this pest was introduced from Asia and has been in the United States since 1924. In the eastern United States, it is present from northeastern Georgia to southeastern Maine and west to eastern Tennessee. This insect was found for the first time in Kentucky in April 2006, near the boundary of Harlan and Letcher counties. The University of Kentucky Department of Entomology and the Kentucky Division of Forestry are engaged in survey activities to further determine where populations of this insect might exist in Kentucky.

The hemlock woolly adelgid feeds at the bases of needles which causes them to dry out and turn a grayish color. The result is needle loss which prevents trees from producing many new buds. The result is little new growth the following year. Heavy infestations have killed trees in as little as one year, yet some have survived infestations for more than 10 years. Other stress factors may affect the tolerance of hemlocks to attack.

MORE INFORMATION ABOUT
HEMLOCK WOOLLY ADELGID
MAY BE FOUND ON THESE
WEBSITES:

www.uky.edu/Ag/Entomology/entfacts/trees/ef452.htm

www.caes.state.ct.us/factsheetfiles/entomology/fsen012f.htm

www.na.fs.fed.us/fhp/hwa

www.invasivespeciesinfo.gov/animals/hwa.shtml

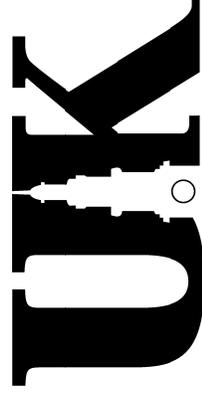
www.na.fs.fed.us/spfo/pubs/pest_al/hemlock/hwa05.htm

entweb.clemson.edu/cuentres/eiis/factshot/pages/HemlockAdelgid.htm

PESTS OF CONCERN TO KENTUCKY: HEMLOCK WOOLLY ADELGID



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SIGNS AND SYMPTOMS OF HEMLOCK WOOLLY ADELGID



The hemlock woolly adelgid is tiny, less than 1/16-inch long, and varies from dark reddish-brown to purplish-black color. As it matures, it produces a covering of wool-like wax filaments to protect itself and its eggs from natural enemies and prevent them from drying out. This "wool" is most conspicuous when the adelgid is mature and laying eggs. The wool can be readily observed from late fall to early summer on the underside of the outermost branch tips of hemlocks. Birds play a key role in spreading this insect. Pay attention to hemlock branches overhanging roadways and stream beds. Also inspect any hemlocks near bird baths and bird feeders.



Eggs inside a woolly mass

LIFE CYCLE

Hemlock woolly adelgids spend the summer in a resting state as immature females attached to the base of needles. In early fall, the hemlock woolly adelgid comes out of its summer rest and starts developing to an adult. During the winter months, adult females lay up to 300 eggs each. After the eggs hatch, reddish-brown adelgid crawlers move about seeking a good site on the hemlock to feed. When the crawlers settle, they turn black with a white fringe around the outside. Young adelgids attach themselves to the base of hemlock needles and with a piercing-sucking mouthpart, feed from the new twig growth. Soon they begin to secrete a white fluffy "wool" that completely covers their bodies. When this generation becomes adults, about half will fly off in search of an alternate host of spruce. Because no suitable spruce species exist in North America, these adelgids die of starvation. The other half are wingless adults and remain on the hemlock tree, where they deposit more eggs. These eggs hatch into second generation crawlers which emerge and move to new growth to settle at the base of needles to feed and molt into black nymphs. These nymphs spend the summer in dormancy.

text for this publication is from Clemson University Cooperative Extension Service publication, Connecticut Agriculture Experiment Station, and US Forest Service

BIOLOGICAL CONTROL



There are currently a number of introduced insect species that have been introduced and released as biological control agents to help control hemlock woolly adelgid in the eastern United States.

One of the most promising biological control agents is a small sesame-seed sized lady beetle from Japan (pictured above). Both the larvae and adult of this lady beetle are highly mobile and feed on all stages of the hemlock woolly adelgid. *Note: this is not the Asian lady beetle that invades homes in the fall!*

Research efforts are continuing to find biological control agents for this insect.