



Hemlock Woolly Adelgid

Adelges tsugae Annand (Hemiptera: Adelgidae)

The Hemlock Woolly Adelgid (HWA) is an exotic invasive aphid-like insect believed to have entered the U.S. on imported nursery plants. HWA is relatively sparse in the Pacific Northwest, but is a very serious pest of eastern hemlock (*Tsuga canadensis*) in 16 states from New England to Georgia. HWA spreads locally from 1st instar crawlers and cottony ovisacs being carried by wind, birds or forest animals, and long distances from people transporting infested nursery stock.

IDENTIFICATION:

- Adult HWA are tiny (~ 1/16" or 1-2 mm), oval shaped aphid-like insects, dark reddish-brown to purplish-black in color.
- Eggs are brownish-orange, darken as they mature, and are covered with white, woolly filaments.



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HWA adult and eggs exposed inside a woolly ovisac.

- Flat, naked reddish-brown crawlers (1st instar nymphs) hatch out and move about actively (below).



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Crawlers emerge from ovisacs and seek a spot to attach and feed.

- Once crawlers settle, they turn black with a white halo of fringe outlining their body (below).



FIG. 1

- The wingless nymphs resemble adults but are smaller.
- As HWA nymphs mature, they produce a covering of fluffy, white wool-like wax filaments.
- Woolly masses are ~ 1/8" (3 mm) in diameter and are most conspicuous late-fall to early-summer at the base of needles on the underside of the outermost twigs of hemlock trees.



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Woolly HWA ovisacs on undersides of hemlock twigs are most noticeable from late-fall through early-summer.

What to Look For:

HWA infest and kill hemlocks of all sizes and ages by sucking up sap to feed on stored starch reserves. Nymphs and adults feed most months of the year except for the hottest summer months. Crawlers (1st instar nymphs) are the only life stage not protected by a woolly covering and able to move about. Crawlers produced in June/July attach at the base of hemlock needles, then enter a period of dormancy from July-October. During this time, only a tiny halo of woolly wax fringe outlines their bodies. Nymphs break aestivation in the fall, resume feeding, and secrete a protective woolly covering.

Symptoms of HWA infestation include:

- Heavily infested hemlocks look grayish/green (not yellow/brown) within a few months as needles desiccate and die.
- Needles drop and most buds are killed, so that little or no new foliage is produced.
- Dieback of major limbs, progressing from the bottom to the top of the tree.



Infested hemlocks turn gray/green and dieback occurs from the bottom-up.

- HWA are easily recognized on infested branches by their white, fluffy, wool-like coverings (below).



- Foliage is usually sparse at branch tips and in the top of the crown.



Foliage becomes sparse at branch tips (above and below).



- Weakened trees are often attacked by other diseases and insects, and easily broken by wind.
- A tree may defoliate and die within 4-10 years of infestation in the northern range of HWA, or as little as 3-6 years in its southern range.

HWA Woolly Mass Actual Size:



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<http://hgic.umd.edu/faq/sendAQuestion.cfm>

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