

# Protecting against Hemlock Woolly Adelgid

## BLUE MOUNTAIN— KITTATINNY RIDGE CONSERVATION PROJECT

The hemlock woolly adelgid is a serious pest of the eastern hemlock tree in Pennsylvania and at least 16 eastern states. It is a tiny aphid-like creature that feeds on the young branches of hemlock trees, which results in premature needle-drop and dieback of branches. This can have major consequences on overall forest composition, the ecology of forest streams frequented by the Louisiana Waterthrush, as well as impacting bird species commonly associated with the eastern hemlock, like Black-throated Green Warbler and Acadian Flycatcher.



The adelgid is tiny, measuring less than 1/16 of an inch in length, and its color ranges from reddish-brown to purplish-black. Mature adelgids produce a wool-like covering of waxy filaments to prevent desiccation and protect itself and young from predation. This woolly covering (the ovisac) is most obvious from late fall to early summer on the undersides of the outer-most branches of hemlock trees.



### DID YOU KNOW?

The hemlock woolly adelgid was first reported in the Eastern United States in 1951 near Richmond, VA. Since that time it has become established in at least 16 eastern states with the heaviest infestations in Connecticut, New Jersey, Pennsylvania and Virginia. Once infested, an untreated tree will start to decline within 4-10 years.

### Life history of the hemlock woolly adelgid

- The hemlock woolly adelgid overwinters as wingless adult females, which lay their eggs during late winter
- The nymphs hatch in late April and disperse to young branches, settling at the base of the needles to feed
- Nymphs go through four stages before becoming mature adults
- In June the newly-mature females produce the filamentous white waxy covering that ultimately shields them and their eggs from predation and desiccation
- A winged form of the adult from this first generation is capable of migrating to host trees like spruce; winged females are partially responsible for the spread of this insect pest
- Birds and small mammals are also unwitting hosts of this organism by aiding them in their dispersal to other hemlock trees
- These eggs hatch in July and the new generation of nymphs disperse toward young branches where they attach to the base of needles and become dormant until they reawaken to feed during the fall and winter

# Protecting against Hemlock Woolly Adelgid (cont'd)

## RESOURCES FOR MORE INFORMATION

USDA Forest Service  
Northeastern Area  
State and Private Forestry  
11 Campus Boulevard, Suite 200  
Newtown Square, PA 19073  
<http://www.na.fs.fed.us>  
<http://www.na.fs.fed.us/fhp/hwa>

Pennsylvania DCNR  
<http://www.dcnr.state.pa.us>

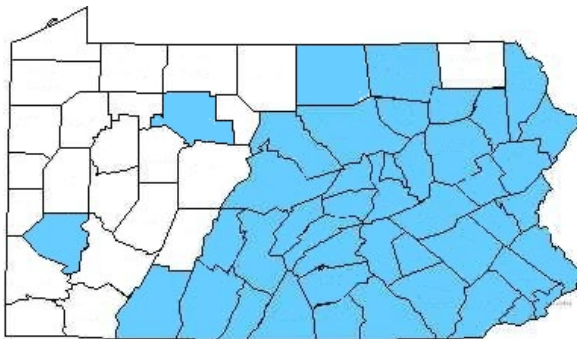
Pennsylvania State University College  
of Agricultural Sciences Cooperative  
Extension <http://ento.psu.edu/extension/factsheets/hemlock-woolly-adelgid>

Becker, A.C., M.C. Brittingham and  
C.B. Goguen. 2008. Effects of Hem-  
lock Woolly Adelgid on Breeding birds  
at Fort Indiantown Gap, Pennsylvania.  
*Northeastern Naturalist* 15(2): 227-240  
or  
[http://extension.psu.edu/wildlife/  
research/birds/Becker-hemlocks.pdf/  
view](http://extension.psu.edu/wildlife/research/birds/Becker-hemlocks.pdf/view)



## What can landowners do to about the hemlock woolly adelgid?

If only one or a few trees are affected in a large forest, the infested tree(s) should be removed to help prevent the adelgid from spreading. Chemical controls, like foliar sprays using horticultural oils or insecticidal soaps specifically labeled for hemlock woolly adelgid, are fairly effective if trees can be saturated enough to ensure that the product comes in contact with the woolly adelgid. Another effective option is the application by a licensed professional of a systemic insecticide (like Orthene, Cygon, Malathion or Merit) to the soil around the base of the tree or through direct injection into tree stems. The most practical treatment for hemlock woolly adelgid in forested areas is biological control. There are not enough natural enemies in Eastern North America that feed on the woolly adelgid. Therefore, current biological controls are utilizing natural enemies like insect predators and pathogens from China, Japan, and Western North America.



The woolly adelgid was first reported in PA during the late 1960s. By 2005 the extent of woolly adelgid infestation covered all or parts of 44 Pennsylvania counties.

The best time of year to effectively control woolly adelgid is during late September through October. The U.S. Forest Service and Department of Agriculture, Pennsylvania Department of Conservation and Natural Resources and Penn State Cooperative Extension recommend the following actions:

1. Do not disturb shallow roots by digging or tilling.
2. Keep hemlocks well-watered during droughts (1 inch/week).
3. Do not place bird feeders on or near hemlock trees if you live in an infested area of the state. Birds could readily transport woolly adelgid crawlers to your trees.
4. Remove large heavily-infested trees that serve as reservoirs for uninfested trees.
5. Clip and burn heavily-infested hemlock branches to help prevent the spread of this invasive pest.
6. Do not change the slope of the land (tree wells or excavations) near your hemlocks.
7. Do not change water runoff patterns around your trees. Moving downspouts or installing a patio can stress hemlocks.
8. Do not fertilize infested hemlock trees with nitrogen. Researchers have found five times as many woolly adelgids on nitrogen-fertilized trees than unfertilized trees. Do fertilize trees with a balanced fertilizer once you are certain the infestation has been thoroughly eradicated.
9. When applying lime or weed killers to lawns near infected hemlock trees keep the application at least ten feet away from the outermost branches of the tree.
10. Consult with and hire licensed professionals for pesticide applications.