HEMLOCK WOOLLY ADELGID

An Invasive Species Threatening Hemlock Trees in Eastern Canada

Invasive Species Centre

Ron Neville, CFIA

What is it?

Hemlock woolly adelgid (*Adelges tsugae*) is a non-native, tiny (less than 1.5 mm), aphid-like insect that attacks and kills hemlock trees.

Hemlock woolly adelgid (HWA) attaches to the branch and feeds at the base of needles extracting nutrients and sap.

Where is it?

Hemlock woolly adelgid was first introduced into Virginia in the early 1900s. Its range has expanded and HWA can now be found from Georgia to coastal Maine and southwestern Nova Scotia. First detected in 2013, HWA has become established in some parts of Ontario.

A native, genetically different population of hemlock woolly adelgid exists in western North America but damage to western hemlock (*Tsuga heterophylla*) has been minor due to the presence of natural enemies and host resistance.

Trees at risk

Eastern hemlock (*Tsuga canadensis*) is the only native host of HWA in eastern Canada and is a foundation species in many forests.

Ornamental hemlock may also be at risk.

Signs and Symptoms:

Early infestation

Erin Appleton, CFIA

- White “woolly” sacs at the base of hemlock needles on current-year twigs
- Premature bud and shoot dieback
- Premature needle loss
- Thinner, greyish-green crown
- Dieback of twigs and branches
- Discolouration of foliage
- Death in as little as 4-15 years

Impacts:

Late infestation

Ron Neville, CFIA

- Increased erosion and sedimentation
- Loss of winter cover for deer, moose and birds
- Reduced shading of streams may impact fish and other aquatic organisms
- Reduction in food source for forest animals
- Increased heating and cooling costs in residential areas
- Reduced value of residential properties
- Reduced hemlock for construction and other applications

How is hemlock woolly adelgid spread?

- Crawlers (young nymphs) can be spread by wind, birds, deer and other forest-dwelling animals
- Movement of nursery stock, firewood, logs and other wood products

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Detecting hemlock woolly adelgid

Life Cycle Features

Kelly Oten,
North Carolina Forest
Service, Bugwood.org

- All individuals are female and reproduce asexually
- Two generations per year, spring and winter
- Crawlers are the only mobile stage
- Once nymphs begin to feed they are immobile. At this stage, they are flat, black, oval shaped with a halo of white woolly wax
- Unlike most insects, adelgids are dormant during the growing season
- In the fall, the adelgids begin feeding, develop into adults, and lay eggs in masses covered by white woolly ovisacs

What to Look For

Johnathan Carpenter

- Examine the underside of branches, closest to the tips for white woolly sacs which are visible from November to May becoming more prominent later in the winter (March to May) as ovisacs develop
- HWA's woolly sacs are permanently attached to the twig, at the base of the needle (not the needle itself) and are waxy
- Hemlock branches found on the ground provide an opportunity to see what is happening higher in the tree
- Check hemlock bark for signs of wool after spring rain storms
- Prioritize trees beside lakes or streams, areas near bird feeders, or where nursery stock has been planted

What can you do?

- Closely monitor hemlock stands for HWA
  - » Focus monitoring in riparian areas or in areas where nursery stock has been planted
- Promote the health of your hemlock trees to improve resilience to HWA and other pests
  - » Avoid compacting soil around hemlocks, be careful not to wound trees, and water trees during dry spells
- Don't hang bird feeders in or near hemlock trees
- Buy hemlock trees locally or ask suppliers where trees are from; inspect trees carefully when purchasing
- Buy firewood sourced from local forests
- Consult with your local tree care professional to determine what treatment options are available
- Report any suspected sightings

If you see signs and symptoms of hemlock woolly adelgid, report the sightings to:

- The Canadian Food Inspection Agency (CFIA)
  www.inspection.gc.ca/pests
- EDDMapS
  www.eddmaps.org/

For more information on hemlock woolly adelgid, visit:

- Invasive Species Centre
  www.invasivespeciescentre.ca/

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