



Vermont Forest Health



Hemlock Woolly Adelgid in Vermont:

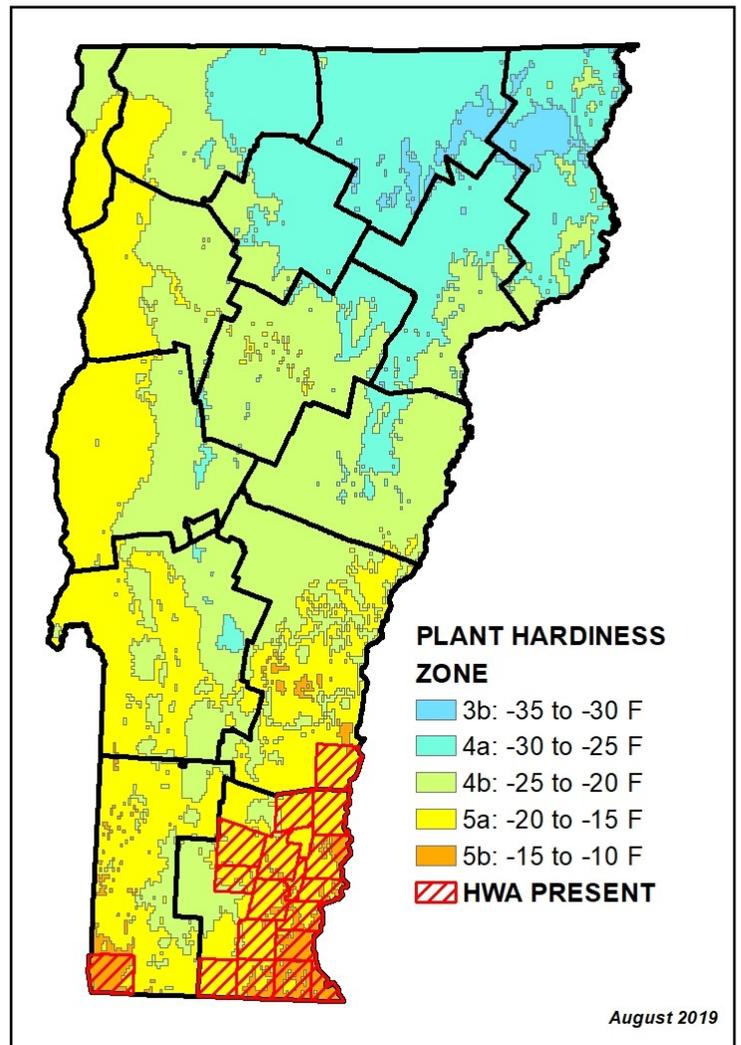
Recommendations for Landowner Response

Department of Forests, Parks & Recreation
August 2019 vtforest.com

Hemlock woolly adelgid (HWA) is a serious pest that threatens the ecological, economic and aesthetic values that Vermont receives from hemlock trees. These recommendations include general considerations and management measures for two different settings: first, trees in a landscaping/ornamental situation and secondly, hemlocks in natural, forested areas.

General Considerations

- *Don't move infested or potentially infested material.* State law regulates the movement of plant pests, and a quarantine restricts movement of live hemlock trees from infested counties.
- *Take down or empty birdfeeders and bird baths* from April to the end of August, or move them at least 100 feet from hemlocks. Birds are known to carry adelgids.
- *Adelgids are most likely to be spread from April to the end of August.* Limit activity in infested areas during this time. Brush off and wash clothing, vehicles, and equipment after working in infested areas.
- We don't know how destructive HWA will be in Vermont. It is established in most of Vermont's Plant Hardiness Zone 5b, but spread into colder zones has been limited. *Some of our winter temperatures have resulted in heavy mortality of overwintering adelgids.*
- *Hemlock trees may decline more quickly if they are infested with both HWA and elongate hemlock scale.* The scale is another non-native pest, which is known to occur in southeastern Windham County.
- *Light infestations of HWA are hard to detect.* Insect populations may be concentrated at the tops of a few trees or on scattered branches.
- We continue to monitor the spread of HWA. To learn more about [identifying the insect](#), or to [report a suspect](#), please visit vtinvasives.org.



HWA is known to be established in most of Vermont's towns which include USDA Plant Hardiness Zone 5b. Spread into colder zones has been limited.

Landscape/Ornamental Setting

Several effective measures can be used for ornamental yard trees. Some can be carried out by homeowners and some must be applied by certified pesticide applicators. Cultural treatments can reduce adelgid numbers. However, chemical insecticides may be necessary to reliably protect infested trees.

Stressed trees succumb to HWA more quickly than healthy trees. Keep your trees as healthy as possible by watering them during drought, properly mulching them, and avoiding mower and string trimmer damage. Don't fertilize infested trees; excessive nitrogen encourages adelgids.

Homeowners can reduce the numbers of adelgids and, possibly, the amount of damage in a tree, by knocking the fuzzy, white "ovisacs" off branches with a strong stream of water from a hose, or by pruning infested branches. Do any cutting from August to February, when adelgids are less likely to be spread.

Wherever possible, leave debris from infested hemlocks on-site. Chipping does not eliminate HWA, but surviving insects do not live for a long time. Cut branches can be burned if safe to do so, but only with a burn permit from the Town Fire Warden.

Infested hemlock debris can be safely moved after one of the treatments below. Debris may be disposed of in plastic bags at the local landfill. To comply with state law, do not move debris with live HWA.

- Drench cut stems and branches with soapy water (1/4 cup of liquid soap/1 gal water). This suffocates the insects.
- Cover debris for three weeks with a clear plastic tarp. This method is only effective if daytime temperatures are above 50° F.



If daytime temperatures are above 50° F, adelgids can be killed by covering with a clear tarp.

Photo credit: Ron Kelley

Several insecticides are effective in landscape settings for individual or small groups of trees. *Read and follow the label carefully.* The decision to use insecticide should be based on public and environmental safety, value of the trees, and cost of the treatment.



Low-pressure foliar application equipment can be used to treat shrubs, hedges, and short trees with horticultural oil or insecticidal soap.

Photo credit: Bugwood/National Park Service

Insecticide treatments can maintain the health of infested high value trees. *Insecticides don't provide long-term protection, and treatments will need to be repeated.* Trees may need to be prioritized. Consider removing untreated trees that become infested so they don't serve as a reservoir for HWA.

Foliar sprays of horticultural oil or insecticidal soap have a low toxicity to applicators and non-target organisms, and have been shown to be effective when applied properly. They kill by suffocating soft-bodied insects like adelgids. It is essential to completely drench the infested foliage. For shrubs, hedges, and short trees, low pressure sprayers are available and appropriate for homeowner use. Different types of oils and soaps can burn foliage, so follow directions on the label. To properly treat tall trees requires specialized, high pressure equipment that is not as readily available for homeowners. The best times to spray are from April to May and August to mid-October.



Trunk injection minimizes non-target organism impacts. Imidacloprid treatments can remain effective for several years.

Photo credit: Great Smoky Mountains National Park Resource Management, USDI National Park Service, Bugwood.org

Systemic treatments include trunk injection, basal bark sprays, and soil treatments. *Systemic treatments are well suited for trees that are still healthy.* Trees must be vigorous enough to have good water movement that will carry the insecticide throughout the tree. Systemic treatments have a time lag before control begins, but some may remain effective for several years.

Systemic treatments must be performed by certified pesticide applicators. Neonicotinoid pesticides are very effective systemic insecticides, but are restricted-use pesticides because special precautions must be taken to protect pollinators. Although hemlock pollen is not likely to be collected by these insects, if the pesticides are taken up by other flowering plants, pollinators may be affected.

The trunk injection technique uses specialized equipment to inject insecticide through the bark and into the tree. Imidacloprid products are commonly used for trunk injection, and may be effective for five years or more. This method minimizes non-target impacts and can be used near water because the insecticide is delivered directly into the tree. Trunk injection does leave wounds which may affect tree health.

Basal bark spray is a direct application to the trunk with an insecticide that can penetrate the bark. Dinotefuran products have been labeled for this method. They provide quicker HWA mortality, but are not effective for as long a period of time after treatment. The tree is not wounded, but care must be taken to minimize run-off to reduce non-target impacts.

Soil treatments are done through soil drenching, pressurized injections, or pesticide "tablets". Because any plants in the area may absorb the pesticide, and the pesticide may move off-site through rocky or porous soils, the risk of non-target impacts is higher with these methods.

Natural Forested Setting

Where HWA does not yet occur, there is no need to alter forest management in anticipation of the insect. Its full impact on New England forests is not well understood. We do know that it takes years to affect tree health, and that infested trees in New England are surviving for long periods of time. However, climate change is expected to increase the impact of hemlock woolly adelgid in the future.

Healthy hemlocks, growing on deeper soils with good water availability, are more likely to survive infestation. Maintain the hemlock component on these sites, release young hemlocks, and avoid significant disturbance.

Where softwood cover is critical, consider diversifying species composition by releasing or planting other conifers.

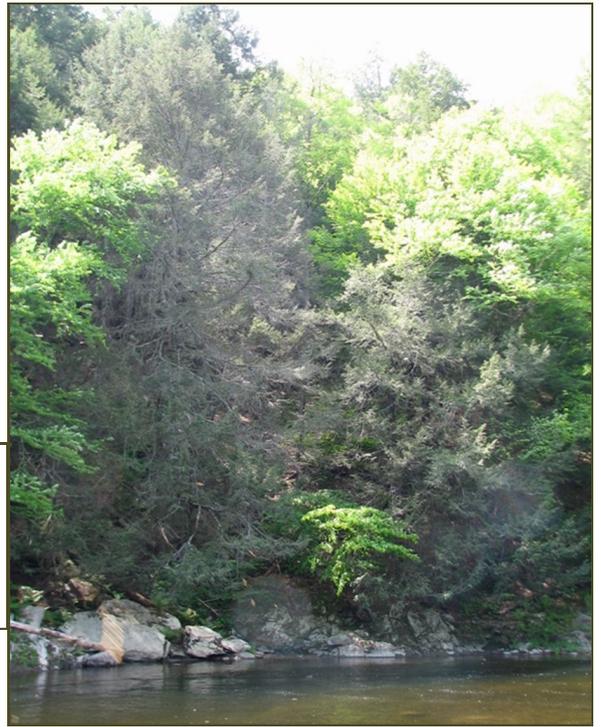
Where HWA is present, *forest landowners and managers are encouraged not to engage in premature salvage cuts.* Infested trees take years to succumb. Premature cutting is particularly discouraged in deer wintering areas and near water. Even unthrifty hemlocks provide habitat benefits that will disappear if the trees are removed.

Premature cutting may eliminate trees that are naturally resistant or tolerant. Researchers have found such “bulletproof” hemlocks in other states. These trees will be critical components of restoration efforts.

In infested stands, it’s preferable to conduct harvests between August and March, when the insect is immobile. If harvesting is done between April and August, cleaning equipment of potentially infested foliage by sweeping or compressed air will slow the spread of adelgids to new locations. *The movement of hemlock wood products originating from infested counties may be regulated by quarantine.* For more information see: <https://fpr.vermont.gov/hemlock-woolly-adelgid-wood-product-considerations>.

Even unthrifty hemlocks provide habitat benefits in deer wintering areas and near water.

Photo credit: FPR Staff



USDA
United States Department of Agriculture

Managing Hemlock in Northern New England Forests Threatened by Hemlock Woolly Adelgid and Elongate Hemlock Scale

Forest Service Northeastern Area
State and Private Forestry September 2015

Insecticide treatment methods are generally impractical for HWA in the forest. However, in forested recreation areas, and other locations where the hemlock component is critical, systemic insecticides recommended for landscape use may protect infested trees. Applicators need to be aware that there is often a maximum amount of product per acre that can be used.

Biological controls have been widely released in the eastern United States, including southeastern Vermont. They hold some promise but are not currently available to the public.

More information for managing forests with HWA can be found at: [Managing Hemlock in Northern New England Forests Threatened by Hemlock Woolly Adelgid and Elongate Hemlock Scale.](#)

These recommendations were written with assistance from the VT Agency of Agriculture, Food and Markets.

ALWAYS READ AND FOLLOW LABEL DIRECTIONS WHEN USING INSECTICIDES.



For more information, contact the Forest Biology Laboratory at 802-565-1585 or:

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