

*Gaagaagimizh*  
**Eastern Hemlock**  
*Tsuga canadensis*



#### HABITAT

Typical of northern hardwood-conifer forests, where it grows with sugar maple, yellow birch, basswood, and occasionally white pine.

Frequent on edges of conifer swamps, borders of wetlands, and ravines.

Hemlock is the most shade-tolerant conifer in eastern North America.

#### TRADITIONAL USES

- Twigs with leaves boiled for tea.
- Sap used as chewing gum.
- Infusion of twigs used to treat dysentery\*.
- Pulverized inner bark used on wounds\*.
- Bark used on cuts and wounds to stop bleeding\*.

\*Meeker, J. E., J. E. Elias and J. A. Heim. 1993. Plants used by the Great Lakes Ojibwa. GLIFWC, Odanah, WI.

#### ECOLOGICAL ROLE

- Hemlock groves provide important thermal cover for ruffed grouse, turkey, snowshoe hare, deer and other animals.
- Hemlock often borders small wetlands, providing a safe roost for bear cubs while their mother feeds on wild calla and water-parsnip in the spring.
- Provides deep shade that keeps streams cool for brook trout and other aquatic species.
- Provides critical habitat for dozens of birds and mammals. Species like red squirrels and pileated woodpeckers are strongly associated with hemlock stands.



*Eastern Hemlock*

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# Hemlock Woolly Adelgid (HWA)

*Adelges tsugae*



UGA1626009

Hemlock twig heavily infested with the hemlock woolly adelgid (HWA). White, cottony ovisacs of HWA contain up to 300 eggs. The HWA feeds on stored starches, depleting food the tree needs to survive the winter.

(John A. Wedhass, Virginia Polytechnic Institute, Bugwood.org)

## HISTORY

The hemlock woolly adelgid is native to Asia and possibly western North America. It was introduced to the east coast by 1951. Recent genetic analysis indicates this introduced strain came from Japan. Western hemlocks are resistant to the HWA, but both eastern species are highly susceptible to attack.

## AFFECT ON HEMLOCK

The HWA attacks seedlings to massive 600-year-old trees. It attaches to the bases of the needles and the growing twig tips. With its piercing mouthparts, it sucks stored starches from the tree. The needles turn yellow and drop. The branches die back, starting with the lower ones. Most trees are killed within 4 years of infestation, though a few may last up to 10 years.



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Appalachian forest giants killed by the HWA. (W. M. Ciesla, Forest Health Mgmt Intl, Bugwood.org.)



Hemlock woolly adelgids are less than 1/16 inch long. (M. Montgomery, USFS, Bugwood.org.)

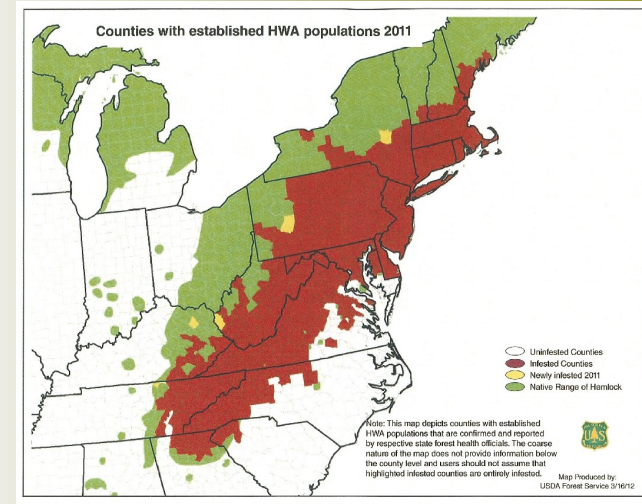


Declining hemlock stand (USFS R8, Bugwood.org)

## SPREAD

The HWA travels by wind, and by hitching a ride on birds, deer, squirrels and other animals. In the eastern US the HWA is spreading at an average of 15-20 miles per year.

People can inadvertently carry HWA long distances on logs, firewood, or bark chips, especially from March through June when the eggs and the "crawler" stage are present. Nursery hemlock trees are a major vector for long-distance spread.



Known range of hemlock woolly adelgid (red and yellow) superimposed on the range of eastern hemlock (green). In 2010 the HWA was found in several counties in lower Michigan, but eradication efforts appear to have been successful.

## LEGAL STATUS

**Michigan:** Transport of materials from infested areas prohibited under §§286.223 and 286.256 of the Michigan Compiled Laws.

**Minnesota:** Unregulated.

**Wisconsin:** Prohibited from import under ATCP 21.16; prohibited species under Chapter NR40.

**Federal:** Unregulated.