

### Are your hemlocks dying?

If they are you're not alone. Entire forests of eastern and Carolina hemlocks are disappearing at an alarming rate. The Hemlock Woolly Adelgid (*Adelges tsugae*) <http://www.ecfla.org/articles/adelgid.htm> is the reason. In this short article we briefly explain what Hemlock Woolly Adelgid is, how fast it's spreading, how it kills hemlocks, how to diagnose your sick hemlocks, how you can save your hemlocks, and how you can sustain long-term hemlock health. There is no reason why this invasive pest can't be stopped and hemlocks have to disappear.

In fact, by saving your hemlocks you will be doing your part to save Eastern hemlock forests and preserve them for future generations. There is a solution.

### What is the Hemlock Woolly Adelgid (HWA)?

The hemlock woolly adelgid is commonly referred to as "HWA." A native of Japan, HWA was first discovered in Virginia in 1951 and by 2004 had spread across 21% of eastern hemlock's range. Currently, the invasive insect has established itself in Minnesota, Wisconsin, Michigan and every state along the upper eastern seaboard and the entire Appalachian range. Fully infested forests <http://tree-savers.com/trees-in-crisis/> extend from Maine to Georgia.

The pest only feeds on the eastern (*Tsuga canadensis*) and Carolina (*Carolinas*) hemlock – conifers native to northeastern, eastern and southeastern forests. It has been estimated that HWA spreads at a rate of about 12-13 miles per year in colder, northern climates, and 7-8 miles per year in warmer southern climates (Evans and Gregoire 2006).

<Http://www.entomology.wisc.edu/raffa/Teaching/Ent%20500%20Readings%202009/E7%20Hemlock%20Woolly%20Adelgid.pdf>

HWA destroys hemlocks by sucking the sap (nutrients) out of the tree through a long "needle like" stylet. Once the hemlock "dries up," HWA moves onto the next tree...and the next.



This voracious transplanted pest reproduces quickly and explosively - two generations each year. On a fully infested hemlock, there are typically as many HWA as there are needles on the tree.

There are several reasons why the HWA infestation has happened so quickly. First, HWA only feeds on hemlocks and the hemlock has no natural defense against it. Second, HWA has no natural predator (such as a beetle) to biologically control it in the US.






However, in its native Japan, HWA has a predator organism – *Sasajiscymnus tsugae* <Http://www.tree-savers/oursolution> – or, "St Beetle." This small, black ladybird beetle is a specialized predator of HWA.

It only eats Adelgids and primarily HWA. In essence, the St Beetle evolved as nature's biological control mechanism for keeping HWA in check – and allowing Hemlocks to survive. Finally, HWA was allowed to spread for fifty years.



How do I know if my hemlocks are infested with HWA?

Determining if your hemlocks are infested is very simple. All you have to do [look for the signs](#).

<p>Presence of white, cottony egg sacs clinging to the underside of Hemlock branches?</p>	
<p>Gradual fading and browning of limbs?</p>	
<p>Graying, dry or brittle needles which begin dropping?</p>	
<p>Trees with skeletal, spider web-like appearance and defoliated understory?</p>	
<p>Presence of one or more other pests/diseases such as spider-mites and scales? [US Forest Service Photo]</p>	



# Guide To Saving Your Hemlocks

What can I do to stop HWA infestation on my hemlocks?

*"The best option for managing Hemlock woolly adelgid in forests is biological control."*

*U.S. Department of Agriculture 2005*

There are several things you can do. You can use pesticides and insecticides. The most commonly used pesticide is *Imidacloprid*, a neurotoxin that is selectively toxic to insects, including bees. The most common methods of application are soil injections, tree/bark injections, and foliar broadcast spraying. But though *Imidacloprid* has proven to be an effective pesticide for HWA, it is also toxic to mammals, causing mortality when exposed to high doses. Worse, studies have shown that this pesticide is toxic to humans. <http://npic.orst.edu/factsheets/imidacloprid.pdf>

There are other limitations to the use of chemical pesticides as a sustainable solution. It is expensive, labor intensive requiring repeated applications, and has been relatively ineffective in halting the spread of HWA. Yet another limitation is the fact that once HWA is poisoned, when the tree recovers there's nothing to prevent HWA from reestablishing it on the tree. In reality, *Imidacloprid* is effective in the short term, but not in the long-run as a sustainable approach.

There is another solution – biological control using the St Beetle <http://tree-savers.com/resources/>. Mentioned above, the St Beetle is the natural predator of HWA. After rigorous lab and field testing, in 1995 the USDA approved the implementation of the St Beetle as a method of biologically controlling HWA in public forests. Research determined that St Beetles pose no threat to any other living organism other than HWA.

It is the perfect biological control agent. Infested hemlocks can significantly recover in just one year. Best of all, because the life-cycle of the St Beetle is synchronized with HWA, its reproduction and population is regulated by the availability of HWA as a food source. Most important, once released and allowed to do its predatory work, hemlocks stay recovered. The biological control of HWA using its natural predator is proving to be not only the most effective solution, but the most sustainable one.

To learn more about *Sasajiscymnus tsugae* (St Beetle), how and why it works, and how you can get these voracious HWA eating beetles on your hemlocks, visit our website: [www.tree-savers.com](http://www.tree-savers.com) or call us today at (570) 871-0088. Together we can save the majestic hemlock – starting with your trees.