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All native ash species are susceptible to EAB, and no known natural resistance has been found. Pesticide applications are available to treat individual trees, but effective treatment requires frequent application. EAB response usually involves cutting down and chipping infested trees. It is unfortunate that so far there is nothing that can eradicate this woodland pest, although biological controls are being researched. Ash trees are common in our forests and successional areas, as well as planted widely in towns and cities, and their loss could be widespread and catastrophic. If you find or suspect an infestation of EAB or other insect pest, contact the DEC Bureau of Forest Health, 625 Broadway, Albany, NY 12233; phone 518-402-9425; email: lflands@gw.dec.state.ny.us.

Information regarding infestation and treatment of forest insect pests develops continually, and it is recommended that woodland owners and managers remain aware of the current status by checking information sources regularly and consult a professional when planning for forest management or individual tree protection. It is important to identify new infestations or range expansions early, and to prevent their spread as much as possible while effective controls are being developed.

The Finger Lakes Land Trust is a membership-supported, not for profit land conservation organization dedicated to protecting the lands that define the character of the Finger Lakes region. Since its founding in 1989, the Land Trust has protected over 11,000 acres of the area's forests, farms, lakeshore, and gorges.

Afoot in the Field is a newsletter and resource provided Land Trust for landowners in the Finger Lakes who own properties that are permanently protected with a conservation easement, or who are otherwise committed to, or interested in, land conservation and wildlife habitat protection and improvement.

For more information about the Finger Lakes Land Trust and its conservation programs visit www.fllt.org or call our Ithaca office at 607-275-9487.

What are these purple boxes I see hanging from trees?



These are insect traps that have been placed around NY and neighboring states by natural resource agencies to detect the presence of emerald ash borer.

[Photo courtesy Ontario Co. Cornell Cooperative Extension].



Afoot in the Field: A Resource for Conservation Landowners in the Finger Lakes Region

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Few trees are better at conveying a sense of primeval wilderness than eastern hemlock. The deep-green soft needles; the rich brown bark; the sweeping branches; the dark shade that cools the air and evokes feelings of being in a dense forest; the rugged terrain that these trees tend to inhabit. It is no wonder that hemlocks hold a special place in the hearts of many people. John Burroughs wrote:

"I jot this memorandum in a wild scene of woods and hills where we have come to visit a waterfall. I never saw finer or more copious hemlocks, many of them large, some old and hoary. Such a sentiment to them, secretive, shaggy, what I call weather-beaten, and let-alone--a rich underlay of ferns, yew sprouts and mosses, beginning to be spotted with the early summer wild flowers. ... A primitive forest, druidical, solitary, and savage--not ten visitors a year--broken rocks everywhere, shade overhead, thick underfoot with leaves--a just palpable wild and delicate aroma."

So it is with dread and a sinking feeling that we now lay eyes on hemlock boughs along lakeshores, on the Cornell campus, and a few other places in the Finger Lakes that are beginning to be infested with the tell-tale white fuzz of the hemlock woolly adelgid. Through the Appalachians and southern New England hemlock trees have suffered dramatically from this non-native insect, with heavy mortality and subsequent changes in forest ecology in some places.

When I worked in the Catskills, I helped map the spread of the adelgid up the Esopus River Valley. It appeared that the adelgid spread rather steadily at low elevations with milder climate, but had trouble gaining ground in more mountainous areas. Early sightings here in the Finger Lakes are also mostly at low elevations and areas of mild climate - hopefully our more mountainous hemlocks will be able to remain adelgid-free for a long time! The effort to map the spread of the hemlock woolly adelgid in the Finger Lakes is ongoing, as is research

throughout the east on prospective controls, including the use of different imported beetle species as predators (now one of the largest bio-control attempts in North America).

It would be bad enough if the hemlock woolly adelgid were the only nasty insect that we had to worry about when considering the health of our forests, but alas there are many others - some far worse - that threaten eastern forests as we know them. In this issue of *Afoot in the Field* intern Michael Roberts outlines not only the adelgid, but also the Emerald Ash Borer - an insect that is not yet known to be present in the Finger Lakes region, but will be devastating if and when it arrives. The same is true for the Asian Longhorn Beetle (not profiled in this issue), which has reared its ugly head in New York City, Chicago, and Worcester, MA, and threatens a whole host of eastern forest tree species.

The first step for forest landowners is to be aware of these problem insects, remain vigilant when spending time in the woods, report suspicious findings, and take precautions against unknowingly spreading "bad bugs" (such as not moving firewood over long distances). Landowners can also learn about options for protecting individual trees, and perhaps shifting larger forest management goals in preparation for potential insect infestations. Some of these insects are a menacing problem, but fortunately there are a growing number of educational resources for the public and a growing commitment to research and control by government and academia.



Chris Olney, Director of Stewardship

More Information About These Forest Insect Pests Can Be Found At These Websites

Emerald Ash Borer

- <http://www.emeraldashborer.info/>
- <http://www.dec.ny.gov/animals/7253.html>
- <http://nyis.info/Insects/EmeraldAshBorer.aspx>

Hemlock Woolly Adelgid

- http://www.saveourhemlocks.org/controls/my_prop.shtml#treating
- <http://na.fs.fed.us/fhp/hwa/>
- <http://www.cornellplantations.org/our-gardens/natural-areas/invasive/hemlock-woolly-adelgid>

To report an HWA sighting:

- http://www.cornellplantations.org/our-gardens/natural-areas/invasive/hemlock-woolly-adelgid/survey_results

Emerald Ash Borer

The emerald ash borer (EAB) is aptly named for its shimmering green hard outer wings (Picture 2) and its penchant for tunneling into ash trees. Found in Detroit, MI and Windsor, ON in 2002, EAB has been working its way through the U.S. midwest and southern Ontario. Last summer it was found in Randolph, NY, along the interstate, suggesting that it hitched a ride on a truck from points west. The NY State Dept. of Environmental Conservation (DEC) responded quickly by cutting and chipping trees positively identified as infested by EAB. Control, survey, and quarantine efforts are now in effect, but the continued spread of EAB is expected; albeit at a relatively slow pace.

The beetle emerges from its host tree in early June, leaving a characteristic D-shaped hole in the bark. It forages and mates for a few weeks before the females lay eggs on the bark. Larvae eat down to the inner bark of the tree where they continue, as larvae (Picture 3), to eat tissue that the tree uses for nutrient and sugar transportation. Over a period of 2-4 years enough tissue is consumed that the tree can no longer transport sugars to its roots, killing the tree. During this time, noticeable leaf and branch die-back occurs. Other indicators of EAB infestation can include sprouting from the trunk and main branches of the tree, vertical cracks in the bark, and serpentine galleries under peeled bark (Picture 4).



Picture 2. Emerald Ash Borer. Courtesy of David Cappaert, www.forestryimages.com



Picture 3; courtesy <http://www.michigan.gov/mda/>



Picture 4; courtesy <http://www.extension.iastate.edu/CropNews/2010/0526hodgson.htm>

Conservation Landowner Profile:

Don Wilson

Q: Your land has been in the family for many years - how far back did your family acquire the lakeside property? Did this long-time family association with the property play a role in your decision to donate a conservation easement?

A: I am a fifth generation Wilson residing on Willow Creek Point on Cayuga Lake. A fond memory of childhood was exploring the gorge and woods. I am currently engaged with the same exploring with grandchildren. My hope is that they will have the same love of this unique place. These memories might feel violated by development or any change to the area.



Chris Olney

Q: Your land comprises a significant portion of the Willow Creek Gorge, which has been designated a Unique Natural Area in Tompkins County. Do you feel that such designations by government are helpful in recognizing important places and prioritizing conservation efforts?

A: Many land owners claim unique features, and designations do not increase uniqueness. This designation does make me think in terms (more or less) of a state park where uniqueness is preserved for future generations. When I was younger I thought in terms of "what is mine, is mine." With maturity I realize

how temporary ownership is, including generational ownership. I believe this designation helps us to be stewards in two ways: a) the owner begins to think in terms of conservation if he or she has not already begun this process, and b) organizations like the Finger Lakes Land Trust can use this list to prioritize effort.

Q: Please tell us a little bit about why your gorge is important geologically, and why the Finger Lakes region in general is blessed with so many beautiful gorges and waterfalls.

A: The "sense of place" described above has re-invented me as an amateur geologist/paleontologist. After years of looking in wonder at the stratigraphy of Willow Creek Gorge, I decided to learn something of the history. Fortunately, Ithaca has resources to do just this.

Between our local (but really international) Paleontological Research Institution (PRI) and Museum of the Earth, and Cornell, the information is there for all of us (but still we can "wonder"). This area is one of the best studied geologic areas on the planet. A trip to the Museum of the Earth is a good place to start. Because my gorge has a well studied fossil record of Middle Devonian earth, I elected to give an educational and research easement to PRI- linked to the Land Trust easement.

Q: You and the Land Trust were disheartened to learn about the presence of hemlock woolly adelgids (HWA) on your property, as these insects threaten the viability of the eastern hemlock trees in your gorge. Please tell us about your recent participation in an HWA biological control project being conducted by Cornell University.

A: I had learned of hemlock woolly adelgid (HWA) 20 years ago, and thought at the time what a disaster this would be to my property and the Finger Lakes Region if it should spread here. It's here, and Ithaca, we have a problem! Thus far it seems confined to the warmer/moister microclimate of lakefront and connected gorges. So I have it essentially on all 17 acres of hemlock, and it may spread to higher elevations. With regret, I tell you that one of my branches became the "poster child" for the Cornell Plantations web site. Through the FLLT I was introduced to Mark Whitmore, a Cornell entomologist whose research involves the introduction of a West Coast beetle (*Laricobius nigrinus*) to local sites with hope that it would prey upon the HWA. No answers yet!

Don't Move Firewood!

A new state regulation now in effect prohibits the import of firewood into NY unless it has been heat-treated to kill pests, and also limits the transport of untreated firewood to less than 50 miles from its source. New York's forests are under attack from numerous exotic insect pests, such as chestnut blight, gypsy moth, Dutch elm disease, beech bark disease, hemlock woolly adelgids, pine shoot beetles, siren woodwasps, emerald ash borer, and Asian long-horned beetles. By transporting firewood, you could inadvertently spread diseases and insects.

- Leave firewood at home - Do not bring it to campgrounds or parks.
- Buy firewood at the campground or from a local vendor; ask for a receipt or label that has the local source.
- If you transport firewood within New York State:
 - It must be labeled with the source and it must remain within 50 miles of that source.
 - Firewood cut from your own property must have a Self-Issued Certificate of Source (available at: http://www.dec.ny.gov/docs/lands_forests_pdf/selfisscert.pdf), and must be sourced within 50 miles of its destination.
 - Only firewood labeled as meeting heat treatment standards to kill pests (kiln-dried) may be transported further than 50 miles from the source.

Above information adapted from NYSDEC Web site.

More information at: <http://www.dec.ny.gov/animals/44008.html>

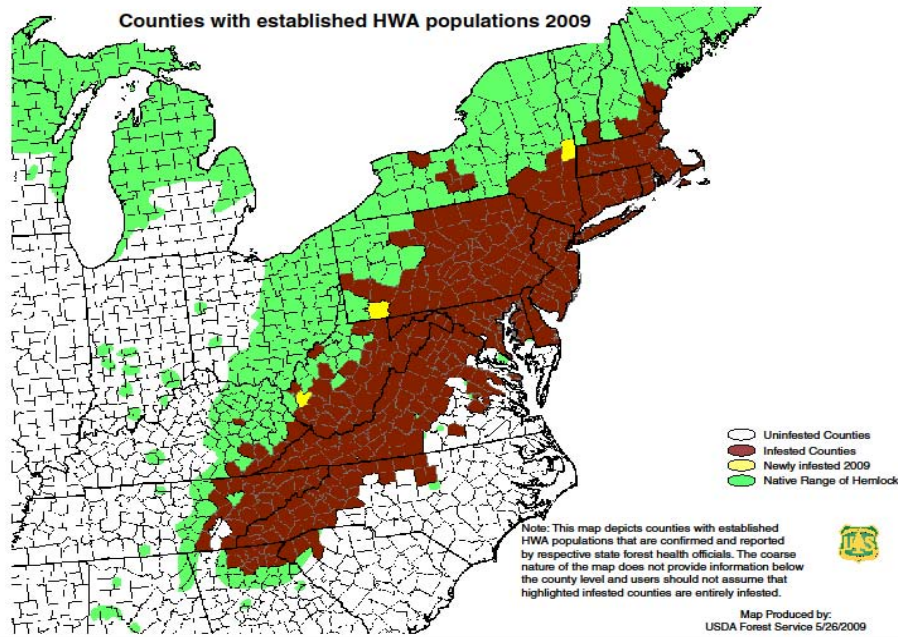


Figure 1; courtesy of <http://na.fs.fed.us/fhphwa/maps/2009.pdf>.

infestations can be reported to Mark Whitmore of Cornell University (mcw42@cornell.edu), or by submitting an entry at the following web site: www.cornellplantations.org/our-gardens/natural-areas/invasive/hemlock-woolly-adelgid/survey_results.

Infestations have also been found in western states, but have been kept in check by naturally

occurring predators. Two such western beetles have been researched by Mr. Whitmore for their effectiveness as introduced control agents, and other researchers have studied beetles from Asia, and many beetles have already been released on infested hemlocks. Methods for protecting individual hemlock trees also include application of horticultural oil or pesticides. Pesticide treatments can be effective and last several years. It is recommended that forest owners and managers consult a professional before taking action. More information can be obtained by contacting a Cornell Cooperative Extension office or a chemical application professional.

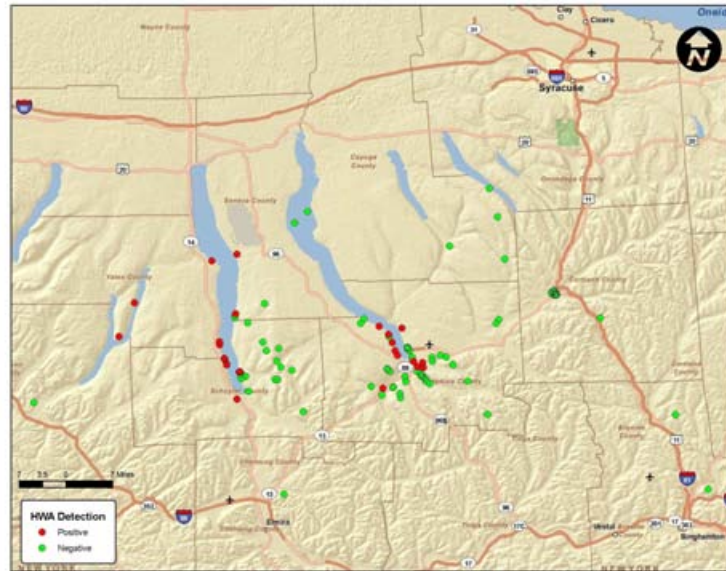


Figure 2; courtesy of Cornell Plantations

Woodland Insect Pests

By Michael Roberts, Land Trust intern

These days it's difficult not to hear about invasive organisms: plants, bugs, and other animals. Most people would recognize the names of some of them found in our area: zebra mussel, garlic mustard, European starling, and autumn olive. Some of our volunteers even have first-hand experience assisting in Land Trust efforts to control their spread. The two woodland pests highlighted in this article - the emerald ash borer and the hemlock woolly adelgid - are not native to North America and have made their way here from Asia. In addition to the economic costs of insect infestations, there are also significant ecological and aesthetic considerations that concern forest land managers, woodland owners, and people who enjoy the outdoors.

Hemlock Woolly Adelgid

Eastern hemlocks are aesthetically pleasing and provide valuable habitat and forage for many animals including porcupines, white-tailed deer, black-throated green warblers, Blackburnian warblers, and Acadian flycatchers. Although the hemlock woolly adelgid (HWA) was first discovered on the east coast of the U.S. in the 1950s, HWA wasn't found in the Finger Lakes region until the summer of 2008. The slow but steady spread of HWA is partially attributable to lack of natural resistance in the eastern and Carolina hemlocks, as well as the absence of predators.

HWA is very small, and most readily identified in egg form. White egg clusters appear "fuzzy" (Picture 1), and are located at the base of hemlock needles. Clusters typically contain 100-300 eggs and can be produced twice a year by two generations of adult females. As nymphs, the aphid-like insect pierces the base of tree needles to feed on sap. Many feeding insects cause needles to die, and in 4-10 years the tree is likely to succumb.



Picture 1; courtesy M. Whitmore

A map showing the known HWA extent for the eastern U.S. is depicted in Figure 1, and for the Finger Lakes region in Figure 2. Much of the local infestation has occurred around lakes and streams. It is believed that the adelgid cannot tolerate temperatures commonly experienced during winters this far north, which may partly explain its occurrence near bodies of water, where temperatures are moderated. Movement of HWA may be facilitated by "hitch-hiking" on birds. HWA