



# OHIO Woodlands Water Wildlife



## An Ohio Woodland Stewards Program Publication

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### Hemlock Woolly Adelgid: The New Threat to Ohio's Forests

*Stephanie Downs, Ohio Department of Natural Resources  
Division of Forestry*

Hemlock woolly adelgid (HWA) is a small aphid-like insect native to Asia that was first detected in the United States in 1951 near Richmond, Virginia. This insect threatens both Carolina and eastern hemlocks, and is currently infesting 19 states in the eastern United States from Maine south to Georgia and west to Ohio and West Virginia. Ohio has only

Painesville, Ohio. Since then, 11 landscape eradication have been performed, with infested trees either being removed and destroyed or chemically treated, depending on the level of infestation. In January of 2012, however, HWA was discovered by the Ohio Division of Forestry (ODOF) in Shade River State Forest (Meigs County) in a natural stand of eastern hemlocks. A total of eight trees were found with the adelgid. Due to the location and small size of these trees, all eight were removed and burned in an attempt to eradicate the population. Concentrated surveys are planned for



this winter to survey remaining hemlocks in both Shade River State Forest and adjacent Forked Run State Park for more infested trees.

Following this detection of HWA in Meigs County, reports of suspicious hemlocks in the towns of Belpre and Marietta (Washington County) were received. Surveys of these towns showed that HWA is established in their landscapes. Of the 1025 hemlock trees surveyed in May of 2012, 404 were determined to be infested.

Shade River, Belpre, and Marietta are located along the Ohio River, and border Wood County, West Virginia, where HWA has been established since 2008. It is believed that these populations have spread naturally into Ohio from West Virginia, and are not the result of human movement. HWA

mainly spreads through birds and wind, but can also be spread by human movement of hemlock materials, including branches, firewood, and nursery stock. Both Meigs and Washington Counties are quarantined by the Ohio Department of Agriculture to prevent the movement of hemlock materials out of the infested areas.

recently been added to this list, with its first recorded find in a native stand of hemlock in January of 2012.

HWA has been found in Ohio since 2001, but until 2012 was only detected in landscape trees or garden center stock. In September of 2001, 10 infested hemlocks were removed and destroyed in

HWA infested hemlock branch on a landscape tree in Belpre, OH.  
Photo courtesy of the Ohio Department of Natural Resources, Division of Forestry

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Surveys for HWA in Ohio's hemlocks are most effective when conducted during the winter months when the adelgid is surrounded by a white woolly covering. Lower branches on the trees are visually inspected, and any positive trees need to be reported to the Ohio Division of Forestry and Ohio Department of Agriculture. Early detection of HWA infestations is important, as lightly infested trees are easier to treat and save. Surveys are conducted yearly on state lands, but individual property owners are also encouraged to inspect their trees and report any suspicious findings. Another tool that can be used to report suspect trees is the new **Great Lakes Early Detection Network** smart phone app. Check out the article in this newsletter to learn more about this new tool. HWA has been moving across the eastern United States since its discovery in 1951. By inspecting hemlocks on your property, HWA can be caught early on in new locations throughout Ohio and this issue can be addressed while it is still manageable. If you think you have a hemlock with HWA, contact the Ohio Division of Forestry at (614)265-6694, or the Ohio Department of Agriculture at (614)728-6270.

## Wood You Know- Hickory (*Carya spp.*)

Eric McConnell, Forest Products Specialist, OSU Extension



Prior to the last ice age numerous species of hickories flourished in the world's forests. Today 16 species remain, many of which are located in North America. Hickories are members of the Walnut family (*Juglandaceae*), and there are two sub-sections of hickories found in Ohio. Those considered true hickories, which are the subject of this article, are shagbark hickory (*Carya ovata*), shellbark hickory (*C. laciniosa*), pignut hickory (*C. glabra*), and mockernut hickory (*C. tomentosa*). The other hickory group is the pecan hickories, which includes pecan (*C. illinoensis*) and bitternut hickory (*C. cordiformis*). The lumber sawn from all true hickories is marketed as Hickory with *C. tomentosa* being a representative species. The name Hickory is believed to be derived from the Native American word *powcohicora*, which described a type of liquor obtained from the hickory nut.

Hickory is a slow-growing species. Trees are often slender and of small to medium size. The bark has a high silica content, which can dull saws. These factors, among others, influence market prices. Factory grade logs are sawn into lumber while lower grades are processed into industrial products. Ohio hickory stumpage has ranged from \$125-550 per thousand board feet (MBF) while sawlogs have recently sold in the range of \$200-650/MBF (both prices based on Doyle). One inch thick 4/4 green lumber prices per MBF have ranged from \$730 for FAS down to \$470 for #2 common. Kiln-dried lumber (4/4) prices per MBF have ranged from \$1210 for FAS down to \$800 for #2 common.

Hickory wood varies from white to reddish brown across the sapwood to the heartwood. Hickory is ring-porous and one of Ohio's densest wood species. The transition from earlywood, which contains the large pores, to latewood is abrupt. Heartwood pores are often plugged by tyloses. The wood rays are narrow and require the use of a hand lens to see clearly. Hickory is easily identifiable on the cross-section by its grid-like appearance when viewed under a magnifying lens or microscope. There is no distinct odor or taste present.

While other woods are denser, stronger or harder, hickory provides a uniquely

high combination of all these qualities. This has long made hickory a prized species for on-farm use. The wood's high shock resistance, or toughness, makes it a superior choice for tool handles, which is more than three quarters of its market. Hickory can be used in a number of applications in the barn or home, from bins, racks, and rough framing to interior woodwork, furniture, and sub-flooring. Its high density provides fuel values which makes it an outstanding choice for heating and cooking. The wood is popular among outdoor cooking enthusiasts for its flavoring ability.

Conscientious lumber drying management is a must following sawing due to hickory's high degree of shrinkage. Green lumber should be well stacked and takes several months to air dry. A mild kiln schedule must be used to prevent aggravating internal checking and warping in the dry kiln. Hickory's machining properties overall rate good to very good. The wood cuts clean and finishes smoothly due to its hard and dense nature. Hickory has no natural durability and has failed in outdoor on-farm applications in as little as two to three years. Products used in ground contact, such as foundation timbers and posts, should be preservative-treated to the required retention level.

### **Structural Characteristics**

Pore distribution: Ring-porous  
 Grain: Straight-grained, normally  
 Heartwood: Pale brown to brown or reddish brown. Little to no resistance to decay.  
 Sapwood: Whitish to pale brown

### **Physical Properties**

Density: 44.9 lbs/ft<sup>3</sup> at 12% moisture content  
 Flat grain shrinkage: 11.0%  
 Vertical grain shrinkage: 7.7%  
 Estimated air-drying time for 4/4 lumber to 20% moisture content: 60-200 days

### **Mechanical Properties at 12% Moisture Content**

Bending Strength: 19,200 psi  
 Compression strength parallel to the grain: 8,940 psi  
 Shear strength parallel to the grain: 1,740 psi

### **Machining and Finishing Properties**

Planing: Good	Shaping: Poor
Turning: Very good	Boring: Excellent
Mortising: Excellent	Sanding: Very good
Steam bending: Good	Avoids Nail Splitting: Poor
Avoids Screw Splitting: Fair	
Holds paints: Poorly to very poorly	
Bondability: Satisfactory, but requires controlled conditions and high-quality adhesives	

## **New Invasive Species Focused Smart Phone App Launched**

*Kathy Smith, Extension Program Director – Forestry*

As you can see by this newsletter, invasive species are commanding a lot of natural resource professional's attention these days. Whether it concerns insects,



diseases, plants, mammals or aquatic species there is

something for everyone! One thing that is true across the board is that early detection is key to dealing more effectively with all of these.

As a group of us were discussing our new Asian longhorned beetle infestation in 2011 we kept coming back to how do we get these things reported early when they are still on a relatively small scale. We were looking for new outreach tools to empower citizens to get involved – so that they could be our eyes across the state. One idea was the use of smart phone technology in the form of an app. Page ahead to September 2012 and we are part of a group that launches the **Great Lakes Early Detection Network**. This smart phone app is a tool for citizens to identify and report suspect invasive species. The app contains images to use as a means of identification, an info section to help with the identification process and a section that





allows you to take a photo (with gps coordinates) of the suspect and upload it to the **EDDMapS** system where it will be sent to an expert for verification (EDD MapS requires you to register with the system so you can be contacted for follow-up). Once verified, a point is placed on a map allowing all of us to address these issues more efficiently. This free app is the creation of the University of Georgia's Center for Invasive Species and Ecosystem Health. They will maintain the data that the app collects and update the app as we add things to the list. To access the mobile link for the app go to <http://go.osu.edu/GLEDN> or access it and other mobile apps offered by the center at <http://apps.bugwood.org/apps.html>

One thing to keep in mind as you look at what is listed in the app as 'invasive' – this is a regional app. The intent is to make it a tool useful to those of us working on this issue across the Great Lakes Region. To that end there are species listed that may not appear to pose a problem in Ohio but are of concern in one of the other states in the region. (A listing of invasive plants for the various states will be posted on our <http://invasives.osu.edu> website). Download the app and become part of Ohio's early detection network!

## White-Nose Syndrome in Bats: Report Signs of Infected Bats

*Marne Titchenell, Extension Wildlife Program Specialist*

White-nose syndrome (WNS) is a deadly disease of cave-hibernating bats. The disease is caused by an invasive fungus that infects bats while they are hibernating in caves and abandoned mines over the winter. Infected bats wake from hibernation, often leaving caves to search for food or water, which is not readily available during the cold, freezing months of winter, and do not survive. WNS was first discovered in New York during the winter of 2006-2007 and has since spread to 21 states and into 4 Canadian provinces. Bat mortality rates in infected caves commonly reach 90%. WNS made its way to Ohio in March of 2011 and is now documented in 6 counties (Lawrence, Geauga, Cuyahoga, Summit, Portage, and Preble).

The Ohio Division of Wildlife and US Fish and Wildlife Service are on the lookout for additional WNS infected sites, as it is expected to spread further through Ohio this winter. The disease is spread from bat to bat, but humans can also transport the spores of the fungus on shoes and

clothing. Because of this, many caves and mines on public lands that are home to bats have been closed to public access. Biologists are asking the public to please not enter a cave or mine where bats may be hibernating to prevent further spread of WNS. The best way to help track the spread of WNS is to look for and report any of the following signs: 1) bats seen flying during the day in cold, winter temperatures, 2) dead bats found during winter, 3) bats found with white, powdery fungus on nose, ears, wings, or feet. Please report signs to 1-800-WILDLIFE. Smartphone users can report signs by taking a picture using a new app developed for tracking invasive species. Called the **Great Lakes Early Detection Network** app, this free app can be downloaded by visiting <http://apps.bugwood.org/mobile/gledn.html>, or typing GLEDN into Google Play. There is no evidence that WNS is harmful to humans, however like any wild animal, avoid touching or picking up sick or dead bats.



Little brown bat with white-nose syndrome.  
Photo courtesy of Al Hicks, New York Department of Environmental Conservation

For more information on WNS, refer to:

OSU Extension FactSheet W-22-12, "White-Nose Syndrome: A Deadly Disease of Bats"  
([http://ohioline.osu.edu/w-fact/pdf/W\\_22\\_12.pdf](http://ohioline.osu.edu/w-fact/pdf/W_22_12.pdf))

Ohio Division of Wildlife – WNS page:  
<http://bit.ly/WhiteNoseSyndrome>

USFWS WNS page – [www.whitenosesyndrome.org](http://www.whitenosesyndrome.org)

## Frozen Frogs

Marne Titchenell, Extension Wildlife Program Specialist

As the year carries us into January and February, many species of wildlife are gearing up for the coldest months of winter. Squirrels are hunkering down in their dreys (leaf nests) and tree cavities, songbirds are arriving in warm tropical areas, coyotes and foxes are donning their warm fur coats, bats are snoozing in caves and mines, and amphibians are freezing...literally. Some species of frogs will become frozen (formation of ice crystals within the body) in very cold temperatures, thaw, repeat the process several times, and still be perfectly alive and healthy. Ice crystals within the body can cause serious damage to cells and tissue, a lethal process, yet several Ohio frogs (gray tree frog, Cope's gray tree frog, wood frog, spring peeper, and western chorus frog) manage this amazing feat of survival. This is sounding more and more like a science-fiction article isn't it? Well, it is all science-fact, as you will soon see.

Many of Ohio's cold-blooded critters enter dormancy during the winter, seeking out hibernacula (place where an animal hibernates) underground, under the forest leaf litter, and within logs, rocks, and pond or stream banks. Although these hibernacula may insulate a frog well from extreme temperatures, its body temperature still drops to 19-23° F, causing it to freeze. When this happens, ice forms beneath the skin, among skeletal muscles, and within the body cavity. Up to 45% of the frog's total body water can become

frozen! When a frog is frozen, everything stops; the breathing, blood flow, and heartbeat. A frog is able to survive this freezing process by the production of cryoprotectants, or in other words, antifreeze. The cryoprotectants (glycerol or glucose depending on the species) are formed and circulated through the frog's body before it freezes. They protect cells from becoming damaged by ice crystals, allowing cells to continue to function and sustain life. In addition, a frog will also concentrate body water into areas where freezing will do less damage, for example between layers of skin and muscle. A frog can remain frozen from 5 to 14 days depending on the species! Research has reported that repeated cycles of freezing and thawing does not harm a frog. Amazing isn't it?

The freezing tolerance of these frogs extends through winter into early spring, when they emerge for spring breeding. The wood frog and western chorus frog are Ohio's earliest risers, waking as early as February to begin their mating calls. Spring peepers wake shortly after in late February to early March to begin their choruses of peeps. The gray tree frogs will not be heard until mid to late April. Freezing tolerance has also been documented in painted turtles, box turtles, and garter snakes. Enjoy the rest of the winter, stay warm, and remember – when you think you're cold, at least you aren't frozen! Now THAT'S cold.

(visit [www.carleton.ca/~kbstorey](http://www.carleton.ca/~kbstorey) for more information and images on freeze tolerant frogs.)

## Mark Your Calendars!

The annual **Ohio River Valley Woodland and Wildlife Workshop** will be held at beautiful Clifty Falls State Park in historic Madison, Indiana **March 23, 2013**. There will once again be three concurrent sessions offering a wide variety of talks. Topics range from timber marketing, tree planting and herbicide applications to woodland salamanders, woodland beetles and tree id. More details are to come and will be posted at the Woodland Stewards website or at <http://www.tristatewoods.org>.

We hope to see you there!



Frozen wood frog  
Photo credit J.M. Storey, Carleton University

# Calendar of Events

**February 26** Wood Identification – Fulton County

**March 23** Ohio River Valley Woodland & Wildlife Workshop – Madison, IN

**April 11** Landscaping for Wildlife – Medina County

**April 13** Your Woods, Water & Wildlife – Crawford County

**April 19** Wildlife in Your Woods – OSU Mansfield

**April 26** The Good, The Bad & The Hungry: Dealing with Wildlife Damage to Your Landscape – Miami County

**May 17** Professionals workshop – Focus on Invasive Species – OSU Mansfield

**May 18** Tree School – OSU Mansfield

**June 4** \*Emerald Ash Borer & Asian Longhorned Beetle

**June 7** Name That Tree – OSU Mansfield

Evening Seminar Series on Invasive Species – OSU Mansfield

**June 11** \*Thousand Canker Disease, Hemlock Woolly Adelgid, Gypsy Moth and Viburnum Leaf Beetle

**June 18** \*Wildlife & the Economic Impact of Invasive Species

**June 25** \*Plants that Invade

**June 28** The Good, The Bad & The Hungry: Dealing with Wildlife Damage to Your Landscape – Geauga County

\* note the events highlight in green are a package of events that are available for \$15 each or all 4 for \$45

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### Check Us Out On The Web!

Look for newsletter articles, links to fact sheets and other publications by browsing our site. Registration for upcoming Woodland Stewards classes may also be done electronically.

Go to:

<http://woodlandstewards.osu.edu>

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