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Spring 2011

The *WOOD*land Steward

Promoting the Wise Use of Indiana's Forest Resources

Message from the President 2011
To Know Your Woods

By Dan Shaver

How long does it take to get to know your woods? This is without a doubt, a rhetorical question. If you answered, you had better get back out there and take a look because you are missing a lot. It is nice to walk through the woods and just enjoy it. It takes a lot more effort to know the trees, wildflowers, birds, wildlife, amphibians, soils and watershed that all contribute to making your woods what it is. If you then start learning about non-native invasive species, insects and disease, wood product markets, hunting opportunities, estate planning and timber taxes suddenly you can be overwhelmed with all the aspects of knowing your woods. This is why the 11 member organizations support the Woodland Steward Newsletter. We know that landowners want more information about their property. Landowners want to be informed, make good decisions, be good stewards of the land, and try to understand the woods they enjoy so much year after year. So my challenge for 2011 to all landowners in Indiana is to learn something new about their woods this year. At the very least, set a goal to read the Woodland Steward Newsletter cover to cover each issue. Do this, and you will enjoy your woods a little more and understand why you work so hard to conserve and protect your woods for today and for future generations.

The Woodland Steward Institute would like to thank all the landowners who made a contribution in 2010. Donors are currently recognized on the Woodland Steward website at www.inwoodlands.org. The Woodland Steward Newsletter is sent to over 33,000 landowners 3 times a year. Without the support of landowners, the Woodland Steward Institute would only be produced twice a year. In this issue of the newsletter we have included a donation envelope and are asking that you support the Woodland Steward Newsletter with a financial contribution to ensure that we are able to produce a third issue of the newsletter in 2011. You can also donate on-line. Go to our website, click on "Donations", and then click on "Donate."

Another way to support the Woodland Steward newsletter is by receiving the newsletter electronically, instead of in print format. Over 95% of our funding goes directly to printing and mailing the newsletter. If you have not been to the website lately please visit us at www.inwoodlands.org. We have a new website with new look and new features. If you receive the newsletter on-line you will be able to view and print it three weeks or so before your neighbor. On-line, you can search and view any article that was ever published in the Woodland Steward newsletter and in some cases read the full unedited version of a report or article. So check out our website and keep getting to know your woods.

Thank you again for all the support in 2010.

Dan Shaver
Woodland Steward Institute President

Jeff Hammond

In this issue

David Cappaert, bugwood.org

visit us online at
www.inwoodlands.org

Upcoming Events

March 12
Forest Landowners Clinic
9 am – 4 pm
Honeywell Center, Wabash
Sponsored by Indiana Tree Farm.
Registration is $50 each, $75 couples.
Contact: 765-494-2153 or lfarlee@purdue.edu

March 19
Sycamore Trails RC&D Forestry Landowners Award Banquet
Clay County
Info at www.sycamoretrails.org.

March 26
Tree ID Tour
9:00 am to Noon
Lawrence County
$5 Registration
Contact White River RC&D at 812-883-3006, Ext. 5.

March 26
Ohio River Valley Woodland & Wildlife Workshop
General Butler State Park, Kentucky
Registration $40
For more info, visit www.tristatewoods.org.

April 2
Forestry/Invasive Plants Field Day
Vigo County
Info at www.sycamoretrails.org.

April 16
Annual Wildflower Hike
10 am – 4 pm
Lawrence County
Sponsored by White River RC&D/ Sycamore Land Trust
$12 for adults
Contact 812-883-3006, ext. 5 or maryjane.deel@in.usda.gov.

April 16 & 17
Owen County Wildflower Weekend
Contact: runversaw@dnr.in.gov or 812-829-2462.

April 30
Walnut Council Field Tour
Dearborn County
765-583-3501 for details.

April 30 or May 7
Sycamore Land Trust's Frogs & Rails: Looking & Listening at the Beanblossom Bottoms Nature Preserve
7 - 9:30 pm
$5 per adult or $10 per family.
RSVP and include your phone number to info@sycamorelandtrust.org or 812-336-5382 x 100.

May 14
Botanizing the Bottoms at the Beanblossom Bottoms Nature Preserve
Field trip to identify plants of wetlands and woods.
9 am - Noon
$5 per adult or $10 per family.
Please RSVP and include your phone number to erin@sycamorelandtrust.org or 812-336-5382 x 104.

May 21
Hardwood Ecosystem Experiment Forest Tour
See ongoing forestry and wildlife research and how findings can be applied to your woodlands.
Registration $5. Contact cparker@purdue.edu, 765-342-1010.

June 25
Adventures with Nature
8:30 am – 1:00 pm
Tipsaw Lake, Hoosier Nat'l Forest
Perry County
Contact 812-649-9136 ext. 5 or www.lincolnhillsrcd.org.

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The opinions expressed by the authors do not necessarily reflect those of the Woodland Steward Institute. The objectives of the newsletter are to provide general and technical natural resource information to woodland owners of Indiana, improve information distribution and build support for responsible forest resource management.

Member Organizations
Indiana Woodland Steward Institute

The power of conservation: clean water, healthy soils is collaboration among 92 Districts, IASWCD, conservation partners

By Jennifer Boyle Warner

The stewardship of our natural resources has never been about self-interest or personal gain, but about the well-being of generations to come. Indiana's Soil and Water Conservation Districts (SWCDs), one in every county, were created to deliver technical assistance, education and cost-share funding through voluntary programs which help landowners address important natural resource concerns.

The Indiana Association of Soil and Water Conservation Districts (IASWCD) and our local SWCDs, share a single mission: to coordinate assistance from available sources — public and private, local, state and federal — in an effort to develop locally driven solutions to natural resource concerns. That is over 450 volunteers across the state serving in elected or appointed positions on SWCD governing boards, who, along with staff at the local level, work with landowners in agricultural areas, cities and towns, and the land areas in between. That is approximately 23 million acres in the State of Indiana.

Local Soil and Water Conservation Districts are uniquely positioned to bring a critical environmental perspective to land use and economic development decisions. As a nonprofit representing these grassroots natural resource entities, the IASWCD provides Districts with the information, networks and tools to make these sound decisions. Our programs at the state level focus on five main areas:

- **Communications and outreach** with Districts and our Conservation partners through our eNewsletter, the ***Weekly Update***, conservation awards, news releases, work on the Pathway to Water Quality exhibit at the Indiana State Fairgrounds, etc.,
- **Advocacy** at the Statehouse with our elected representatives on Clean Water Indiana and other natural resource issues, and with the National Association of Conservation Districts,
- **Capacity building** through our conservation development specialist who supports SWCDs and watershed groups, as well as the successful Conservation Cropping Systems Initiative. The CCSI promotes a systematic approach to production agriculture focusing on: continuous no-till/strip-till, cover crops, precision farming and nutrient and pest management.
- **Leadership** through our Annual Conference and the Indiana Conservation Partnership's Leadership Institute, and
- **District member benefits** including a contribution agreement with NRCS, providing the GrantStation eNewsletter grant resource tool, and liability insurance coverage to Districts.

How you can become involved at the local level

Volunteer / Assist your county SWCD with legislative awareness programs for local, state and federal officials, conservation programs, urban and agricultural best management practices (BMPs) field days, fundraising, tree sales, youth and adult education events or surveying.

Serve as a Supervisor / Represent your community on the County SWCD Board of Supervisors as a natural resource decision maker. Identify local soil and water conservation issues and priorities and develop SWCD programs that provide solutions to these issues.

Serve as an Associate Supervisor / Attend monthly board meetings and provide input to the SWCD board on local soil and water conservation issues and programs.

Indiana's Conservation Partnership

The IASWCD and our 92 SWCDs are proud to be an important component of Indiana's Conservation Partnership (ICP). The partnership provides leadership, information, technical assistance and education on conservation resource issues. Other ICP members are the:

- Indiana Department of Environmental Management,
- Indiana Department of Natural Resources,
- Indiana State Department of Agriculture Division of Soil Conservation,
- Purdue Cooperative Extension Service,
- State Soil Conservation Board,
- USDA Farm Service Agency, and the
- USDA Natural Resources Conservation Service.

Soil and water / quality of life . . . whether you live on a farm, in a small town, or in the heart of an urban center, healthy and sustainable communities begin with the wise management of our natural resources. That is why the Indiana Association of Soil and Water Conservation Districts is pleased to be part of the Indiana Woodland Steward and the Woodland Steward Institute promoting the wise use of our Hoosier forest resources. These are important conservation best management practices in urban and agricultural land settings.

For more information on the IASWCD and our local Soil and Water Conservation Districts, contact the Association at 317.692.7325 or at www.iaswcd.org.

Jennifer Boyle Warner is the Executive Director for IASWCD.

Our "Hoo"sier Owls

By John B. Dunning and Jeff Riegel

Owls are among the most intriguing animals native to Indiana. They have been celebrated in story from the myths of the early Greeks to the books of Harry Potter. Owls are common across much of the state, but are relatively unknown, probably because of the nocturnal habits of these birds. But since they are efficient predators of mice and rats, among other things, owls are very useful birds to have around.

Three species of owls are common year-round residents in Hoosier forests. The largest of these is the great horned owl, one of the dominant predators of our forests. Most people are surprised to learn that the great horned owl is as common as the familiar red-tailed hawk even though the owl is much less likely to be seen.

Barred Owl. PGC photo/Hal Korber

Great horned owls hunt in open areas but nest in large trees, where they take over a nest abandoned by a hawk, crow or heron. They are common where both woods and fields mix. The owls start breeding in January and February, adding new sticks to an old nest and laying a clutch of three eggs. Most species of owls nest very early in the year so that there will be a lot of easily caught prey in the form of young mammals and birds when the owl chicks are learning to hunt on their own. Many nests of the great horned owl are in snags or trees with broken tops, therefore retaining some of these forest features will provide good nesting spots for this dominant bird.

A second species of large owl is found in the larger woodlands of Indiana. The barred owl is most common in the interiors of forests and spends less time along the woodland edge. One major reason for this is the presence of the great horned owls, which will kill and eat a barred owl. Barred owls usually nest in the cavities of deciduous trees, laying their eggs in deep winter. Their dependence on tree cavities means that barred owls are likely to respond well to land management activities that retain large trees on a property and increase the number of snags with cavities. They also do well when there are forest patches of a variety of ages on a property, in addition to the older trees that provide nest sites.

Eastern screech-owls are the smallest resident owl in the state. They nest in small tree cavities and readily make use of nest boxes made especially for them. More than the other two species, screech-owls are found in suburban backyards, urban parks and on college campuses – anywhere there is a variety of trees and shrubs. Screech-owls feed on small prey such as insects, songbirds and mice. They breed later than do the big owls, and have active nests in March and April. In addition to nest boxes, these owls will use old cavities excavated by northern flickers, tree holes created by storm damage, and hollow trunks of snags. Their ready use of a wide variety of cavity types makes our screech-owls a prime beneficiary of snag retention and other habitat improvement activities.

Indiana's smallest owl does not breed here, but its numbers during the fall migration can be in the

thousands statewide. The northern saw-whet owl breeds from the most northern states on into Canada and migrates from there when food becomes scarce. "Swets" are an irruptive species, meaning their populations rise and fall dramatically from one year to the next on a roughly four-year cycle. A group of volunteer researchers in Yellowwood State Forest began studying the movements of these owls in 2002 as part of the larger Project Owlnet (www.projectowlnet.org). Their first year produced 71 owls on just one ridge in Yellowwood. Since then, the annual numbers have averaged around 70, but nearly 200 owls were captured and banded on that same ridge in 2007. The low point in the cycle was in 2009 when only nine owls were captured. There are now eight such banding stations scattered around Indiana. Brookeville Reservoir had the largest number of captures in 2009 with 32; while an Indianapolis station tallied only six. Some northern saw-whet owls winter in Indiana where forests with an open understory provide good foraging opportunities throughout the winter months.

The rarest owl in Indiana is, paradoxically, the species with the largest geographic range. Barn owls are found across the globe, but in the Midwestern United States their populations have declined dramatically. The species is considered endangered in Indiana. Barn owls originally nested in tree cavities, but when early settlers built barns and other farm buildings, the owls were quick to adapt. They are not limited to barns however, as recent Hoosier nests have been found in old churches, silos, and within the

Barred Owl. PGC photo/Hal Korber

walls of abandoned buildings. To be suitable, human structures must have openings that allow the owls to fly in and out and an interior area that is undisturbed and big enough for the nest. The biggest factor in their decline has been changing agricultural practices. Barn owls hunt in open areas such as pastures, but do not use row-crop fields. As Hoosier farmers converted pastures to corn and soybean, the barn owl lost its hunting grounds. Farmers in the southern part of the state that still retain some open grassy fields on their land can contact the state Department of Natural Resources to have a barn owl nest box added to their outbuildings if they don't have appropriate nest sites.

John B. "Barny" Dunning is a professor of wildlife ecology in the Department of Forestry and Natural Resources at Purdue University. Jeff Riegel is a field project supervisor for the Department of Forestry and Natural Resources at Purdue University.

Benefits of Snags in Your Woods

By Richard Winstead

Woodland owners are often encouraged to remove dead or decaying trees since they have little market value, but these trees have high wildlife value. Snags are dead or partially dead standing trees. They provide cavities for nesting and resting, perches for hunting and displaying, and an abundant supply of food for insect eaters. Many of these services are also provided by live cavity or den trees.

The value of snags and cavity trees cannot be overlooked in a forest because of the role they play in the lives of many animal species. For example, a total of 89 vertebrate wildlife species in Missouri use cavity trees or snags for all or part of their life cycle. In Pennsylvania, there are over 35 species of birds and 20 species of mammals that use snags at some point in their life cycles. In addition, many species of reptiles and amphibians use the cavities in snags. Snags are also very important to invertebrate and fungi species.

In Indiana, snags are important for many species of wildlife. Screech owls and barred owls use snags and den trees for nesting and resting. Gray and fox squirrels, deer and white-footed mice, gray treefrogs, southern flying squirrels, raccoons, pileated woodpeckers, red-headed woodpeckers, and wood ducks utilize snags and den trees for foraging, nesting or shelter. Numerous songbirds including the eastern bluebird, nuthatches, chickadees, and wrens utilize snags and den trees for part of their life cycles. Osprey, kingfishers, flycatchers, and other birds use snags along the water as feeding perches.

Different species of wildlife prefer different types and sizes of snags in a variety of habitats. Some species prefer hard snags (dead or partially dead trees with fairly sound wood and some limbs remaining). Others prefer soft "punky" snags (in advanced stages of decay and rarely with limbs). Wood ducks and other large birds require large snags simply because they need large cavities in which to nest. Small species, such as the tufted titmouse, forage and nest in cavities inside smaller snags. To accommodate a variety of species, landowners should try to maintain several types and sizes of snags.

In the east, most snags do not stand for long periods of time, often falling within a decade of death. Because of this ephemeral nature, forests should be managed to maintain consistent availability of suitable snags over time. The best method to provide snags for wildlife is to retain existing snags in places where they will not create a dangerous situation for people using the nearby area for outdoor activities like hiking or cutting firewood. When the abundance or distribution of snags is inadequate or if particular types of snags are desired, snags can also be "created." Creating snags involves killing trees so that they remain standing. Success depends on the method used, the tree species you are trying to treat, the current health of the individual tree, and the specific site characteristics such as the presence of forest pests that may accelerate the tree's death. Consider topping or girdling some large defective (cull) trees to create snags.

Photo by Brian MacGowan

Management should place emphasis on larger diameter snags because they generally remain standing and retain bark longer, and support a larger variety of wildlife. As many hardwoods as possible that have natural cavities or cavities excavated by woodpeckers should be retained. Favor less-decayed snags over more-decayed snags, favor tall snags over short snags, and favor snags with greater bark cover over snags with little bark cover.

Retention of leave trees and snags during timber harvesting provides habitat for wildlife that require perches, tree cavities, or bark-foraging sites as the surrounding forest regenerates. Forestry practices that eliminate these opportunities in snags and dead wood are detrimental to a diverse array of wildlife species and should be avoided.

Richard Winstead is a Supervisory Wildlife Biologist with the USDA Forest Service and is stationed at the Hoosier National Forest.

In My Opinion: Certification and the Hardwood Industry

By Ray H. Moistner

Last year in the Woodland Steward, I authored an article on forest certification, and what it means to the landowner. The article touched on your role as a private landowner in supplying the valuable resource to the state's largest agricultural industry. At the time of that article, the industry was still very much reluctant to embrace certified wood. They still reject the notion of an independent third party verifying what the U.S. Forest Service and the individual state forestry divisions already acknowledge – that U.S. hardwoods are sustainable and legally harvested. It remains questionable to tax landowners, loggers, and manufacturers just to affix a seal stating as much.

The industry boils at the notion that we need to do even more to prove that we are "green," while the major certification schemes still discriminate against hardwoods. Hardwood people know that theirs is the greenest of products, but have struggled to get that message out.

Over the last 20 years, industry has watched certification programs gain momentum, but has not been able to unify to the degree necessary to stay out of the mud hole in this game of environmental tug-of-war. Meanwhile, those seeking to make a buck off of LEED-designed buildings have joined the opposition movement, and helped force costly certification on taxpayers and construction projects.

Throw into the mix a dismal housing market, and an economy that has been hard on the hardwood industry, and you have seen more and more companies reluctantly sell some form of certified wood, rationalizing that any market niche is worth pursuing in these tough times. Every day it seems to become easier to sell certified wood, however "diluted," as long as one is willing to pay the ransom.

There are many fronts on which to fight the certification monster, but they all will require a common denominator: we have to be able to get our message out in a widespread way. No longer can we accept 30 mini-efforts from thirty different hardwood organizations. The time has arrived, and there is an effort underway for a hardwood check-off program, which could raise the funds needed to get our message out to the masses. The first major industry meeting about the check-off program was held at the IHLA convention in February.

An educated consumer, as well as enlightened architects and designers can go a long way toward getting hardwoods their due. One can imagine a doctor on a TV commercial talking about reduced allergies among children in homes with hardwood floors instead of carpet. Sustainable hardwoods, available from thousands of local sources, should become the material of choice in green projects. The public deserves to know we aren't running out of trees and the hardwood industry is a huge part of our economic engine. High school students should be proud to announce they are pursuing careers in an industry with so many different types of opportunities.

Check-off programs have done wonders for other products, and made their slogans automatically recognized by the public. We "got milk" because we know "it does a body good." We know pork is the "other white meat" and that beef is "what's for dinner."

The group of leaders who are working on this initiative have raised the funds necessary for the initial phase, and have submitted the program to the USDA for approval and oversight – a requirement of every check-off program. Once the USDA determines eligibility, the program will go to the pool of affected hardwood manufacturing companies for a referendum. (A key hurdle was cleared when it was determined that manufacturers, not landowners or loggers, would be the group who paid the check-off.) Mills with over $1 million in annual sales, as well as large concentration yards and unfinished flooring manufacturers, all comprise the initial group identified to pay into the program. There is a potential of about 1,200 companies in all.

A check-off program and certification seem to be entirely different animals, yet the ability to get a unified message to the public has been at the heart of almost every challenge the hardwood industry faces. Despite its insistence that certified hardwoods are costly to landowners and everyone else, and not really needed in the sustainable forests of the United States, the industry applauds the efforts of the Indiana Division of Forestry to seek affordable solutions for procuring certified forest products.

We hope the landowners will work in unison with the manufacturers, continuing a mutually-beneficial relationship between the suppliers and the companies who meet the demands. The best way to support the hardwood industry is to be a vehicle for delivering the message of sustainability, and by continuing to produce high-quality hardwoods and manage your forestland for all uses.

Ray Moistner is the Executive Director for the Indiana Hardwood Lumberman's Association. For more information about the IHLA, visit www.ihla.org.

Forest Certification on Private Lands

By Brenda Huter

Do you know where your wood products come from? Does it come from a forest that is being plundered or is it from a forest that is being well managed for timber and the other forest resources? Forest certification helps consumers answer those questions. Certifying organizations (American Forest Foundation, Forest Stewardship Council-FSC) develop standards for good forest management. The standards not only cover how much timber can be removed but other social and ecological factors such as special species and communities, worker safety, water quality, and pesticide use. Landowners who can demonstrate that they are meeting all of a certifying organization's standards can get their forest certified under that organization and sell forest products with that recognition. Having a forest certified may open new markets for the timber harvested from it. In addition forest certification is usually required for selling carbon credits.

Certification is not limited to the forest. Forest industry companies from loggers to veneer companies can be certified. Their certification standards have to do with tracking the wood from the forest to the final product. As long as each owner of the wood in the manufacturing process is certified by the same certifying organization, the final product can be certified. This is called the chain of custody (Figure 1). If at some point, the material is sold to someone who is not certified, the chain is broken and the wood is no longer certified (Figure 2).

There are several ways a private forest owner can get their land certified in Indiana: do it on your own, become a Tree Farmer, or enroll in the Classified Forest & Wildlands Program.

Landowner's can seek forest certification independently by contacting the certifying organization. The landowner will then need to hire a certification auditor to come the property to verify that their forest and its management meet all certification standards. After receiving certification, the landowner will need to pay to have the auditor come back each year for a surveillance audit. The cost to become certified and retain the certification can be in thousands of dollars. For large landowners this may be possible, but for small landowners it is usually cost prohibitive.

Another option is to become a Tree Farmer. The American Tree Farm System (http://www.treefarmsystem.org/) is a program of the Family Forest Foundation that focuses on stewardship of private forest land and ensuring that landowners met the Family Forest Foundation's Standards of Sustainability. States have tree farm committees; Indiana has the Indiana Tree Farm Committee. Landowners can apply to the state committee to become an ATFS member (http://www.fnr.purdue.edu/inwood/indiana%20tree%20farm.htm). The committee will send a professional forester to inspect the property and determine if the forest is eligible. As a Tree Farmer, landowners are certified under the American Tree Farm System (ATFS). In addition, ATFS has received recognition from Programme for the Endorsement of Forest Certification (PEFC), an international certification organization. Tree Farmers also are PEFC certified. Certification audits are done by the state committees and the national ATFS. Cost to the landowner is minimal.

The final option is for landowner to enroll their forest in the Classified Forest & Wildlands Program (CFW) (http://www.in.gov/dnr/forestry/4801.htm). CFW is run by the Indiana Division of Forestry. The program has a 10 acre minimum. To enroll, landowners must meet with a district forester, a Division of Forestry employee that

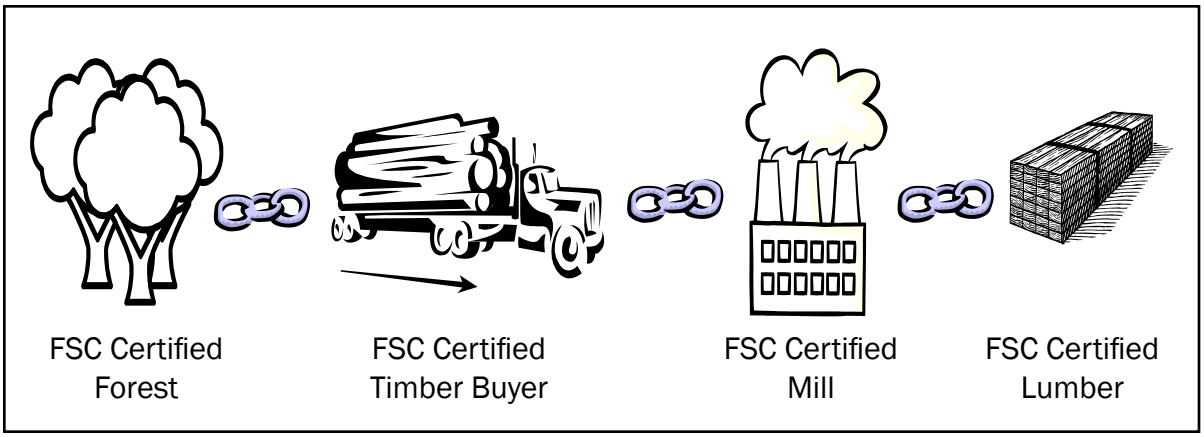

Figure 1 - In a **complete chain of custody**, the wood material moves from certified owner to certified owner all the way to the final product.

works with private landowners. The district forester will determine if the land is eligible for the program and work with the landowner to develop a management plan. There are costs associated with enrolling in the program: description of land being enrolled written by a surveyor ($100- $400) and recording cost ($30). Enrollment in the program reduces the landowner property tax assessment to $1/acre, increases the landowners' access to district foresters, and provides the landowner with ATFS and FSC forest certification (License No. FSC-C071226). There is no additional cost for the certifications; it is a benefit of CFW enrollment. Initially when the Classified Forest & Wildlands Program became certified in 2006, landowners were given an opt-out (if you had 10 acres of forest enrolled you were certified unless you requested to not be certified). Landowners enrolling in the program now decide to be certified or not at time of enrollment. Being certified is voluntary, and landowners can decline the certification benefit at anytime without affecting their classification status.

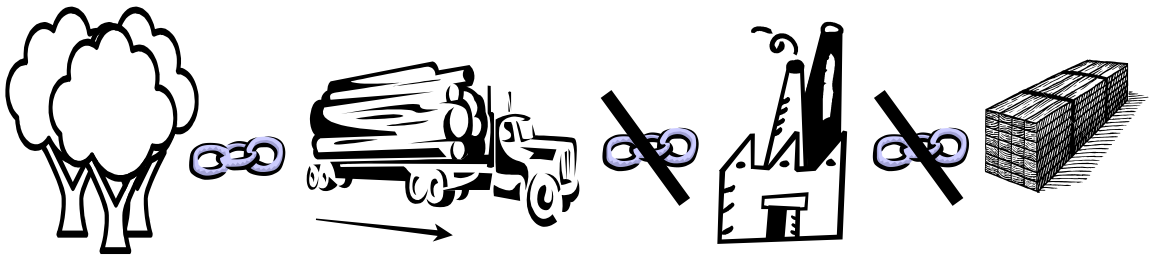

Figure 2 - A **broken chain of custody** occurs anytime the certified material is passed to an uncertified owner or the certified wood is mixed with uncertified wood.

When a CFW landowner decides to sell timber, they must follow their management plan and any harvest recommendations in the plan. In addition, the landowner needs to make sure that the harvest does not cause excessive erosion. When a certified CFW landowner decides to sell timber, there are some additional steps. First they need to contact their district forester. The district forester will help the landowner through the process. The timber harvest must have a contract, and that contract must address certain topics: listing of species sold with volumes, certificate numbers, worker safety, compliance with laws, water quality protection requirement (BMPs). Once the timber is sold, the district forest will hold a preharvest conference with the landowner or representative, consultant forester if applicable, and logger. The purpose of the preharvest conference is to discuss plan for the harvest so everyone has the same understanding. When the harvest is going to start, the district forester needs to be contacted. The district forester will visit the active harvest site. If any problems are noticed, the district forester will let the landowner, the consultant forester, and logger know so they can be fixed before the harvest is finished. After the harvest is finished, the district forester will do a final check of the property and let the landowner know of any problems.

Forest certification provides private forest owners recognition of good forest management and opens new markets for their timber. The Classified Forest & Wildlands Program and the American Tree Farm System through the Indiana Tree Farm Committee make it possible for small private forest owners have their forest certified at minimal cost.

Brenda Huter is the Stewardship Coordinator for the Indiana Division of Forestry.

Wood-boring Insects Threatening Indiana Hardwoods

By Nicole VanDerLaan-Hannon and Matthew Ginzel

Indiana has over 9 million acres of forest and timberland combined, and approximately 87% of the timberland in the state is in private ownership. Unfortunately, the sustainability of this resource is threatened by a litany of native and exotic insect pests, and increases in global trade will only further jeopardize the quality and productivity of Indiana's forests. These insects are capable of reducing tree growth, causing stem deformities or a reduction in timber grade, affecting seed production, and ultimately killing a tree. This article is intended to provide landowners and forest managers with a brief overview of four invasive wood-boring beetles that are either currently found in Indiana or have the potential to enter the state.

Emerald Ash Borer (EAB, *Agrilus planipennis*); native to Asia and currently found in northeastern U.S. and spreading throughout Indiana.

Hosts: Ash, attacks crown first then moves down trunk of tree, can colonize trees greater than 1" in diameter.
Life Cycle: Adults are metallic-green (1/3" long) and emerge in late April (Fig.1), leaving D-shaped exit holes in the bark. Larvae are creamy-white and have a flattened body with bell-shaped segments (Fig. 2). They feed in the phloem creating S-shaped galleries. It can take up to three years for symptoms to appear following initial colonization.
Signs of Infestation: D-shaped exit holes, vertical splits in the bark, crown dieback, epicormic shoots, flagging and yellowing leaves. More information on EAB can be found at www.extension.entm.purdue.edu/EAB/.

Fig. 1. Adult emerald ash borer. *(David Cappaert, Michigan State University, Reprinted with permission from bugwood.org)*

Fig. 2. Emerald ash borer larva. *(David Cappaert, Michigan State University, Reprinted with permission from bugwood.org)*

Fig. 3. Life stages of the Asian longhorned beetle. *(Kenneth R. Law, USDA APHIS PPQ, Reprinted with permission from bugwood.org)*

Asian Longhorned Beetle (*Anoplophora glabripennis*); native to Asia and currently found in New York, New Jersey, Massachusetts and was recently eradicated in Illinois.

Hosts: Primarily maple and capable of attacking a variety of hardwoods.
Life Cycle: Adults (1-1 ½" long) emerge from July to August. They are primarily black in color with white spots on their backs and white bands on their elongate antennae (Fig. 3). Adults feed on leaves and twigs of host plants. Mated females chew oval depressions in the bark where they deposit eggs. Young larvae are creamy-white with dark brown mouthparts and feed on phloem. As the larvae grow, they bore deeper in the heartwood. It may take 1-2 years for larvae to develop into adults.
Signs of Infestation: Oval depressions chewed in the bark, sap exuding from 1/4" or larger round exit holes, "frass" or coarse sawdust near exit holes and at the base of trees, crown dieback, yellowing leaves and weakened branches. For more information, visit www.beetlebusters.info.

Black Stem Borer (*Xylosandrus germanus*); an ambrosia beetle from Asia, presently found throughout the eastern US including Indiana.

Hosts: Capable of infesting over 200 tree species including chestnut, black walnut, butternut, oak, black cherry, hickory and birch.
Life Cycle: Adults are dark brown (approx. 1/10" long) and emerge in May (Fig. 4). Fertilized eggs become females and unfertilized eggs become males. Flightless males remain inside the host and females mate with either male siblings or male offspring in order to produce fertilized eggs. After locating a host, females chew brood chambers in the heartwood and introduce a symbiotic fungus or "ambrosia" which grows on the walls of the chamber. Larvae feed solely on the fungus. This borer is capable of

Fig. 4. Adult black stem borer. *(Pennsylvania Department of Conservation and Natural Resources-Forestry Archive, Reprinted with permission from bugwood.org)*

colonizing healthy trees.
Signs of Infestation: Entrance holes 1/10" in diameter, epicormic shoots and long strands of sawdust or "frass" protruding from holes resembling toothpicks (Fig. 5). For more information, please visit www.extension.purdue.edu/extmedia/FNR/FNR-227-W.pdf.

Fig. 5. Sawdust and frass pitch tubes from black stem borer adult. *(Beat Forster, Swiss Federal Institute for Forest, Snow and Landscape Research, Reprinted with permission from bugwood.org)*

Fig. 6. Adult walnut twig beetle, gallery and staining from associated *Geosmithia* fungus. *(Whitney Cranshaw, Colorado State University, Reprinted with permission from bugwood.org)*

Fig. 7. Cankers associated with the *Geosmithia* fungus. *(Ned Tisserat, Colorado State University, Reprinted with permission from bugwood.org)*

Walnut Twig Beetle (*Pityophthorus juglandis*); a bark beetle native to the western U.S. where it has killed large numbers of black walnuts. The beetle has recently been found in Tennessee.

Hosts: Prefers black walnut, but capable of infesting other walnuts.
Life Cycle: Adults emerge in May and are present throughout October. They are yellowish-brown and are 1/10" long (Fig. 6). Larvae are creamy-white and feed under the surrounding bark. Adults introduce a *Geosmithia* fungus that stains the wood and creates multiple cankers in the bark – a condition called "Thousand Cankers Disease".
Signs of Infestation: Entrance holes approx. 1/10" in diameter, dark amber stains in the wood and cracks of the bark, multiple brownish-black cankers, early signs of flagging and crown dieback (Fig. 7). For more information, please visit www.ppdl.purdue.edu/PPDL/pubs/ walnutthousandcankersdisease/pdf.

Control: Chemical control is rather ineffective against wood-boring insects because they spend the majority of their lives concealed beneath the bark of trees, physically protected from sprayed insecticides. Nevertheless, damage by many of these insects can be minimized by maintaining a healthy tree stand through proper sanitation, such as removing dying and diseased trees, and thinning to reduce stress. If landowners or forest managers find one of these insect pests or signs of infestation they are encouraged to consult their local Department of Natural Resources or University Extension personnel to confirm the identity of the insect and for current management tactics and control measures.

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Recommended Resources:

Barnd, B. D., Pijut, P. M. and Ginzel, M. D. (2008) *Insects Affecting Hardwood Tree Plants*. Purdue University Extension. FNR-227-W. (http://www.extension.purdue.edu/extmedia/FNR/FNR-227-W.pdf).

Cranshaw, W. and Tisserat, N. (2010) *Pest Alert: Walnut Twig Beetle and Thousand Cankers Disease of Black Walnut*. Colorado State University. (http://www.ext.colostate.edu/pubs/insect/0812_alert.pdf).

United States Department of Agriculture (2006) *Invasive Species and Forest Health Factsheet*. Animal and Plant Health Inspection Service. (http://www.aphis.usda.gov/publications/ plant_health/content/printable_version/fs_invspec_forest_health.pdf).

Deer Reproduction and Localized Management in Indiana

By Chad Stewart

It seems hard to imagine now, but there was a time when there were no deer in Indiana. Actually, that time was not long ago. The last reported deer was seen in 1893, and Indiana remained "deer-free" until 1934 when the Division of Fish and Game (now Division of Fish and Wildlife) reintroduced deer into southern Indiana. This reintroduction effort lasted for almost 9 years until 1942, releasing a total of 296 deer. By 1951, the herd was estimated at 5,000 animals and the first hunting season in 58 years was implemented. Hunters that year harvested almost 1,600 deer. Today, only 60 years since deer hunting returned to Indiana, the deer harvest exceeds 130,000 animals a year, and should be lauded as one of the major accomplishments of modern wildlife management. Unfortunately, their increasing numbers are causing conflict for many Indiana residents.

Deer are extremely productive animals. Deer can obtain sexual maturity at six to seven months of age or once they reach 80 pounds, which can easily be achieved living in fertile farmland habitat. Female deer often give birth to between 1 and 3 fawns, with older does more likely to give birth to 2 or 3 fawns than younger deer. Again, habitat plays a key role, and the highly nutritious diet of deer in Indiana favors increased reproduction. Female deer are capable of reproducing their entire lives; there is no age where their ovaries become inactive.

Deer have few predators in Indiana. Their primary predator is man, and hunting or collisions with vehicles are the most likely reason a deer will die in Indiana. Other natural predators such as coyotes and bobcats, may prey on smaller deer or sick deer, but their diets are largely composed of small mammals. Domestic dogs can and will run and kill deer, and may impact deer populations locally in certain areas, but do not appear to be significant factors at controlling deer at the statewide level. The ability for deer to reproduce early and late in life, have multiple offspring each year, and few natural predators, all within ideal habitat, lends itself to growing populations.

photo by Mike Kerper

The DNR does not estimate deer populations across the state. Some states still estimate their total annual deer population using models supplied with biological data. These data include, but are not limited to, fawn sex ratio, fawn:doe ratio, buck recovery rate, adult sex ratio, etc. It's arguable the cost to collect this data is not equal to the value or usefulness of the estimate. In modern deer management, knowing the actual number of deer is not as important as knowing how the deer herd is trending. Indiana uses variables including antlered harvest, deer-vehicle collisions, damage reports received, and various surveys to monitor population trends. Currently, those trends are all showing that the deer herd has steadily increased over the previous 10 years. With fewer hunters predicted in the forecast, it will become increasingly difficult to continue to manage Indiana's deer herd in the next 20 years or so.

The DFW continues to liberalize deer hunting regulations in an effort to reduce Indiana's deer population, but simply allowing more deer to be harvested will not translate into a lower deer population if such regulations are not liberally employed by the majority of landowners across Indiana's vast rural landscape. Over 95% of Indiana is privately owned, and landowners have

historically been more restrictive and selective in the harvest of deer than what the DFW legally allows. More emphasis on increased hunter access and antlerless deer harvest will be necessary to bring about herd reduction.

Landowners wishing to maintain a deer herd balanced with respect to their surrounding habitat should strive for hunting success rates of 20% (H/E = 0.20; see Table 1) for firearm efforts and 10% for archery efforts. An "effort" is defined as one attempted day to harvest an antlerless deer, and the number of firearm efforts should be equal to 1/5 the amount of total permanent acreage. Since 1993, these rates have been successfully used by Indiana State Parks to bring about the recovery of certain palatable plant species. While these success rates have not been tested on private lands, they serve as a reasonable start for landowners. Hunting on private lands is different because ownership parcels are smaller, hunting effort is usually spread out over the season, and landowners are likely more efficient hunting their own properties. One antlerless firearm effort can be replaced by 5 archery antlerless efforts if spacing throughout the property and season prove to be difficult. The calculation of the success rate should only include the harvest of antlerless deer, not antlered deer.

In order to implement these recommendations, it may be necessary for the landowner to increase the number of hunters currently allowed on the property. The DFW has initiated a Hunters Helping Farmers program whereby deer hunters interested in helping landowners harvest antlerless deer during the deer hunting season can register. This list can be attained through your local district biologist, who can help make recommendations on hunting pressure and managing deer conflicts on your property.

When managed properly, deer can provide a valuable recreational and aesthetic component to any landscape. Like most things, however, when they become abundant, they can provide conflicts and negatively affect their surroundings. It is everyone's mission to help keep deer as a revered, and not reviled, species on the Indiana landscape, but this will require sacrifices by both landowners and hunters to achieve.

Chad Stewart is a deer biologist with the Indiana Division of Fish and Wildlife.

Table 1. A comparison of annual **antlerless deer** harvest on a theoretical 40-acre property. Thirty acres of which are considered permanent deer habitat, which includes grasslands and woodlands but not row-crop agriculture. (H = antlerless deer harvested; E = one attempted day to harvest an antlerless deer; 5 archery efforts equal 1 firearm effort)

Year	Harvest (H)	Effort (E)	Success (H/E)[1]	Comment
2007	5	7 (all firearm)	.71	Hunters had great success this year, taking several antlerless deer on the property. The high success rate shows that the deer population is high or the property is used heavily by deer, and more efforts are needed next year to balance the deer herd with the available property.
2008	5	14 (12 firearm+ 10 archery)	.36	The harvest this year remained the same as 2007, though efforts doubled. The H/E dropped from 2007, showing progress at reducing the deer herd.
2009	1	8 (6 firearm + 10 archery)	.13	Data from 2009 shows that the deer herd has been reduced. Even though more deer were harvested in 2010, the harvest per effort remained in balance – at or near 20% success rate. Similar efforts should be expected to be placed in 2011 to keep the deer herd balanced on this property.
2010	2	8.4 (7 firearm, 7 archery)	.24	

[1] Success = Harvest / (Firearm Efforts + (1/5) *Archery Efforts)

Indiana Tree Farm 2010 Awards

Logger of the Year

Tri-State Timber LLC of Bloomington was recently awarded the Logger of the Year by the Indiana Tree Farm Committee. Chair Bob Burke recognized owners Brett Franklin and Rusty O'Neal for the company's good logging practices and attention to safety. Tri-State produces 10-12 million board feet annually.

Consultant forester Rhett Steele, who nominated them, summed it up, "Their workmanship in the woods leaves the land in a great condition for future timber production and shows their devotion to the resource."

Maintaining the integrity of the existing forest stand is an important part of an outstanding logging operation. Directional felling keeps harvested trees from damaging the remaining crop trees. Logs are skidded carefully so future crop trees are not bumped and scarred. Cull trees are harvested where safe to do so; otherwise they are marked for girdling.

Best management practices are used to prevent erosion. Those include grading logging roads, seeding them when necessary, and creating waterbars to slow erosion on slopes. To maintain safety and quality of the operation, employees are trained on best management practices, cutter I and II, first aid and CPR. The staff includes three foresters with silviculture training. In addition to their logging work, they have reforested with over 20,000 native seedlings in the past four years.

Indiana Outdoor Lab of the Year

The Dora Bex Nature Center at Fayetteville Elementary School is the 2010 Outdoor Lab of the Year. Fayettevillle Elementary School is in the North Lawrence Community School District in Lawrence County. The Nature Center is named after retired teacher Dora Bex, who developed the outdoor facility which includes woods, a prairie, a successional area, a wildlife plot, an amphitheater, and a new pavilion. With the help of Sycamore Land Trust, the students have developed a trail with interpretive signage. The Nature Center is utilized by almost all of the teachers at Fayetteville Elementary.

The Brothers Wehr: Indiana Tree Farmers of the Year

Brothers Dan and Stan Wehr, though following different career paths, found a common interest in forestry, wildlife and good land stewardship. They were recently presented the Robert D. Burke Tree Farmer of the Year Award for their exemplary woodland management.

The Wehr's own approximately 360 acres of forest and wildlife habitat. Forests are mixed species, but predominately white oak and even rare trees such as black hickory, butternut, blackjack oak, and American chestnut.

Qualifying tracts are in the Indiana Classified Forest & Wildlands program and American Tree Farm System and they have an Indiana Demonstration Forest to share their successes and knowledge. They have toured over 200 people on the property and hosted another 500 visitors during two field days.

The Wehr's are active members of several organizations; IFWOA, Lincoln Hills RC&D Forestry Committee, Walnut Council, Quail Unlimited and Conservation Clubs. They try not to miss any opportunity to advocate invasive species management, BMPs, and sustainable forestry issues.

Their main goal is to teach their grandchildren to appreciate nature and to pass the land on better than they found it. Stan summed it up: "It is well understood, the better you treat your land, the better it treats you. As a testament, our grandchildren would rather go to "The Farm" than do anything else."

Management of the Tree Farms

The properties are long-term investments in land and timber. It is understood that nature will grow trees, but nature needs a bit of help to maximize quality. TSI and proper spacing are keys to this process, as well as working with what nature has provided. Their Crawford County land was extremely well-managed over the years by the original owner and the Wehr's have continued intensive management.

Nearby, Stan has transformed other forestland through timber stand improvement (TSI). Management tools such as TSI, vine control, improvement cuts, and post harvest TSI are used to improve forestlands. Harvests have concentrated on cull tree removal, thinning to improve species composition and stem quality, and mature tree harvest. They have been enrolled in TSI cost-sharing programs under EQIP, FLEP, and WHIP.

Aesthetics are very important as well as preserving special features such as caves openings, springs, cliffs and features in the barren and glade. Twenty-one rare or endangered plants in the barren have been identified. Controlled burns is one management tool recommended to help rejuvenate the native plants. Special sites are all over the properties and all are protected.

Stan and Dan Wehr discuss their woodland goals at their October field day.

Wildlife Management

Since several family members hunt, game species are especially important. They have approximately forty acres set aside for wildlife habitat. Deer, turkey and squirrel are well-established. The emphasis has been to increase the rabbit population and attract quail. Food plots, strip disking, and prescribed burning are practices done to promote wildlife habitat. Ponds have also been built for fish and wildlife. During the last three years, they have participated in the Game Bird Habitat Development Program, which offsets many of these costs of enhancing wildlife habitat.

Education and Training

Over the years the brothers have attended numerous seminars and trainings. Many have been sponsored by the Indiana Forestry and Woodland Owners Association (IFWOA), the State of Indiana, or Purdue University. In 2010 the Wehr's were one of four finalists for the coveted Charles Deam Award. Much of their education began with the Purdue eight-week course, "Forest Management for the Private Woodland Owner." They work regularly with their district forester Mike Coggeshall who provides direction as needed.

Management Challenges and Successes

The Wehr's #1 challenge for the next many years will be controlling invasive species. They feel their properties can be managed but if their neighbors do not join the fight, it may be a losing battle. Highway rights-of-way are of particular concern. This is where invasives seem to initially become established.

Over several years, Stan has done work to control tree of heaven, stilt grass, bush honeysuckle and multiflora rose.

Says Stan, "We believe the "Forester of Tomorrow" will be carrying a back pack sprayer instead of a chain saw."

CRP General Signup Announced

The USDA's Farm Service Agency in Indiana recently announced a general signup for the Conservation Reserve Program (CRP) will begin on March 14, 2011 and continue through April 15, 2011. During the signup period, farmers may offer eligible land for CRP's competitive general signup at their county Farm Service Agency (FSA) office. For more information, visit www.fsa.usda.gov/crp.

In the Community

Local SWCDs at work: The 27-acrea Craddock Wetland, a project of the Delaware County SWCD is located in a defunct industrial area of Muncie along the Cardinal Greenway and the White River, and adjacent to a large urban area. It is accessible to the general public and features wetlands, mesic prairie areas and upland woods – all easily observed from the wooden boardwalks that wind through the Preserve. This reclaimed land along the White River corridor is fast becoming a way station for migratory birds and a haven for other wildlife. **Photo courtesy of the Delaware County SWCD.**

Learn more about conservation partnerships on page 3.

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