Volume 5 Issue 3
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Kentucky Woodlands Magazine

Woodland Certification
Have You Considered Shagbark and Shellbark Hickories?
Kentucky's Least Wanted Tree Pests

Kentucky Woodlands Magazine

Volume 5 Issue 3

Promoting stewardship and sustainable management of Kentucky's non-industrial private forests.

In this Issue...

From the Editors of the Kentucky Woodlands Magazine:

Woodland certification is becoming a growing issue in Kentucky. Forest industry and even conservation organizations such as The Nature Conservancy are looking at woodland certification as a means of enticing you into conservation easements while allowing you to capitalize on timber and other income opportunities. Certification is a prerequisite for carbon market programs here in Kentucky and has entered into the biomass discussion. The featured article provides an introduction to certification and offers perspectives on certification from Joe Ball, Tree Farmer and past president of Kentucky Woodland Owners Association, and John Smith the current president of Kentucky Forest Industries Association.

This issue also contains information on hickory nut production, treatments for hemlock woolly adelgid and emerald ash borer, updates on Kentucky's latest forest inventory and a host of other issues we hope you will find interesting and useful. On behalf of the Kentucky Division of Forestry and the University of Kentucky, thanks for doing all you do for the woodlands of Kentucky.

Jeff Stringer,
University of Kentucky
Department of Forestry

Diana Olszowy,
Kentucky Division of Forestry

About the Cover:

The cover photo from Franklin County (Bald Knob off of Harp Pike) is a reminder of the 2009 ice storm that covered much of Kentucky. The photo was supplied by Wesley Turner, Environmental Control Supervisor in the Kentucky Division of Waste Management's Superfund Branch. Wesley is an environmental geologist by training and a mixed media artist by choice. For more information about addressing ice damage to your woodlands please visit www.ca.uky.edu/forestryextension/kyicedamagehome.php

This image (of a stream in Woodford County) was supplied by Tim Brown, Field Operations Branch Manager with the Kentucky Division of Forestry.

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Woodland Certification

by Jeff Stringer, Christopher Reeves, Bobby Ammerman

Certification has emerged as one of the most hotly debated aspects of woodland ownership. While woodland certification[1] is a relatively new phenomenon, certification of products and services is something that has been around for a long time and as consumers we are familiar with. USDA has certification for meat and organic products, movies have a certified rating provided by the Motion Picture Association of America, and electrical appliances carry the Underwriters Laboratory (UL) certification and label. In all of these cases, certification means that the products carrying the certification label meet a set of standards and as consumers we know what to expect. We understand that if an electrical device has a UL label on it, it has been constructed to a set of standards that are designed to make it safe.

Woodland certification is similar, in that it ensures that if a woodland is certified, it means that it is being managed consistent with a set of standards. Further, if a forest industry buys timber from a certified forest and makes a finished product such as paper or flooring, the industry can place a certified wood label on the product. This label means that all or a portion of the wood that was used to make the product came from a certified woodland that was managed according to sound forestry principles that protect the environment.

Public concern with woodlands increased dramatically in the 1980s and '90s as activists shed light on the uncontrolled logging occurring in the rainforests of Central and South America and the harvesting of old growth trees in the Pacific Northwest. These concerns surfaced with the most urgency in Europe and spread into the United States as concern intensified over the logging of old growth timber in the Pacific Northwest. In response to these concerns, a number of organizations developed a certification system that was built around standards that they believed embodied sound woodland management, protected the environment and addressed social concerns they perceived to be important to the public.

The interest in woodland and wood product certification is generated from the need to show the public that woodlands are being treated properly. Not every consumer thinks about these things while shopping for a new dining room table, buying printer paper, a box of tissues, or purchasing a house. However, surveys completed to determine the public's attitude toward woodlands indicate that people do care. They want to know that their purchase does not lead to the destruction or degrading of woodlands. The public wants to be assured that woodlands are being managed sustainably, although they could not define what sustainably is. In the United States, some consumers and some regions of the country are more attuned to this issue and place a higher premium on it than others. This is also true for other countries. Many export customers from countries in Western Europe require certification, while other countries show little interest. Regardless, there is a growing interest in protecting the environment, and woodland owners must have a means of showing that they can do their part. This is where certification comes in. It is a voluntary market response to the consumers' concern over the environment. Interestingly enough, there has also been recent international discussion about the idea of promoting woodland certification to aid in conservation and environmental protection.

Certainly certification is important to forest industries that have customers requiring certified wood products. These industries need a source of certified wood. Since they do not own appreciable amounts of woodlands themselves, there is growing interest to support certification of private woodland owners—one of forest industries' primary sourc-

[1]*The terms forests and woodlands are used interchangeably. Technically, woodland certification is termed forest certification and includes all ownership of woodlands from small, family-owned woodlands to large industry-owned forests.*

es of timber. While certification is becoming important for woodland owners who are open to harvesting timber, recent developments have also shown the importance of certification for woodland owners interested in carbon programs, the potential sale of other ecosystem services, and even the development of conservation easements.

Defining Certification

Certification requires that woodlands are well managed using sound silivicultural, ecological, economic, and social principles. It indicates that the woodland has not been subjected to exploitive practices such as uncontrolled harvesting and abuse of the soil, water, wildlife, and critical habitats. Certification also indicates that laws and regulations have been followed by the owner and those who work in the woodlands. All certification systems require that each of these basic elements be addressed. The two most prevalent certification programs for woodland owners in the United States are the American Tree Farm System (ATFS) and the Forest Stewardship Council (FSC). If you look at the primary objectives of these systems, ATFS having eight and FSC having 10, they will look very similar and they are designed to prove that sound principles were used in the ownership, management, and harvest of the woodlands. However, each certification system places a different emphasis on each of these issues. In essence, differences in the requirements among the certification systems results from differences in how each system defines good management and what silvicultural, ecological, economic, and social issues are deemed important. You can see the difference in emphasis if you look at the details of each of the systems standards (see www.treefarmsystem.org and www.fscus.org for details). Each of the organizations having a certification system (including systems other than ATFS and FSC) believes that its definition of good management and its standards are the best. Woodland owners, forest industries, and environmental organizations also take sides on this issue, which has led to lively debates on the legitimacy of the different systems. In the end, the certification system in which a woodland owner chooses to participate is based on the owner's interests and needs and the costs and benefits of the system. Each system has a different set of costs (financial and time) and different benefits. The woodland owner should understand these costs and benefits and make a knowledgeable decision about whether to become certified and what certification system, or systems, will work best for the owner.

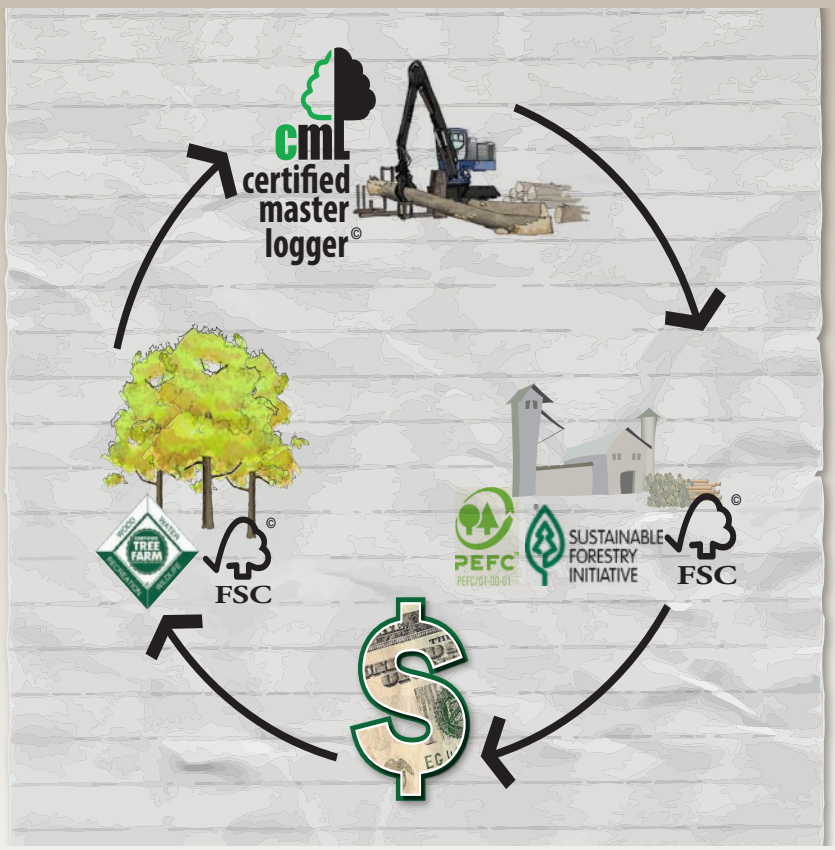
Photo courtesy: Billy Thomas

The signs above indicated that this property is being managed according to the specifications of the respective programs. The American Tree Farm System is a certification program while the Stewardship Forest program is not.

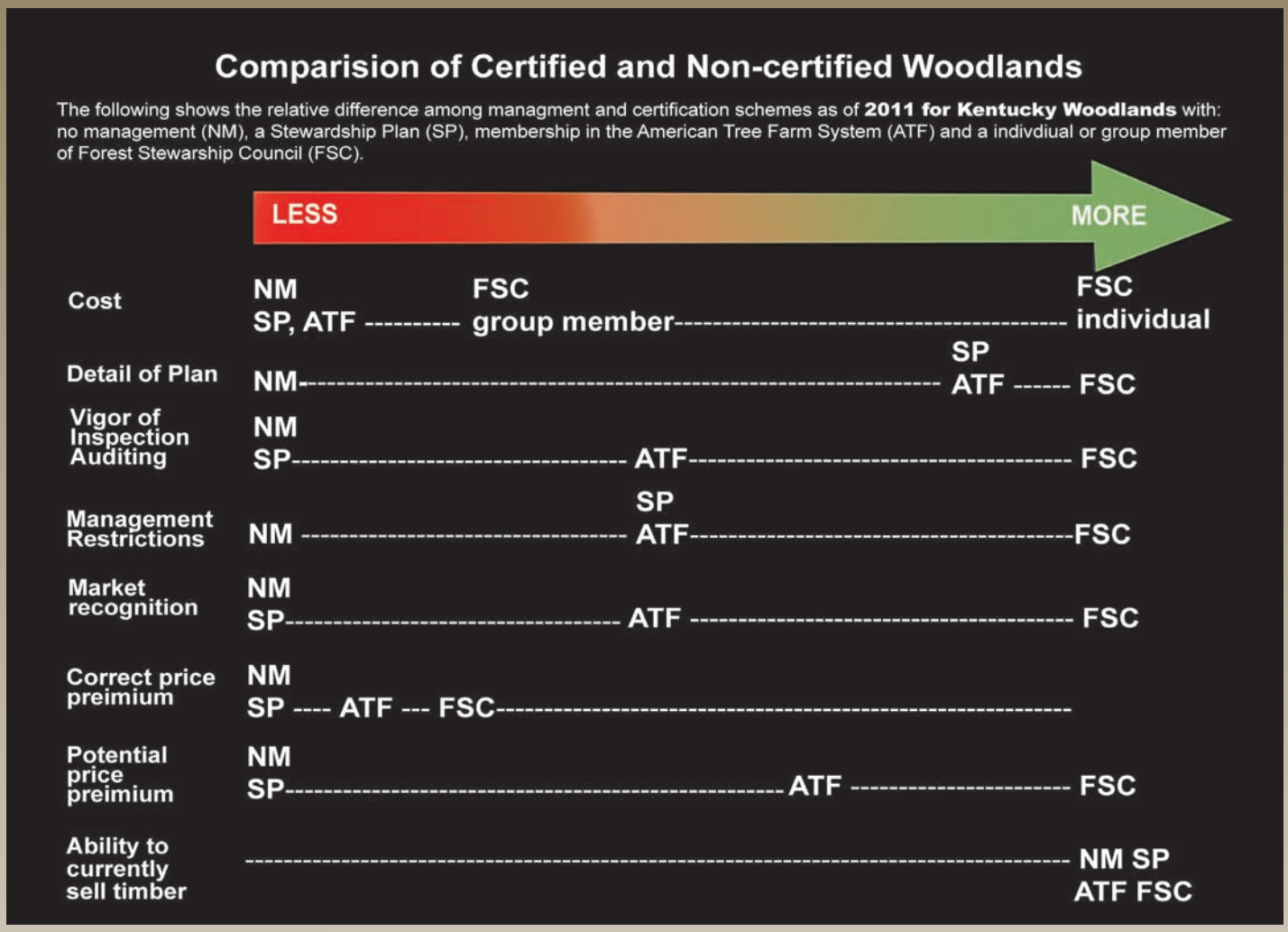
Three fundamental principles of all certification systems

1. The woodland owner must have a written management plan developed by or with the assistance of a professional forester.
2. The plan must address the provisions that are set forth in the standards of the certification system that includes sound silvicultural, ecological, economic, and social principles.
3. The woodlands must be inspected periodically to ensure compliance with the plan (and thus compliance with the principles of the standards).

A woodland owner can certainly work and enjoy his or her woodlands without the aid of a forester and without a plan. However, it would be difficult for most woodland owners to do an efficient and effective job of actively managing their woodlands without some professional assistance. Professional assistance can often be obtained through the state forestry agency (such as the Kentucky Division of Forestry). A state forester can develop a written management or Stewardship Plan that provides information and recommendations employing sound forestry principles. So, what makes certification different, and what makes one



The diagram represents the flow of certified wood and ultimately money for woodland owners. FSC timber moves to FSC certified mills and American Tree Farm timber moves to SFI and PEFC mills. The use of certified loggers makes it easy for woodland owner and mills to meet certification standards. The mills produce either FSC, SFI or PEFC certified lumber or paper. Woodland owners benefit through preferential treatment from mills.



This comparison chart is provided to help readers visualize the relative differences among the management and certification schemes.

certification system different from another? The answer to those questions comes from principles 2 and 3. In some instances, a Stewardship Plan may very well encompass all of the standards required by a certification system. This is probably most true for the ATFS, which was developed specifically to address forest management as it relates to woodland owners in the United States. The difference between an uncertified woodlands and an ATFS-certified woodlands is that the ATFS woodlands is inspected (audited) to see that the management plan is being adhered to, whereas in uncertified woodlands, even one with a stewardship or management plan, there is no inspecting and thus no proof that good management has actually been practiced. There may also be some technical details of a certification system that might not be addressed in a typical Stewardship or non-certified woodlands management plan. This omission of technical details could be because some certification principles might not be very relevant to a woodland owner in the United States or the principles encompass some issues that have not been historically addressed by woodland owners in the United States. The latter is most typically encountered with certification systems that have been developed internationally or for owners of very large forests; the primary example is certification developed by the Forest Stewardship Council (FSC). Next, we will contrast ATFS and FSC as it relates to family woodland owners.

Certification Systems

American Tree Farm System (ATFS)

The ATFS has been around since the 1940s. It started as a recognition system for good forest management for non-industrial, family-owned woodlands. Woodland owners involved a forester in the development of a written management plan, and their woodlands were inspected by those foresters periodically to ensure that the plan was up-to-date and being adhered to. Recently, ATFS has morphed into a certification system. The ATFS has contracted an outside organization to audit the entire ATFS program and its members (Tree Farmers) and increasing the breadth of its management standards to encompass a wider range of forest issues and concerns. The ATFS contains eight standards (principles) and 23 individual indicators (or provisions) that must be addressed in a plan. As indicated above, in many states a typical Stewardship Plan will contain what is necessary to meet standards for the ATFS. In a nutshell, the standards require that management activities, including harvesting, are done using sound principles of silviculture and management and that natural resources such as water and issues pertaining to wildlife are addressed. There is a heavy emphasis on ensuring that all local laws and regulations are followed. The ATFS was designed with small woodland owners in mind, provides a significant amount of flexibility, and uses the local forester's expertise in developing the

(continued on pg. 6)

From the Woods...

John C. Smith,
President, Kentucky Forest Industries Association and Sales Manager of Forest Products, Inc. of Corbin, KY

KWM: What certified products do you currently have markets for?
John: Our primary business is operating band sawmills in eastern and southeastern Kentucky. Our main product is Appalachian hardwoods, both green and kiln-dried. This varies from year to year, but the percentage of certified wood ranges from 5-20% of our total lumber production. The two main markets for this material are into the European Union and into LEED-specified government buildings.

KWM: What certification do you currently have and why?
John: We use the Forest Stewardship Council (FSC) "chain of custody," with both "pure" and "mixed credit" accounts. While there are other certifying bodies, our customers are looking more for the FSC standard of product rather than with competing certification scenarios.

KWM: Would it be helpful to have more certified forestland/timber in close proximity to your facilities?
John: Certainly. It is difficult to develop markets for products that you do not always have available. Basically, you are considered either "in or out" of a market segment based on product availability; it's hard to sell from an empty wagon, so to speak. With energy and freight costs increasing regularly, the closer the resource is to your processing facility, the more competitive an organization can be. Also, the more of this certified timber that becomes available, the more stable markets we can develop for this material.

KWM: Do you view certification as a passing fad or something that is here to stay?
John: Speaking personally, I believe that the certification of America's forestland is an up and coming issue. Many consumers today want to be assured that the hardwood products they are buying are from responsibly managed forests. Further than that, they want to know that the timber was legally harvested. Forest and chain of custody third-party certification accomplishes all of that. The consumer is assured that the timber came from a well-managed forest and that all aspects of the processing were done in accordance with prevailing civil law. I think this market will continue to grow and be the norm for future business.

KWM: As president of the Kentucky Forest Industries Association, do you see certification as something that could potentially help both the forest industry and woodland owners alike in this state? If so, in what way?
John: It is difficult to imagine that mills such as ours and Kentucky woodland owners must think of our markets as global, but that is exactly what they are competing with. In a recent marketing meeting, we were told that 47% of all North American hardwoods are exported from this country. Third-party certification sets us apart from most areas of the world, where forests are abused, timber is stolen, and human rights are ignored. Our beautiful hardwoods are in demand in other countries. Certified timber is more desirable to buyers like us and to the buyers of our products. Any time we can gain an advantage, we need to do so if we are to compete with other countries for market share.

Kentucky Woodlands Magazine recently interviewed two prominent Kentuckians that are very knowledgeable about the wood industry and woodland management in the state. We wanted to get their perspective on what forest and wood certification means to the wood industry and woodland owners.

Joe Ball,
Woodland owner, Tree Farmer and past president of the Kentucky Woodland Owners Association.

KWM: Are your woodlands in Kentucky certified and if so, which certification do you have and why did you become certified?
Joe: My Tree Farm on the Wayne and McCreary county line was certified in 1987 with the American Tree Farm System and has been re-certified every 5 years since. The process of certification requires planning, goal setting, and setting priorities for implementing the plan which was what I wanted to do.

KWM: Do you view certification as a passing fad or something that is here to stay?
Joe: The growing public interest in stewardship is not a passing fad. I see certification as a sign of progressive times. The greater society is demanding that we demonstrate actions to implement stewardship of a valuable resource that affects more than the landowner.

KWM: Would you advise other woodland owners to consider certification?
Joe: Yes. Not only are the actions inherit in the certification process important for everyone concerned, it is the right thing to do. Some form of third-party certification is necessary and becomes a prerequisite for woodland owners that want to get involved with selling certified wood products, participating in government programs, selling carbon credits, and documenting that a timber tract has Tree Farm certified trees.

KWM: As a past president of the Kentucky Woodland Owners Association, woodland owner and long-time Tree Farmer do you think certification is something that can help the forest industry and woodland owners in Kentucky?
Joe: Moving in the direction of certification is a win-win proposition. It won't guarantee immediate profits to all concerned today, but it will ensure that more acreage is in a managed program thus improving the quality and growth rate of standing timber. Kentucky is presently number 2 or 3 in the production of hardwood timber. Certification could be an effective tool greatly enhancing Kentucky's forest industry. With a significant number of woodland owners involved in some sort of a certification program we would change the culture of the woodland resource from a resource to be exploited in the short run to one that will justify management and stewardship to benefit everyone. To initiate a successful trend toward certification landowners must receive short-term benefits (incentives) for their actions and investments, as well as long-term gain.

plan. The main difference between a woodland managed with a Stewardship Plan and one that is ATFS certified is that the ATFS woodland is inspected by an ATFS approved forester (Tree Farm inspector). Future inspections occur on a random basis to make sure that the woodland owner is adhering to the plan and that it is updated if needed. Harvesting can be conducted without the oversight or assistance of a forester, but during the inspection, the Tree Farm inspector will look to see that recommendations regarding the harvest were adhered to. The ATFS owner must also allow a third party-certifying body (Pricewaterhouse Coopers LLC, is the certifying body that ATFS uses) to visit his or her property to determine that the management plan is being adhered to. Currently, this auditing cost is being absorbed by the national ATFS office. The forester's time to help develop your management plan and conduct inspections are generally provided by the state agency or, in some cases, forest industry. Thus there is little or no cost for woodland owners that want to be ATFS certified. However there are indications that the cost of certification incurred by the ATFS and its partners may eventually, in full or in part, have to be passed on to its Tree Farm members. Currently ATFS is a system that has recognition within the United States. However, there are efforts to increase its recognition through association with the Sustainable Forestry Initiative (SFI) and be globally recognized through endorsement by an organization called the Programme for the Endorsement of Forest Certification (PEFC).

Forest Stewardship Council (FSC)

FSC is a globally recognized standard for forest management for all types of forest ownerships. Initially conceived to work for larger land holdings, provisions have been developed to facilitate participation by family woodland owners. Currently the FSC is commanding the most attention from those interested in producing certified wood and paper products, primarily due to its global market recognition and acceptance. A woodland owner with FSC certification is required to have a management plan that ensures compliance with its standards. In total there are 10 guiding principles and 190 individual indicators that must be addressed. These indicators include social, economic, and environmental issues. As can be surmised by contrasting the difference in the number of indicators between ATFS and FSC, there is more rigor and detail required in planning and auditing for FSC-certified woodlands. There are also more restrictions in the FSC standards. For example, there are specific rules requiring harvest planning and rules governing the use of pesticides, harvesting, protection of important or critical habitats, development of plantations, and the use of genetically modified species. Some of these restrictions point to differences between FSC and ATFS and both organizations can provide information and evidence to support their position on these issues. FSC also requires that your woodlands be initially approved and annually audited by an FSC third party-approved certification body (such as Scientific Certification Systems or Smartwood). All of these provisions and the rigor associated with certification were developed to meet what FSC perceived to be required of a legitimate internationally recognized standard for well-managed forests. If a woodland owner were to individually undertake FSC certification, it would cost $4,000 to $8,000 initially and $1,000 to $2,000 annually, a fee that is prohibitively expensive for most. Fortunately, for small woodland owners there are ways in which this cost can be substantially reduced and assistance can be obtained to help woodland owners with the unfamiliar aspects of FSC certification. To fix this monetary problem and to deal with unfamiliar aspects required in the FSC plan woodland owners can join an FSC group. These groups are managed by an organization or a consulting forester termed the group manager. The group manager handles and assists woodland owners with the unfamiliar issues associated with FSC certification, and the costs are distributed amongst the members of the group reducing them significantly and allowing interested woodland owners that are serious about woodland management to become certified (see sidebar on group certification). The use of foresters who are trained in FSC planning and the use of certified loggers can further reduce the burden of FSC certification (see side bar on certified loggers).

Each of these systems has a set of standards of management that woodland owners must meet in order for their woodlands (and the products coming from them) to carry the certification system's label. Also, woodland owners must allow their lands to be inspected by an independent third party to ensure adherence to the plan and the standards. These independent third parties are business or non-profit organizations that provide auditing services and are called certifying bodies

Photos courtesy: Jeff Stringer

These 2 X 4's were for sale at Lowes. They have an FSC mixed source label. This means that the mill that produced them (Domtar) had procured at least 70 percent of the timber in the 2 X 4s from FSC certified woodlands.

(example: Pricewaterhouse Coopers LLC for ATFS and Smartwood for FSC). This inspection provides legitimacy to the certification systems. This legitimacy is important for consumers that buy certified wood products and industries that make these wood products. As could be expected, this auditing, and in some cases development and implementation of a woodland management plan that meets certification standards, costs money. In theory, this cost will be offset by increased markets or prices paid for certified wood products. While the public says it wants woodlands to be well managed and wants proof of that, it is currently unwilling to pay more for certified products. This disconnect is very slowly starting to change, but it is problematic to those interested or needing to sell certified wood products.

Regardless of these problems, there are an increasing number of retailers, including big box chains that are interested in selling certified wood products. This interest has trickled down to the secondary wood industry, which makes finished products, and to the saw and paper mills that produce the raw lumber and paper. These industries are certifying their operations so that they have the ability to produce certified wood or paper (see side bar on forest industry certification). However, these industries need certified woodlands to obtain timber and pulpwood, and none of the industries have enough of their own woodlands to meet the need. They rely upon woodland owners for the majority of their wood. In some instances, these industries have developed policies of preferential treatment for woodland owners that have certified woodlands. Also, debates over renewable fuels and the use of biomass to reduce fossil fuel emissions have included discussions regarding the use of certification to ensure proper management and environmental protection.

Certification has also been used by some carbon programs to ensure that woods in these programs are being

Certified Loggers

There are certification programs for loggers. The Certified Master Logger Program (CMLP) is an example of a performance-based certification program for logging firms. These firms must adhere to a set of logging standards and are audited once or twice a year to make sure they are adhering to those standards. These standards require that the firms are insured; follow all laws and regulations; develop harvest plans; and protect water, wildlife, and special habitats and places. The use of certified loggers can help woodland owners meet management objectives and can help them especially with FSC certification. You can get more information at www.certifiedmasterlogger.com

Group Certification

Group certification is bringing many woodland owners under one certificate that is managed by one entity. Group certification is designed to make certification practical and affordable by centralizing and streamlining many of the administrative processes related to certification. Traditional certification requires a woodland owner or forester to contact and pay (on their own) for an audit team to visit the owner's woodlands to ensure that the owner follows the standards. In group certification, the audit team will only inspect and visit a select number of random properties within the group. This audit is the greatest financial hurdle to achieving certification, and by visiting only a sample of properties the costs are reduced by inspecting only a few properties rather than having to visit every single property individually. The group can also save time and money for group members by completing several certification requirements for them (for example, annual reporting, international treaty investigations, and database management of rare and endangered species). The group manager will be visiting with and walking woodland owners through the process of certification rather than woodland owners contacting an audit team on their own. The group can also support their members by advertising their certified timber sales and putting them in contact with reputable foresters, loggers, and others to help them.

Forest Industry Certification

Forest industries achieve certification through something that is called Chain of Custody (CoC) certification. It is a process that ensures the wood (for example, lumber and veneer) and wood products (for example, doors, flooring, trim, furniture, paper) that carry a label of certification come from well-managed, responsibly harvested certified forests or woodlands. The objective of CoC is to be able to verify the woodland origin of the wood used in consumer products. Each entity that handles certified wood becomes a link in the "certification supply chain," from the woodlands all the way to the consumer. A new link is created in the chain each time the ownership of certified wood changes. If any entity in the supply chain is not certified, the chain is broken, and the final product cannot carry a certified label. In a typical situation this means that the woodlands must be certified and a certificate must be in place to cover the logging, processing at a saw or veneer mill, and the production of wood products at a secondary wood industry such as a cabinet or furniture maker or printer. Forest industries must develop written control procedures for how they are going to source, sell, and separate certified wood from other materials during manufacturing. If their plans are found in compliance with CoC standards through auditing, they have the ability to procure, produce, and sell certified wood products. The most prominent wood certification systems in the United States are the Forest Stewardship Council (FSC) and the Sustainable Forestry Initiative (SFI) that recognizes the American Tree Farm System.

managed correctly and in a way that actually increases carbon sequestration. There is also growing interest in using woodland certification to provide a working forest for landowners who wish to participate in conservation easements. These issues indicate that certification may become an important aspect of woodland ownership regardless of whether the primary objective is timber production, carbon sequestration, or anything in between.

For many woodland owners who care about their woodlands, getting and adhering to a Stewardship Plan or becoming a member of ATFS is not a problem. While more requirements and verification exist for FSC, membership in a group can easily overcome these issues—most woodland owners who care about their woods can easily meet the requirements for FSC through membership in a group. So, certification is in reach of every woodland owner.

How to Get Certified

If you are not familiar with woodland management, the best place to start is by contacting the state forestry agency or consulting forester approved by the state agency and have a Forest Stewardship or management plan developed. Once you have a plan or if you already have one, professional foresters can direct you to the ATFS. The requirements of ATFS are not difficult. Involvement with FSC normally comes through involvement with a forester who is directly involved or familiar with FSC certification. Most foresters will be able to direct you to these individuals and FSC groups in your area (if they are available).

Summary

Certification is voluntary and is used to prove that woodlands are being well managed. *Well managed* in modern terms means that woodlands, the natural resources they support, and the overall environment and ecosystem are taken into account during planning. Certified timber and pulpwood is becoming increasingly important to forest industries, and certification is a part of the discussions for ecosystem markets, conservation easements, and energy production. There are several certification systems available to woodland owners. Foresters are becoming more knowledgeable about certification and can help inform you about certification. There are also efforts under way by forest industries, environmental groups, state agencies, universities, and non-profit organizations to increase the understanding and opportunities for woodland certification. See the side bar on the Center for Forest and Wood Certification as an example of an effort under way to assist woodland owners with certification.

Certification will continue to evolve as market demand and recognition increases. It is widely agreed that certification of one form or another is here to stay. It is therefore reasonable to conclude that woodland owners who are interested in keeping their options open for a wide range of opportunities should become informed about certification and stay abreast of and participate in certification as it best suits their needs and interests. Staying up-to-date may be especially important as preferential treatment for woodland owners that have certified timber emerges, price premiums develop, or ecosystem markets and sources of conservation payments increase their involvement in certification. Keeping up with certification issues or becoming certified puts you in a position to take advantage of a wide range of opportunities that may profit you and your woodlands.

CFWC
Center for Forest & Wood Certification

Center for Forest and Wood Certification

The Center for Forest and Wood Certification (CFWC) is being developed to provide woodland owners, forest industry, loggers, and foresters with assistance in certification. The CFWC is a partnership umbrella that provides certification groups that can be joined by woodland owners, coordination of efforts to train foresters and woodland owners in certification, and members who maintain certified logger programs. It also provides forest industries with assistance in certification and in building supplies of certified timber. See www.forestcertificationcenter.org for more information.

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Forest Health

Kentucky's Least Wanted Tree Pests

by Jody Thompson and Alice Mandt

Kentucky is unfortunately "blessed" with numerous pests that negatively affect our trees. They may be caterpillars, beetles, aphids, or innumerable others, but in Kentucky's woodlands, two stand out as the most notorious. The hemlock woolly adelgid and the emerald ash borer first appeared in Kentucky in 2006 and 2009 respectively. Since that time, they have been moving through the state, attacking our hemlock and ash trees.

Hemlock Woolly Adelgid

Within the mountains and coves in eastern Kentucky, you will find the hemlock trees. Hemlock trees make up the picturesque landscape of dark evergreens and lush woods that shade streams even through the winter. Unfortunately, those areas no longer exist in some parts of the eastern United States due to the invasive, exotic insect, hemlock woolly adelgid, also known as HWA. The insect itself seems inconsequential with a length of less than one-eighth inch, but its effects are catastrophic. HWA feeds on hemlock needles by inserting its piercing mouthparts into the base of the needles and depleting the tree of essential nutrients. When fully infested, the result is needle drop, limb dieback, crown thinning, and tree death in just a few years. The eastern hemlock tree is considered a foundation species; the entire hemlock forest ecosystem depends on its existence. There is no other species that can replace the hemlock tree and assume its ecological role.

A single adelgid can produce up to 300 eggs and is so small that it can be spread by wind and birds. With no natural predators of HWA, populations in the eastern United States are spreading at an alarming rate. A single tree can hold millions of adelgids. In Kentucky, HWA was first found in Harlan County in 2006 and has since been found from the Red River Gorge south to the Cumberland Gap and from the Big South Fork east to Pike County. Though Kentucky has not yet experienced mortality, some areas are on the verge of seeing hemlock trees die. Unfortunately, even though efforts are made to get the word out about HWA, most attention will come when trees begin to die.

The hemlock woolly adelgid is a tiny insect that is causing big problems for hemlocks in Kentucky and beyond. The insect gets the "woolly" part of its name from the white cottony wax masses (left) found at the base of needles of infected trees. While small in size they make up for it in numbers as a single hemlock woolly adelgid can lay hundreds of eggs (right).

Photo courtesies: Above: Chris Evans, River to River CWMA, Bugwood.org Right and EAB photo above: Pennsylvania Department of Conservation and Natural Resources - Forestry Archive, Bugwood.org

Emerald Ash Borer

Emerald ash borer

Moving from eastern Kentucky to northern and central Kentucky you will find ground zero for dead and declining ash trees. Whereas HWA was introduced in the eastern United States almost 60 years ago, the emerald ash borer, also commonly known as EAB, entered the United States less than 20 years ago and was found in the state in 2009.

A female EAB will lay eggs in the bark crevices of an ash tree. After the eggs hatch, the juvenile beetles (larvae) chew their way into the tree. The EAB larvae feed on the inside of the tree, and when many beetles are feeding in one ash tree, it leads to tree death. The juveniles eventually develop into adult beetles and chew their way out of the tree.

EAB is one of the most dynamic and devastating tree pests that the United States has seen. It doesn't care if an ash tree is healthy or sick; it attacks in force and can kill a tree in just a couple of years. It has been found from Louisville east to Greenup County and from Lexington north to the Ohio state line. EAB moves its greatest distance with human help. Multiple EAB introduction points in Kentucky were due to firewood movement from infested areas.

What Can You Do?

The most important thing any individual can do is become educated about these pests and make sure that they are not contributing to their spread by the long-distance movement of their host material. Firewood movement is one of the most common pathways for the spread of EAB, which can survive in downed ash wood for up to 18 months. Additionally, avoid transplanting hemlock trees from a woodland setting to your yard.

When treating for HWA and EAB, just spraying the trees will not kill these pests. HWA is well protected most of the

year because of the woolly mass that protects it. EAB is well protected because its juvenile stage, which is the damaging stage, feeds on the inside of the tree.

Because both of these pests cause damage in the internal tissues of their host trees, it is essential to get the insecticides inside the tree. Systemic insecticides do this by moving through the internal tissues of a plant, such as those that transport water. This delivery method ensures that HWA and EAB are directly exposed to the insecticide when they feed.

Treatment Methods for Hemlock Woolly Adelgid and Emerald Ash Borer		
Soil Drench		The most common application method for a homeowner to use is the soil drench. Remove leaves and other non-soil material away from the base of a tree to expose the soil. The insecticide, mixed according to label directions, is then poured onto the soil. Look for products containing imidacloprid and dinotefuran at retail stores carrying garden products, co-ops, and farm supply stores. *Photo courtesy: Great Smoky Mountains National Park Resource Management Archive, USDA National Park Service, Bugwood.org*
Soil Injection		Soil injection uses a probe-like injector that is pushed into the soil near the base of the tree. The insecticide is pumped directly into the root zone. Look for products containing imidacloprid and dinotefuran. *Photo courtesy: Great Smoky Mountains National Park Resource Management Archive, USDA National Park Service, Bugwood.org*
Trunk Injection		Holes are drilled into the trunk of the tree near its base at a distance particular to the size of the tree. Capsules filled with the insecticide or fittings attached to a supply of insecticide are inserted into the holes and the chemical is delivered into the tree. This method typically uses imidacloprid for HWA, but imidacloprid and emamectin benzoate formulations for EAB. Emamectin is not currently used for HWA. This method should be performed by a licensed and trained professional. *Photo courtesy: Pennsylvania Department of Conservation and Natural Resources - Forestry Archive, Bugwood.org*
Basal Spray		The insecticide is sprayed on the bark near the base of a tree. This method, as with the others listed, is not effective in all situations and should be applied by an experienced professional. Certain formulations of dinotefuran are used for this method. *Photo courtesy: Billy Thomas*

Word of Caution
Even though these pesticides can be very effective in the treatment of EAB and HWA, many consider certain insecticides to be overused. Use any pesticide according to the label instructions. Also, using more than is recommended doesn't always mean better results. In fact, improper use can lead to problems with other pests, contamination of water sources, human health hazards, and wasted money.

About the Authors:

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Alice Mandt *is the Hemlock Woolly Adelgid Coordinator with the Kentucky Division of Forestry. Her responsibilities include monitoring infestations, coordinating treatment efforts and building educational programs to address hemlock woolly adelgid issues in Kentucky.*

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Kentucky Woodland Owners Association

Certification Isn't A Dirty Word

www.kwoa.net

In the past couple of years the new "buzzword" in the world of forestry seems to be forest certification. My first knee-jerk reaction was, "Oh no!!! I don't want the government telling me what I can and can't do with my own forest!" I tend to be a very cynical person and don't blindly believe everything that I see and hear. I like to research and learn about new things before I form an opinion, so I started my journey to learn about forest certification. I started reading everything I could find online and in print about forest certification. I attended seminars and meetings about forest certification.

I don't proclaim to be an "expert" concerning forest certification, but here are some of the things that I have learned:

FOREST CERTIFICATION IS TOTALLY VOLUNTARY. No one is making anyone get his or her forests certified. Forest certification isn't for everyone, and no government agency is requiring woodland owners to get their forests certified.

FOREST CERTIFICATION INVOLVES MANAGING YOUR FOREST IN A SUSTAINABLE MANNER. It doesn't mean that you can't harvest your timber. It just means that you will conduct your forest management activities in a sustainable fashion using established best management practices.

THERE ARE MANY DIFFERENT CERTIFYING GROUPS. All of the certification organizations have the same main goal – making sure that forests are managed in a sustainable, environmentally sound fashion. Some of the groups require a large monetary commitment from the landowner to obtain certification. Others require no monetary expense of the landowner. It's up to the landowner to decide the program that fits his/her needs.

I ALREADY HAD A CERTIFIED TREE FARM!!!! I utilize the free services of the Kentucky Division of Forestry (KDF) and have a written stewardship plan that was created for me by my KDF service forester. I follow that management plan and use best management practices on my Tree Farm. I meet the standards of the American Tree Farm System and registered my farm with the American Tree Farm System. That makes my woodlands a certified Tree Farm under the standards of the American Tree Farm System.

There are many woodland owners in Kentucky who have stewardship plans, perform the best management practices outlined in those plans, and actually qualify for forest certification status. Many woodland owners just aren't aware that their sound forestry practices make them eligible for forest certification.

At the present time, the timber markets are not paying a higher price for logs from certified forests. At the present time, the only "monetary" advantage of having a certified tree farm is the fact that your markets are increased and that you are eligible to sell your carbon credits.

Forest certification is just one of the many dynamic things occurring in the world of forestry. It's hard for the average woodland owner to keep up with all the changes. One of the primary missions of Kentucky Woodland Owners Association (KWOA) is to promote healthy sustainable forests in Kentucky through education of woodland owners. One of the educational opportunities that KWOA provides on a yearly basis is our annual meeting. This year the KWOA Annual Meeting will be held at Carter Caves State Resort Park in Carter County, KY March 31 - April 1. KWOA invites the "experts" in many different aspects of forest management to speak and provide field demonstrations. Participants also have a chance to gain insight and share experiences with their fellow woodland owners.

Photo courtesy: Billy Thomas

Woodland owners get updates on forestry programs and opportunities at the 2010 KWOA annual meeting. In the image, Dr. Andrew Stainback, of the UK Department of Forestry, discusses Kentucky woodland property tax issues.

If joining our group or attending our annual meeting sounds interesting, please go to our web site, www.kwoa.net for additional details.

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Kentucky Tree Farm Committee Newsletter

Perspectives of One Kentucky Tree Farm Inspector

by Kevin Galloway

Kentucky Tree Farms are visited by qualified inspectors who have completed the required training from the American Tree Farm System. These foresters can be one of the following: a consultant forester, an industry forester, or a service forester with the Kentucky Division of Forestry. An inspector's task is to visit and verify that Kentucky's Tree Farms are meeting the American Forest Foundation Standards of Sustainability, to record any recent forest management activities that have been implemented on the Tree Farm; and to keep abreast of the goals and concerns that the Tree Farmer may have about his or her property and its forest health. It is during the process of completing these tasks that this inspecting forester has experienced many enjoyable sights, sounds, and lessons.

As a Tree Farm inspector for 18 years, I have visited some of the most beautiful landscapes and working Tree Farms in Kentucky. I have seen amazing cliff-line views, magnificent watersheds with vibrant streams and waterways, well-manicured rows of Christmas trees and hardwood plantations, quality stands of young crop trees and mature timber, abundant wildlife and top-notch wildlife habitat, and beautiful home sites including an impressive pioneer village with nearly a dozen reconstructed log cabins on one property. Many folks would pay vacation prices to see what I have had the privilege of experiencing while inspecting some of Kentucky's Tree Farms.

Photo courtesy: Kentucky Division of Forestry

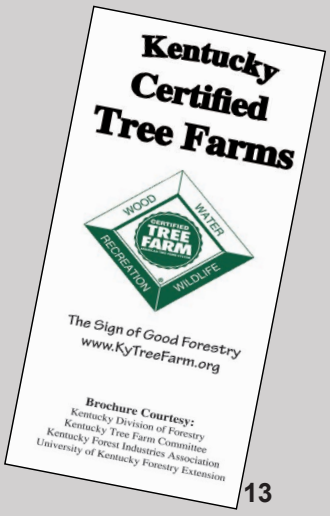
Tree Farm inspector and Kentucky Division of Forestry service forester Kevin Galloway presenting Mr. Woodrow McClurg of Morgan County with his Tree Farm sign and designation in 1996.

During these visits and inspections, I have been rewarded with building lasting friendships and with obtaining useful tidbits of knowledge and wisdom. Seasoned Tree Farmers have taught me more about Kentucky's history and heritage than any textbooks ever did. For example, I have learned more about life in our state during the '30s, '40s, and '50s and how these three decades greatly influenced many of the forest stands that we work, manage, and recreate in today. I have witnessed time and time again how active Tree Farmers have proven to me that **initiative** is one of the greatest attributes one can possess. The key to seeing a result **is starting**, which may entail putting a dibble bar in the soil or sinking a chainsaw or an ax into the bark of a tree.

Other lessons and principles learned include **paying attention to detail** and **using proper timing** to implement management work. These two principles apply even when managing trees that have the potential to live a hundred years or more. When planting trees, the most important steps that usually determines success are not what you plant or how you plant (although both are very important) but what one kills during that first planting year (site preparation). In regards to wildlife, a Tree Farm's bees, birds, and game species are far greater assets than nuisances; thus, conserve them or at least tolerate them. The final and most important principle learned is that the next generation needs to **learn the truth** about how forests develop, including how they originated, how they grow, and how they can be utilized. This has been best demonstrated to me not from textbooks rather from those who **do management**. Thank you, Tree Farmers for being true conservationists and for sharing your wisdom, workmanship, and properties with this Kentucky Tree Farm inspector.

New Kentucky Tree Farm Brochure Available

Visit www.kytreefarm.org to download the latest brochure. This revised brochure provides current and future Tree Farmers a good overview of the Tree Farm program in Kentucky. Check it out, and pass it along to a prospective Tree Farmer!



Hickories can be gathered from woodlands, and varieties that produce high-quality nuts make a nice addition to Kentucky woodland plantings (Figure 1). Native hickories that have relatively high-quality nuts and are the most suitable for nut production include shellbark hickory (*Carya laciniosa*), shagbark hickory (*Carya ovata*), and crosses between these species (Figure 2). While shagbark hickory and shellbark hickory look similar, there are a number of ways to tell them apart (Table 1). Pecan (*Carya illinoensis*) is actually a type of hickory—note that its scientific name is *Carya*, the same as hickories. This indicates that pecan is a type of hickory and can breed with other hickories: pecan shoots can be successfully grafted onto hickory trees, and hickory shoots can be grafted onto pecan trees. However, from a practical standpoint, we typically refer to pecans as being distinctly different from hickories. Other native hickories, including mockernut hickory *C. tomentosa* and some pignut hickories *C. galabra* and *ovalis*, also produce sweet kernels but have unacceptable cracking qualities.

Photo courtesy: Richard Simpson

Figure 1. Original Simpson No. 1 shellbark hickory tree along Pine Lick Creek in western Lincoln County. First noted by William Tinsley in 1790. Note metal squirrel shield at base.

Obtaining Seedlings and Graft Wood

There are no organized breeding programs for hickories as there are for pecans, so hickory varieties have been selected from the wild. To assure high-quality nuts, hickory trees must be grafted with a known variety. Variety recommendations for Kentucky are listed in Table 2. Hickory trees typically have taproots and are difficult to dig for transplant, but there are a few nurseries where bare-root grafted trees can be purchased for spring planting. Alternatively, seeds can be planted where trees are desired or established hickory trees can be grafted with improved varieties.

Non-Timber Forest Products

Have You Considered Shagbark and Shellbark Hickories?

by John Strang

Photo courtesy: John Strang

Grafting Hickories

Dormant scion wood (a section of a branch that contains buds) is collected in late winter and stored in a refrigerator for grafting. Grafting is both a science and an art. You can get general information on grafting woody plants on the Internet from a wide variety of sources. Typically, scion wood is grafted onto a small rootstock, normally from seedlings 1 or 2 years old. The best seedling to use as rootstock is from northern pecan. Native hickory species such as bitternut, pignut, and mockernut do not make good seedlings to use for grafting shellbark and shagbark hickories. Specifically, one, three, or four-flap grafts are made with dormant scion wood onto stock trees in May and June. Weather is a major factor affecting grafting success. A 65°F overcast day is ideal if the rootstock bark is slipping easily. Heavy rainfall just prior to or following grafting is detrimental to obtaining successful grafts.

Figure 2. Shellbark and shagbark nuts, left to right.

Photo courtesy: John Strang

Pruning and Nut Production

Pruning on hickories is minimal and consists mostly of encouraging the growth of branches that form and grow outward from the stem, which is done by removing branches that emerge from the trunk at narrow angles and pruning to promote only one main leader. If two leaders occur, prune one off. Nut production can take 10 to 15 years for seedling trees, while grafts on older trees may produce in three to four years. To obtain these production times, trees will need to be well maintained by controlling competing weeds through hoeing or mulching around tree bases, fertilization, and watering the young trees, particularly in the first season after transplanting. Hickories planted in a shaded wooded area may grow very slowly and take many years to produce nuts. Nut production is much better where trees are well spaced and receive maximum sunlight. The best hickory varieties produce yields in the 50- to 75-pound range per tree in good years. A very productive variety will bear nuts in threes (Figure 3), as opposed to singly or in pairs. Most hickory varieties have an alternate bearing tendency, producing a heavy crop one year followed by a light crop.

Photo courtesy: Richard Simpson

Figure 3. Large crop of Simpson No. 1 hickory nuts borne in threes.

Hickory Pests

Hickory pests include the pecan weevil and pecan scab. The pecan weevil emerges from the ground during nut hardening from late August through the end of September. The female chews a hole in the nut and deposits an egg, which hatches into a white grub that feeds on the nut kernel. When the grub is mature, it chews a hole through the shell during the late September to December period and drops to the ground. An earthen cell is made and the grub pupates, remaining in the soil for one to two years before hatching out and continuing the cycle. Weevils generally do not move much, and subsequent generations continue to feed on the same tree. Some hickory varieties have better weevil resistance than others. Guinea fowl, or guinea hens, and bantam chickens can substantially reduce this pest. Pecan scab is a fungus that is a serious problem for pecans. It can defoliate trees and lead to nut losses. This disease is less of a problem for hickories in Kentucky, only occasionally seen on shagbark trees and rarely on shellbark hickories.

Table 1. Shagbark and shellbark hickory tree, leaf, and nut characteristics.

Characteristics	Shagbark	Shellbark
Habitat	Upland areas across the state	Bluegrass Region with limestone
Mature trunk	Shaggy	Coarser plates than shagbark
Leaflets	5 with up to 7, terminal leaflet largest	7 with as few as 5 or up to 9, larger leaf
Terminal buds	Smaller	Larger, often retain bud scales 1-2 years
Husk	1/8 to ½ inch thick	¼ inch thick
Nut shape	Round to ovate	Variable
Nut diameter	1¼ to 1¾ inches	1¾ to 2½ inches
Shell	White in color, longer with a thin shell	Light brown, hard, and thick

Cracking and Extracting

After patiently cracking and extracting the meats from a few hickory nuts, one quickly realizes that nut size matters, but it is not the primary consideration in determining nut suitability. Exceptional hickory varieties don't have just a good hickory flavor, they have nuts in which the meat will separate easily from the shell, leaving a large proportion of halves. If a hickory nut is sawed in half crosswise to view shell protrusions into the meat, an indication of shelling ease can be obtained. Figure 4 shows shell and nutmeat configurations for three different seedling trees for which nut meat extraction is more difficult. Figure 5 shows a Kreider shellbark hickory that cracks out relatively easily.

Photo courtesy: John Strang

Figure 4 Above. Shell and nutmeat relationship for three seedling shellbark hickories.

Figure 5 Below.
Kreider is a very large shellbark hickory nut.

Photo courtesy: John Strang

Table 2. Recommended hickory varieties.

Shagbark	Description
Bridgewater	Very large with 47% kernel
Cook Shag	Good flavored, oval flat nut that cracks out in halves
Grainger	Large nut that matures late and cracks easily, tree bears heavily
Porter	One of the best, good flavor, thin-shelled, cracks out in halves
Raudabaugh	Thin-shelled nut that cracks out easily
Silvis 303	Good quality, large, round, thin-shelled nut with 45% kernel, good self-fruitful producer
Wilcox	Medium-sized nut with very good flavor that cracks out in halves
Wilmoth	Large, good tasting, light-colored, thin-shelled nut
Wurth	Large, thin shelled nut that cracks out in halves and is a very good producer, scab resistant
Yoder No. 1	Excellent flavored nut that cracks out easily and bears early, variety is reported to shed weevil-infested nuts early in the season.
Shellbark	
Bullnut	Good bearing and cracking characteristics, nice yellow fall foliage color
Brouse	Open cavity, cracks out well
Daulton	Vigorous tree that produces very large nuts
Fayette	Large, good flavored thin-shelled nut with 33% kernel, tree bears annually and self-pollinates
Henning	Vigorous growing tree with a large, very attractive nut
Keystone	One of the best cracking shellbarks in which kernels fall free from the shell
Kreider	Very large nut that cracks out well
Lebanon Junction	Matures early, cracks out large, sweet kernels
Lindauer	Precocious heavy producer, large kernels crack out in whole halves, weevil resistant
Merle's Best	Excellent thin-shelled nut, good flavor, and cracks out in halves
Rausch	Open cavity, cracks out well
Selbher	Heavy bearing regular producer of medium-sized, thin-shelled nuts, cracks out very well, probably self-pollinates
Simpson No. 1	Heavy cropping, excellent flavored, medium-sized nut with an open cavity that cracks out well
Shellbark X Shagbark	
Mitch Russell	Precocious annual heavy producer, average-flavored nut, cracks out in half and whole kernels

Selling and Marketing Nuts

Think back to the last time that you went to the store and purchased shelled hickory nuts…still thinking? Unfortunately, hickory nuts are not bought and sold on a commercial basis. Part of the reason for this is that until recently there have been no commercial crackers for hickories as there are for pecans and black walnuts. So, nuts are generally cracked one at a time. When cracking hickory nuts, it helps to soak the nuts in water overnight to make the kernels more flexible and enable extraction of larger nutmeat portions. Another hard and fast rule when cracking nuts to store is to avoid tasting the nuts until the cracking and picking are completed. This assures that you will have more than a small quantity to store. Over time the oils in hickory nutmeats turn rancid, so it is best to store the nutmeats in freezer bags or tightly sealed containers in the

freezer. Currently most hickory nuts are sold in the shell at farmers markets or on the Internet when they are available.

One of the most enjoyable aspects of hickories is their unique hickory flavor. Cherished memories are borne of sitting around a hot crackling fire on a cold winter day and patiently extracting and consuming the amber kernels. Pecan pies are excellent, but hickory nut pies are exceptional. Consider this the time to plant a few hickory trees and start a family tradition of hickory nut pies for the holidays!

Hickory sources — varieties and graft wood

- Nolin River Nut Tree Nursery in Upton, KY www.nolinnursery.com is a Kentucky nursery that sells excellent named varieties.

- Prospective growers can also usually find graft wood at the Kentucky Nut Growers' spring meeting held on Saturday in late April at the Hardin County Extension Office. This meeting and the Kentucky Nut Growers Association (www.pawpaw.kysu.edu/knga.htm) summer meeting often include grafting demonstrations.

Hickory Nut Crackers

- Fred Blankenship makes and sells the Mr. Hickory Nut Cracker, which works very well for hard-shelled nuts. For more information, call 270.272.7670.

- Clifford England, England's Orchard and Nursery, sells the Kenkel Hard-shell Nutcracker, which is also excellent for hickory nuts. For more information, visit www.nuttrees.net

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- Fred Blankenship, one of Kentucky's leading authorities on hickory varieties and their grafting, has developed a nice CD on hickory grafting for those interested in trying their hand.

About the Author:

John Strang, Ph.D., *is an extension specialist in the University of Kentucky Department of Horticulture. He is responsible for continuing education and applied research in the areas of fruit and vegetable production. John also edits the Fruit Facts Newsletter, www.ca.uky.edu/fruitfacts*

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Kentucky Forest Inventory and Analysis Update

Kentucky's forests cover an estimated 12.4 million acres, or 48 percent, of the state. Ninety-seven percent of these forest acres are considered available for timber production. The remaining 3 percent is considered unproductive forestland and reserved forestland on which timber removals are prohibited by law. Unproductive forestland is defined as being incapable of producing 20 cubic feet of wood volume per acre annually due to natural conditions (e.g., steepness, poor drainage, rockiness, etc.). A reserved forest is a public forest that cannot be utilized for timber production through statute or administrative regulation (e.g., national parks).

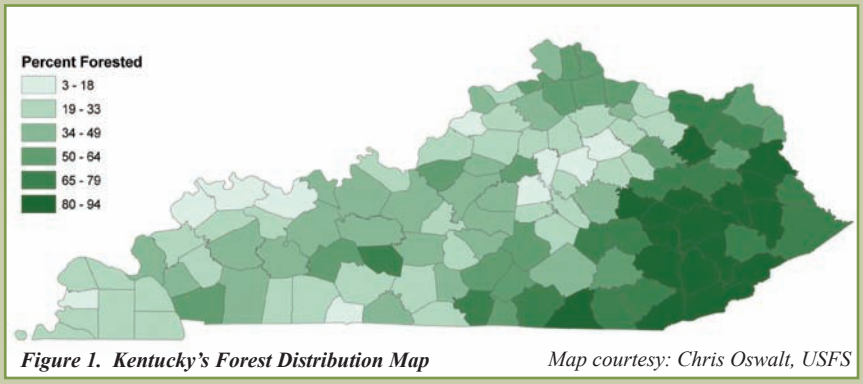


Figure 1. Kentucky's Forest Distribution Map *Map courtesy: Chris Oswalt, USFS*

Where are Kentucky's Forests?
The Cumberland Plateau and the Appalachian Mountains in the eastern portion of the state are the most heavily forested, with several eastern counties covered with more than 80 percent of forests— see Figure 1. The central and western portions of the state, although less densely forested, still account for 50 percent of the total forested area.

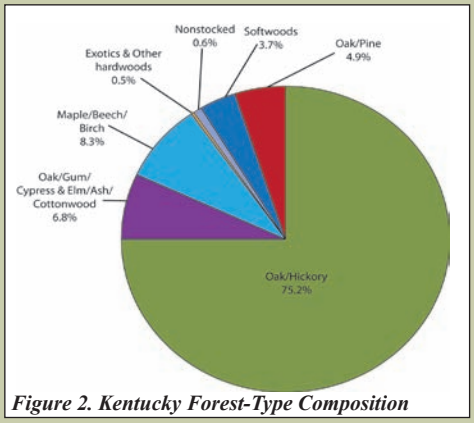


Figure 2. Kentucky Forest-Type Composition

What's Growing in Kentucky's Forests?
Oak-hickory is the predominant forest type in the state, covering nearly 9.1 million acres (75 percent of Kentucky's forests - see Figure 2). Pine-dominated forest types have declined, while hardwood forest groups have expanded. Unfortunately, red maple is now the most numerous tree species found in Kentucky's forests, with an estimated population of 830 million live trees. Red maple is now more numerous than all oak species (with a population estimated at 687 million trees) combined.

How Many Trees Are Growing — Are Being Harvested or Are Dying?
The amount of growing-stock volume averages 655.5 million cubic feet annually. Timber removals (harvested trees) average 298.7 million cubic feet (less than 2 percent of the current growing-stock volume) and tree death (mortality) averaged 164.8 million cubic feet.

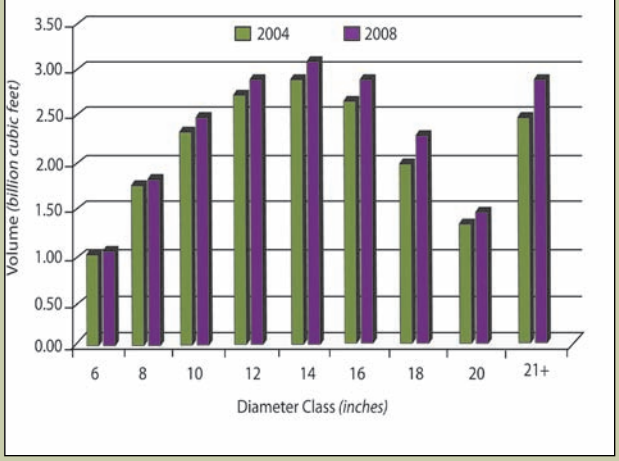
The growth-to-removal ratio for Kentucky is 2.2 to 1. This ratio means that for every one tree harvested or dead through natural causes, 2.2 trees are replacing it.

Who Owns Kentucky's Forests?
Private individuals own the majority of Kentucky's forests, at 88.5 percent. The U.S. Forest Service manages 6.4 percent, and other federal, state and local ownership manage the remaining 5.1 percent.

How Many and What Size Are Kentucky's Trees?
The sawtimber-size stands (trees larger than 9 inches in diameter – softwoods or 11 inches in diameter – hardwoods) make up more than 8 million acres (66 percent of Kentucky's forests). Pole-size stands (trees that are 5.0-8.9 inches in diameter – softwoods or 5.0-10.9 inches in diameter – hardwoods) make up more than 2 million acres (22 percent of the Kentucky's forests), and the sapling/seedling-size stands (smaller than 5.0 inches in diameter for both softwoods and hardwoods) make up more than 1 million acres (12 percent of Kentucky's forests).

The growing-stock volume (the amount of growth measured in cubic feet that actively-growing trees are accumulating each year) increased from 18.2 billion cubic feet in 2004 to 19.5 billion cubic feet in 2008. The largest jump in the number of trees occurred in the sawtimber-size trees, which increased from 14 billion cubic feet to 15.2 billion cubic feet (makes up 77 percent of the growing stock volume) - see Figure 3.

Figure 3. Volume of Trees by Diameter Class



In Honor of Our Fallen Forest Ranger, Friend, Brother

Donald R. Lam, Jr.

The Kentucky Division of Forestry (KDF) is mourning the loss of Donald R. Lam, Jr. who died from injuries sustained while fighting a forest fire in western Kentucky last September. Don was the Caldwell County forest ranger technician and an experienced wildland firefighter who had assisted with fire suppression efforts on the local, state and national level for nearly 12 years. He had been in critical condition since the accident occurred on September 7, 2010 receiving injuries while working the Scotts Chapel Road Fire—a 12-acre wildfire in Livingston County. Don was clearing a fire break for containment at the base of a bluff when a burning snag broke loose on top and rolled off striking him from behind. The impact left him unconscious and with serious injuries including second degree burns. The fire was initially spread from a burning brush pile during a county-wide burn ban, which was set fire by a construction company that was clearing the site for the owners. Currently, charges are pending for the individual responsible for starting the fire.

Don's professional attitude and commitment will be greatly missed by his co-workers and our entire forestry family across the Nation and his courage and dedication to protecting our public safety will set an example for us all.
We miss you Don!

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FORESTRY 101

Monitoring Your Woodlands

Part 2

by Doug McLaren

Believe it or not, your woodlands are constantly changing—new trees are sprouting, and established trees are actively growing in height and diameter or are declining due to lack of sunlight, drought, insect/disease infestation, or simply old age. Your forester will usually make a periodic visit to your woodlands every five to 10 years and during these visits will make note of these slowly evolving changes.

Most woodland landowners will do at least a partial "walk-through" on these periodic visits with their forester; acknowledging any changes that may have occurred in the landowners long and short-term objectives and goals for their woodland. It is evident to most landowners that a forester never stops and looks at every tree in the woodlands during these visits but still collects necessary information to make an estimation of the number of trees, their volume, and the overall health of the woodland. The question that many landowners ask about is how are these measurements for volume per acre determined by the forester? Simple—sampling! It is the same process that you utilize when you determine whether that pot of soup you are preparing needs more salt. You do not need to taste the entire pot to make this determination. You simply sample a "small portion of the whole." It's the same for forest measurements—you just measure a sample of the trees on any one unique site to represent that area.

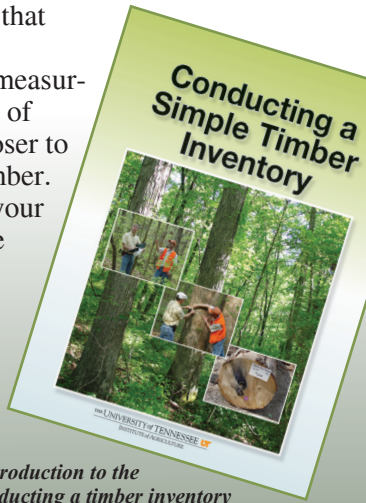
Photo courtesy: Kentucky Division of Forestry

Woodland owners should make a point of accompanying their forester when they visit their property if at all possible. These visits are an invaluable opportunity to discuss and exchange information about your woodlands.

The next question asked by the woodland owner is, "How many trees have to be sampled to represent that unique stand of trees in my woodlands?" The answer is based on the economics of time and the accuracy required. The fewer trees we measure, the better, but enough are needed to give a true representation of the stand. Again, let's use the soup pot example. Most of us will utilize a teaspoon or tablespoon to do our sampling. We could use a cup, but you can readily understand that type of measurement would be too much (unless the soup is really good). So, a teaspoon or two will do the job for soup. How does this concept relate to the number of trees needed to estimate our woodland volumes?

Many foresters will establish a circular plot or use a prism—a small piece of angled glass—to gather the information. For the landowner, this is pure forestry techno "magic." For woodland owners, there is a method that can provide very adequate volume results and it is referred to as the 1/10-acre plot. There are other sized plots that could be utilized, but the 1/10-acre plot makes tree volume estimations of an acre easy for landowners. A circle that is 37.2 feet in radius will provide a plot that represents 1/10 acre.

If you are comfortable measuring heights and diameters of trees, you are one step closer to estimating volumes of timber. Locate a random spot in your woodlands to estimate the volume of that particular area. You will need to take a tape measure and mark off the radius of 37.2 feet from a center point. Then measure the



This publication provides an introduction to the terminology and methodology of conducting a timber inventory and should allow you to communicate effectively with forestry professionals regarding your timber inventory. It is available at https://utextension.tennessee.edu/publications/Documents/PB1780.pdf

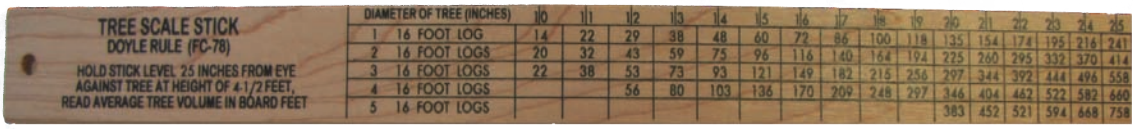


Photo courtesy: Steve Patton

The Tree Scale Stick is a valuable tool that can be used to measure tree diameter and tree height. It also contains a tree volume table that will give you an estimate of the number of board feet in your trees. Once you have determined the diameter of the tree and the number of 16-foot merchantable logs it contains you can readily determine the volume. For example, using the tree scale stick shown, a tree with an 18 inch diameter that has 1 16-foot log contains an estimated 100 board feet. These sticks are available from Forestry Suppliers (www.forestry-suppliers.com) for less than $15.

diameter and log height of all the trees that are 10 inches in diameter at 4½ feet from the ground (also known as diameter at breast height, or DBH) within this circle. One question that normally comes up during this process is about trees that are "on the line." For our example it will be acceptable to measure every other tree that is deemed "on the line." Locate a volume table and determine the volume of all the trees measured. Since this is a 1/10-acre plot, simply multiply the total volume for the plot times 10 to obtain the estimated volume for this area on a per acre basis.

Now we need to discuss the number and locations of the samples that should be taken. Remember that pot of soup still cooking on the stove? Suppose that in addition to the pot of soup you have a pot of chili cooking too—you cannot get an estimate of the salt needs of the chili by sampling the soup; you will have to sample the chili separately. The same applies to estimating volume within your woodlands. Several samples should be taken within any one unique growing site because of the variation we find in Kentucky's woodlands. For example, say you have an old field site that has established itself in yellow-poplar. You would take several samples within this site to determine the average estimated volume of the site. In the eastern part of the state, we normally have less desirable growing conditions along the ridgetops. Such an area would be another section where you would take several samples and list this average. Separating older more mature timber from younger stands would be another delineation of sampling sites. Consult the woodland management plan that was developed by your forester for the locations of the specific sites that have been identified in your woodlands.

After you have sampled all the different wooded sites that exist in your woodlands, you will have a very rough estimate of the total timber volume in your woodlands. Share this information with your visiting forester and ask for feedback and suggestions on your initial steps on monitoring your woodlands.

Photo courtesy: John Cox

Kentucky forests have a tremendous amount of diversity and variation largely because of our geographic location and wide range of topography. Conceptually breaking your property down into units (or "stands") based on similarities such as landscape position, land use history, species composition, management objectives, etc. and sampling these units separately will allow you to have more accurate information that can enhance the management of your woodlands.

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Kentucky Champion Tree Program

The Mighty White Oak — Granddaddy of the Oaks

by Diana Olszowy

Many folks could easily recognize a mature white oak tree from as far as ½ to 1 mile away. In the open, mature white oaks feature large, spreading horizontal branches, with some of the lower branches having diameters as large as two feet and crown spreads as wide as the tree is tall. The state champion white oak, pride of Hancock County, mimics these characteristics by having a circumference of over 19 feet, towering to nearly 100 feet and having a crown spread of 108 feet. White oaks can grow to exceptional sizes of 150 feet with trunks as wide as 8 feet (average is 80 to 100 feet in height and 3 to 4 feet in diameter) and their lifespan can surpass 500+ years. (This majestic white oak in Hancock County is estimated to be approximately 350 years old, which, if we converted to human years, would be the equivalent of only 65 to 70 years; however, this champ is nowhere near retirement and will likely outlive us all.)

In a forested site, white oak takes on a completely different growth habit, growing tall with a straight trunk and a small crown. It is a relatively slow-growing species, which enables it to reach to 500+ years of age, and it produces copious amounts of acorn crops every couple of years. The acorns are favored by turkeys, bears, squirrels, and chipmunks, and if you're an avid deer hunter, chances are you already have your stand set up near a white oak. If you want to encourage more white oak on your property, help out the squirrels by planting the acorns immediately after collecting them in the fall. To give the acorns a fighting chance, make sure you have healthy and viable acorns, remove the cap, and place the acorns in a five-gallon bucket of water. Use only those acorns that sink to the bottom. Acorns that float usually have insects or some other defect inside and are not viable. Select a planting site with plenty of room for the acorns to grow, preferably in full sun. Make sure that wherever you plant them you leave them, because white oak seedlings do not like to be transplanted because of their long taproot.

White oak has the largest growing range of all oaks in the eastern United States, extending from southeast Maine and down the Atlantic Coast to Georgia and from the Florida Panhandle to as far west as Texas. States such as Arkansas, Missouri, and Iowa form the western border of the white oak's range. It is also one of the most valuable timber species, used for flooring, cabinets, furniture, and in Kentucky, barrels. Because of its tight cooperage, which keeps liquids from seeping out, it is the preferred wood used in the manufacture of whiskey (also bourbon and wine) barrels.

Above: The Kentucky champion white oak is located in Hancock County and has a circumference of nearly 20 feet. Right: White oak leaves start out pinkish in the spring and typically expand to four to eight inches in length and have seven to ten rounded lobes; they turn brown or reddish in the fall.

Above photo courtesy: Diana Olszowy, Kentucky Division of Forestry
Right photo courtesy: Chris Evans, River to River CWMA, Bugwood.org

White oak acorns are a very important food for wildlife species in Kentucky. White oak trees will often have a large crop of acorns every few years.

Photo courtesy: Paul Wray, Iowa State University, Bugwood.org

About the Author:
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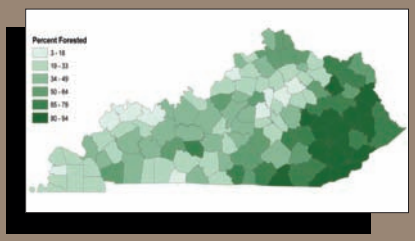
Test Your Knowledge

Submit Your Answers at www.ukforestry.org to Win a $50 Gift Certificate

Editor's note: Questions are drawn from the articles in this issue; if you have trouble with any of the answers then please review the articles to discover them. Visit www.ukforestry.org to enter your answers for a chance to win a $50 gift certificate to Forestry Suppliers. Sorry, but University of Kentucky and Kentucky Division of Forestry employees (and their family members) are ineligible to win the $50 gift certificate.



1. This hardwood species can establish and grow in a wide variety of sites. There are an estimated 830 million live trees of this species which is more numerous than all oak species combined. Which tree species is now the most numerous in Kentucky?

a)Yellow-poplar b) Kentucky coffeetree c) American dogwood d) Red maple

Hint: See article on page 18.

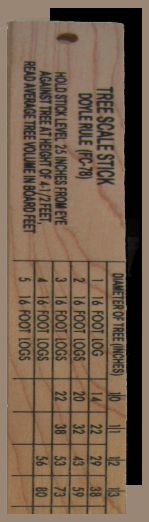
2. Kentucky has a number of native nut trees including hickories, pecans, and walnuts. These trees are important for wildlife but are also enjoyed by people. Some people are planting these trees for nut production. How much nut production can the best hickory tree varieties produce per tree in a good year?

Hint: See article on page 14.

a) 25- to 50-pounds
b) 50- to 75-pounds
c) 75- to 100-pounds
d) 100- to 150-pounds

3. The Tree Scale Stick is a valuable tool that can be used to measure tree diameter and tree height. It also contains a tree volume table that will give you an estimate of the number of board feet in your trees. Once you have determined the diameter of the tree and the number of 16-foot merchantable logs it contains you can readily determine the volume. Using the Tree Scale Stick shown on page 21, how many board feet does a tree with a 14 inch diameter that has 1 16-foot log contain?

Hint: See article on page 20.



a) 24 board feet
b) 36 board feet
c) 48 board feet
d) 60 board feet

4. The hemlock woolly adelgid and the emerald ash borer are moving through the state, attacking our hemlock and ash trees. The most important thing to do is become educated about these pests and make sure that you are not contributing to their spread by the long-distance movement of firewood or hemlock trees. However, it is possible to treat infected trees with certain _____ insecticides. What types of insecticides can be used to treat for hemlock woolly adelgid and the emerald ash borer?

Hint: See article on page 10.

a) Broad spectrum
b) Contact
c) Organic
d) Systemic

5. The interest in woodland and wood product certification comes from the need to show the public that woodlands are being treated properly. Public concern with woodlands increased dramatically in the 1980s and '90s as activists shed light on the uncontrolled logging occurring in the rainforests of Central and South America and the harvesting of old growth trees in the Pacific Northwest. In the United States, woodland certification is _____?

Hint: See article on page 1.

a) Mandatory
b) Voluntary
c) Required for international sales only

kentucky WOODLANDS

MACED's Carbon Offset Market Update

Given the recent news about changes at the Chicago Climate Exchange (CCX) and the failure to pass climate legislation, you may have questions about the viability of MACED's carbon offsets program. The short version of those changes relative to the MACED carbon offset program is that the offsets division of the CCX will continue until the end of 2012. MACED had originally planned to sell offsets generated by enrolled landowners on the CCX to large emitter members of the exchange who were obligated by their membership contracts to offset.

MACED has been exploring other marketing opportunities since then which resulted in the sale of 14,500 metric tons of offsets in 2009. Since then we have spent a significant amount of time on new marketing strategies to sell offsets to a more diverse set of outlets. We currently have informal commitments from other foundations and make regular sales of offsets on our website (www.stewardsofappalachia.org). There is a proven interest in carbon offsets and specifically managed forest offsets at the local, regional, national, and global level. To take further advantage of this interest, we have been and will continue to explore other carbon protocols that have better market potential and that suit our landowner base.

MACED believes that the current managed forest carbon program encompasses the core values of good forest management and has value and legitimacy far beyond that of carbon offsets. The current program requires that landowners consult with a professional about management, have long term goals, obtain forest certification, and a professional inventory, all elements that are at the very least a good beginning to a broader participation of forest landowners in the science and practice of good forestry. Despite the current issues with the carbon market, the managed forest offsets program has been hugely successful in that we've been able to prove that forest landowners will enter into long term commitments of management for the right incentives. We also realize that the success of the program would not have been possible without the support of the state and regional forestry community. We are committed to giving the program every opportunity to succeed. If you have questions please call 859.986.2373 or visit www.maced.org/foi/about.htm

MACED
Mountain Association for Community Economic Development

Upcoming Dates To Remember:

Date:	Event:	Location:	Contact:
March 24, 2011 April 12, 2011	Got Cedar: Now what? A program for landowners that have eastern redcedar on their property.	Franklin County Extension Office Bracken County Extension Office	502.695.9035 606.735.2141 859.257.7597
March 26, 2011	Ohio River Valley Woodland and Wildlife Workshop	General Butler State Park	859.257.7597 www.ukforestry.org
March 31 - April 1, 2011	KWOA Annual Meeting	Carter Caves State Resort Park in Carter County	www.kwoa.net
April 13 -15, 2011	KFIA Annual Meeting	Marriott Griffin Gate - Lexington, KY.	502.695.3979
April 14, 2011	Ohio Valley Lumber Drying Association Spring Meeting	Anderson County Extension Office	cfackler@uky.edu or 859.257.9511 ext. 235
May 3-5, 2011	Joint Meeting of the 2nd Kentucky Invasive Species Conference and the 13th Annual Southeast EPPC Conference	Lexington, KY	http://invasives2011.org
June 13-17, 2011	Kentucky Forest Leadership Program	Jabez, KY	859.257.7597
July 12-14, 2011	Biomass Harvesting in Kentucky (for Woodland Owners and Loggers)	Princeton, London, Morehead	859.257.7597

For more information about these programs, visit www.ukforestry.org

NEWS TO USE

2010 Emerald Ash Borer (EAB) Trapping Update

About 5,500 purple prism traps were hung during the 2010 survey program. EAB were collected for the first time in Boone, Woodford, and Boyd counties. The Boone and Woodford county insects were within the original 2009 quarantine area. The only collection from outside the original quarantine was from Boyd County which is adjacent to an established infestation in southeastern Ohio and next to Greenup County where an EAB was captured in 2009. There were differences in lures so there may have been differences in trap attractancy in 2009 and 2010. State officials have issued a quarantine for Boone, Bourbon, Campbell, Carroll, Fayette, Franklin, Gallatin, Grant, Greenup, Harrison, Henry, Jefferson, Jessamine, Kenton, Oldham, Owen, Pendleton, Scott, Shelby, Trimble and Woodford counties regulating the transportation outside those counties of articles that could harbor the emerald ash borer. For the latest information on Emerald Ash Borer please visit http://pest.ca.uky.edu/ext/eab/welcome.html.

EABs were captured during the 2010 trapping program for the first time in Boone, Woodford, and Boyd counties.

Photo courtesy: Jeff Stringer

COOPERATIVE FORESTRY TECHNOLOGY UPDATE

Updated Tax Tips for Forest Landowners for the 2010 Tax Year

Timber Tax Tips Update

Drs. Linda Wang, National Timber Tax Specialist and John L. Greene, Research Forester, with the U.S. Forest Service have recently released the Updated Tax Tips for Forest Landowners for the 2010 Tax Year. This publication is available at www.ca.uky.edu/forestryextension/PDF/TaxTips2010.pdf and is highly recommended for woodland owners to review on an annual basis; it provides tax tips for woodland owners and their tax advisors in the preparation of the 2010 individual tax return. If you have any questions regarding your individual tax situation please consult your legal and tax advisors for more complete information.

Ohio River Valley Woodland and Wildlife Workshop

The Ohio River Valley Woodlands and Wildlife Workshop (ORVWWW) is scheduled to be held on March 26, 2011 at General Butler State Park in Carroll County, KY. This workshop is a partnership effort among UK Forestry Extension, Ohio State University Extension, Purdue Extension, the state Divisions of Forestry and Fish and Wildlife in Kentucky, Ohio, and Indiana as well as numerous other partners. This workshop brings together a wide variety of forestry and wildlife expertise from throughout the Ohio Valley Region to provide woodland owners with forestry and wildlife related educational opportunities that will enhance your ownership experience. To find out more about this outstanding educational opportunity visit www.tristatewoods.org or call 859.257.7597.

Ohio River Valley

Woodland & Wildlife Workshop

Test Your Knowledge Answers from KWM Vol. 5 Issue 2

1. b)
2. b)
3. c)
4. b)
5. d)

Congratulations to M. Glasscock of Marion Co. She was randomly chosen from the entries with the most correct responses from the quiz in the last issue.

Visit www.ukforestry.org to submit your answers to this issues quiz for a chance to win a $50 gift certificate to Forestry Suppliers. The answers to this issue's questions will be provided in the next issue of the magazine.

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Monitoring Your Woodlands (part 2)
Kentucky Forest Inventory Update

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