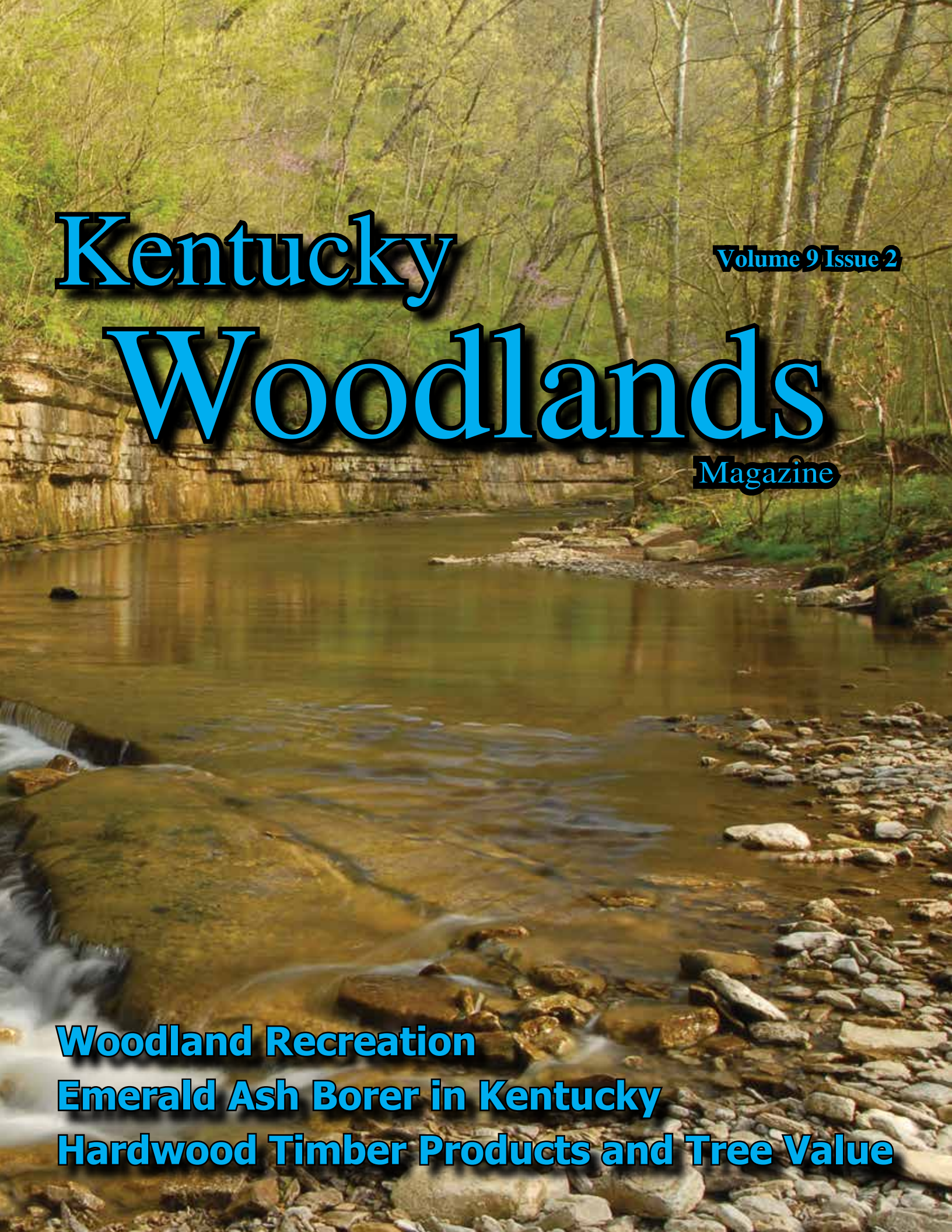

Kentucky Woodlands Magazine

Volume 9 Issue 2

Woodland Recreation

Emerald Ash Borer in Kentucky

Hardwood Timber Products and Tree Value

Kentucky Woodlands Magazine

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Winter 2014/Spring 2015

Promoting stewardship and sustainable management of Kentucky's family private forests.

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Editors's Note: We are also pursuing the use of SFI paper produced on SFI certified and American Tree Farm System certified land.

From the Editors of the Kentucky Woodlands Magazine:

Woodland owners definitely understand how challenging it is to maintain a healthy woodland. Numerous threats from invasive exotic insects, pathogens and plants as well as constant bombardment from Mother Nature's fury seriously impact their ability to keep their woodlands resilient. One of the first things woodland owners need to do to combat this dilemma is to educate themselves on what are the threats.

This issue will focus on two threats, one current and one waiting on the doorstep – Emerald Ash Borer (EAB) and Thousands Canker Disease (TCD). EAB unfortunately has been thriving and has spread to 1/3 of the state with further infestation inevitable. TCD is an insect/disease combo that attacks black walnut and fortunately has not been found in Kentucky, but has been found in the eastern states of: TN, VA, NC, IN, PA, MD and OH. This article will help in identifying TCD symptoms and instruct on how to manage if TCD is found. Also included is an article on managing your property for recreational opportunities and our normal departments such as Kentucky News to Use, Champion Tree, Certification Corner and the Tree Farm Committee Newsletter.

Knowing what threats your woodlands are facing is the first step in maintaining a healthy woodland.

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About the Cover:
The cover image was taken by the late Dr. Tom Barnes, UK Wildlife Extension Professor, of Lower Howard's Creek in Clark County. Dr. Barnes passed away last fall but left a significant legacy—we miss you Tom. To learn more about and to visit Lower Howard's Creek check out the following link www.lowerhowardscreek.org. For more information contact the Lower Howard's Creek Nature and Heritage Preserve at 606.744.4888.

Photo courtesy: Renee' Williams

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Emerald Ash Borer in Kentucky

Photo courtesy: Pennsylvania Department of Conservation and Natural Resources - Forestry Archive, Bugwood.org

Photo courtesy: Jeff Stringer

The emerald ash borer continues to make its way across Kentucky. Dying or dead ash trees like those at the top of the image above are unfortunately likely to increase.

by Lee Townsend

The emerald ash borer (EAB) fits the classic definition of an invasive species; a non-native organism whose introduction causes economic and environmental harm. The invasion process usually passes through a series of stages: introduction (2009 for the EAB), colonization, establishment, dispersal, and spatially distributed populations. The beetle is in the establishment stage in some areas, and established populations are present in many north central counties.

The Figure 1 map shows reported EAB activity in Kentucky. Counties marked in green indicate the known areas of infestation, counties in orange have moderate infestations, while counties in red have high infestations. Beetles may occur over extensive areas of some counties but only at specific sites in others. EAB is present along borders with West Virginia, Virginia, and Tennessee, so there is not a single front of activity.

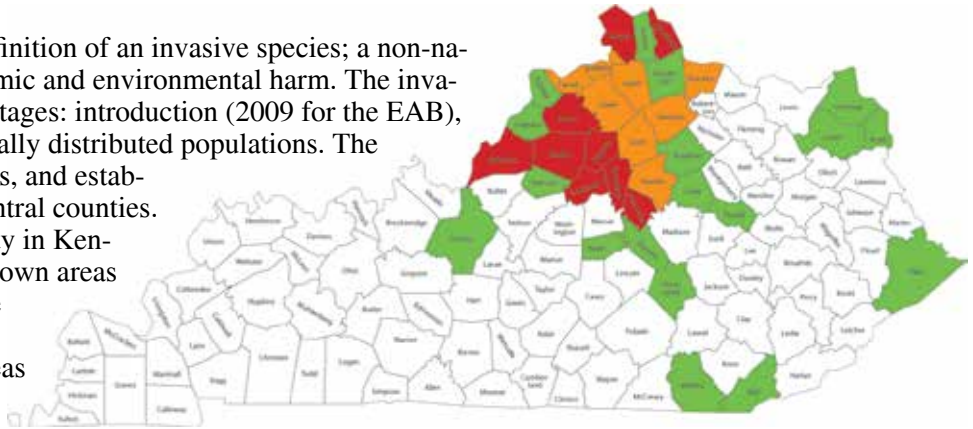

Figure 1. This map shows the distribution and intensity of EAB in Kentucky. Counties in green have a confirmed EAB presence while counties in orange have moderate infestations and counties in red have high levels of infestations.

Areas of establishment were identified by a survey. The most intense infestations of EAB as assessed by UK AG & Natural Resource and Horticulture Extension agents at the end of 2013 are depicted in Figure 1. Mortality due to the emerald ash borer is becoming increasingly evident in these areas.

EAB is dispersing slowly but surely as the beetles move from colonized areas during the summer. Females feed and disperse for several days before beginning to lay eggs. Depending on the availability of ash trees, flights may be just a few hundred yards, but the insect is capable of moving much farther. Researchers propose 10 to 20 miles per year as the natural rate of spread for the EAB.

Kentucky Regulatory and Survey Status

As of April 3, 2014, the Animal and Plant Health Inspection Service (APHIS) expanded the quarantine regulations for the emerald ash borer (EAB) to include all of Kentucky. This federal order directly affects the wood and nursery industries because it regulates the interstate movement of ash nursery stock, green lumber, waste, compost, and chips of ash species, plus firewood of all hardwood species. Ash may be moved freely within the state. Unfortunately, human-aided movement is responsible for the leapfrog dispersal that has the beetle popping up well outside of its known range in and outside of Kentucky.

An intensive surveillance program using purple pyramid traps helped to monitor the spread of the EAB. While the traps had limited effectiveness, they were at least a means of trying to identify new infestations. A limited number of traps may still be put out, but the major effort that monitored sensitive areas (interstate highway rest stops, state and federal parks and campgrounds) has ended, leaving detection to Extension agents, certified arborists, and turf and landscape managers.

Continued watchfulness by all will be necessary to limit the spread of this important invasive insect. Knowing the extent of the infestation in Kentucky and monitoring its progress provides the best chance of targeting management efforts to slow the spread of this destructive insect. Report suspected infestations to the Office of the State Entomologist or your local Cooperative Extension office for confirmation. New findings will be posted on the Kentucky Emerald Ash Borer page (http://pest.ca.uky.edu/EXT/EAB/welcomeeab.html).

Management Prospects

Several insecticides are available to protect landscape and specimen trees, but this approach is impractical for private and public woodlands. In some cases, biological control can have a significant impact on invasive species. While it is possible that some beneficial insects in Kentucky may attack an invasive species, there may be a strong preference or a better fit with the biology and behavior of native borers. This would result in minimal effectiveness against the invader.

The classical approach to biological control is to look to help from the home of the invasive species. Ideally, researchers can identify at the source of the pest natural enemies that can be mass produced and safely released to provide targeted control.

Three small wasps (Figures 3-5) have been identified and approved for release at EAB-infested sites in the U.S. Two species locate and attack EAB larvae; one attacks eggs of the insect. These wasps are not like the hornets or yellowjackets that come to mind when thinking of wasps; their activity and interest is limited to a particular invasive species.

Photo courtesy: David Cappaert, Michigan State University, Bugwood.org

Figure 3. Tetrastichus plannipennisi

Figure 4. Spathius agrilli

Photos courtesy: Houping Liu, Michigan State University, Bugwood.org

Figure 5. Oobius agrilli

Tetrastichus plannipennisi, about 0.2 inches long, drills into infested ash trees. Its larvae attack and destroy EAB larvae in their home range and can affect as much as 60 percent of the larvae in an infested tree. The organism can produce four generations each year.

Spathius agrilli, about the same size as *T. plannipennis*, also attacks EAB larvae in infested trees. It apparently can detect vibrations caused as borer larvae chew through wood. It then uses a drill-like ovipositor to its insert eggs.

Oopius agrilli is the smallest member of the trio—so small that its larva develops within an EAB egg, preventing it from hatching. *Oobius agrilli* wasps cannot sting or bite and have no known adverse effect on humans or other vertebrates.

Identifying EAB-infested areas is a key to selecting release sites that will have the greatest impact on the borer. These wasps will not be able to find their host if released where EAB does not occur. Wasps can be wasted if they are turned loose where most ash trees have already died and few EAB are present.

Successful establishment of biological control agents that can survive in Kentucky and move along with the EAB as it disperses can help to slow the spread of this destructive pest. Responsible movement of ash and vigilance in areas where the beetle is not known to exist are important ways to respond to the threat of the emerald ash borer.

About the Author:

Lee Townsend, Ph.D. is a extension entomologist at the University of Kentucky. He provides extension programs related to the management of insect pests of tobacco, forages, livestock and coordinates the pesticide applicator training program for private and commercial applicators.

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The image below shows the dramatic impact EAB can have on woodlands that contain large percentages of ash trees which is a common occurrence in north central Kentucky.

Photo courtesy: Jeff Stringer

Photo courtesy: Debbie Miller, USDA Forest Service, Bugwood.org

Emerald Ash Borer's Natural Enemies Are Here – Can They Make a Difference?

by William Davidson and Lynne Rieske-Kinney

Kentucky's forests support many native wood-boring beetles, several of which are closely related to the emerald ash borer (EAB). Populations of these native borers are usually kept in check by natural enemies, host plant resistance, and environmental pressures. Many of these natural enemies could potentially help suppress invading EAB populations if they are attracted to and can successfully attack EAB larvae.

The UK Forest Entomology lab has been releasing parasitoids and monitoring parasitization of EAB at several sites in Kentucky since 2013. The combined efforts of the Forest Entomology Lab and the Kentucky Office of the State Entomologist have resulted in the release of over 150,000 parasitoids across Kentucky's infested counties since 2010, including more than 35,000 *Spathius agrilli*, 101,000 *Tetrastichus planipennisi*, and 13,000 *Oobius agrilli*.

We recovered *T. planipennisi* from EAB-infested logs in the winter of 2014, suggesting that this classical biological control agent is becoming established in Kentucky's forests. In addition, we have discovered several native parasitoid species in association with EAB.

Figure 1. Atanycolus spp. (Family: Braconidae)

Photos courtesy: William Davidson

Atanycolus spp. (Figure 1) has been documented in EAB-infested forests in the upper Midwest and has also been found in Kentucky. At least two species in the genus *Heterospilus spp.* (Figure 2), which are known to parasitize native wood-boring beetle larvae, have been found in association with EAB-infested logs, suggesting that this genus may easily transition to EAB.

Figure 2. Heterospilus spp. (Family: Braconidae)

In addition, several species in the family Ichneumonidae, common parasitoids of a variety of forest pests, have been found in association with EAB, as have additional lesser known families.

Native natural enemies are discovering EAB populations and appear to be learning to use them as a resource, potentially helping to reduce EAB numbers.

About the Authors:
William Davidson *is a Research Assistant completing his Master's Degree (2015) with* ***Lynne Rieske-Kinney****, PhD, Forest Entomologist at the University of Kentucky. Her research program examines interactions among forest arthropods and forest regeneration, restoration, and sustainability and includes studies on the effects of invasive species on Kentucky's forests.*

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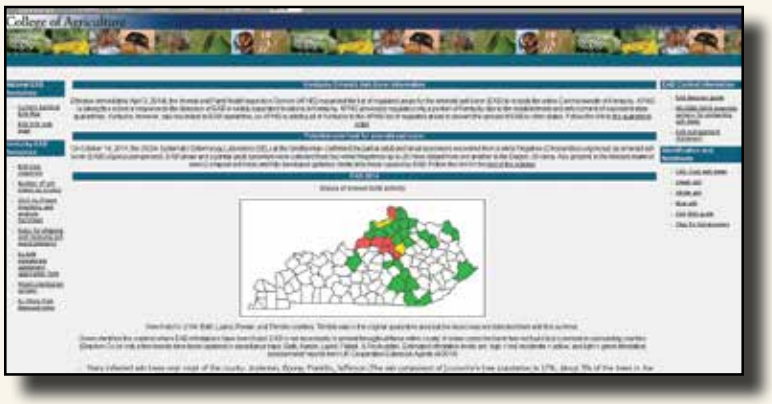
Emerald Ash Borer Resources

Kentucky's ash trees are under attack! The Emerald Ash Borer (EAB), an invasive insect pest from Asia, was first discovered in Kentucky in May 2009. This pest presents a serious threat to all ash trees in Kentucky – many of which have been planted in urban areas. As the Emerald Ash Borer spreads across Kentucky woodland owners will be faced with making decisions about how to respond. The resources in this article will help you to deal with Emerald Ash Borer.



Department of Entomology

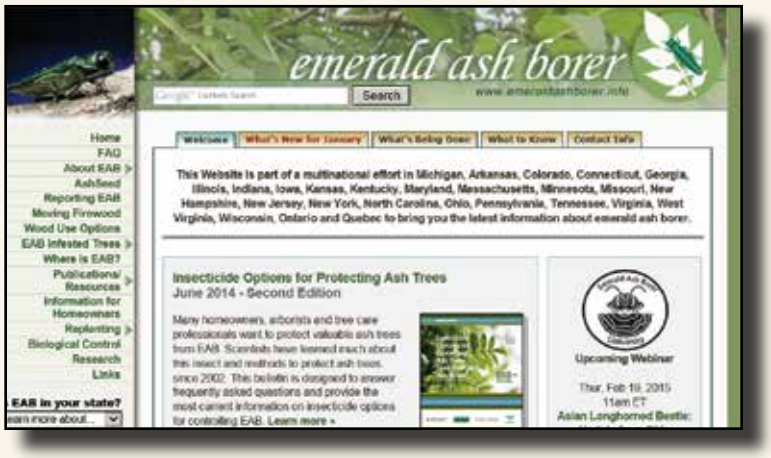
http://pest.ca.uky.edu/EXT/EAB/welcomeeab.html

The University of Kentucky's Department of Entomology has a website dedicated to EAB. By visiting the site above, you can view current EAB activity maps, identification factsheets, EAB FAQ's for Kentuckians, potential new hosts for Emerald Ash Borer and much more.

Forestry Extension

www.ukforestry.org

Everyone from woodland owners to loggers might be interested in visiting the University of Kentucky's Forestry Extension web page about EAB. On this website you can read an article on Recommendations for Ash Management in Kentucky, treatments for ash lumber, firewood, and logs, logger information on cutting and hauling ash logs and general industry notes.



National EAB Information

www.emeraldashborer.info

If you would like to learn more about EAB on a national level, you might want to check out the web address above. Twenty-four states and Canada are represented on this site. By visiting this site, you can learn more about what other states, including Kentucky, are doing to fight EAB including when EAB was confirmed in those states.

Photo courtesy: Lexington Herald-Leader

Saying Farewell to Dr. Thomas Barnes

We would like to honor Dr. Thomas G. Barnes in this edition as he contributed many photos and articles for the Kentucky Woodlands Magazine. Not only was he our colleague, he was also our friend. We will miss you Tom!

Photo courtesy: Darryl Cremeans

Excerpt printed with permission from the Lexington Herald-Leader and author Karla Ward.

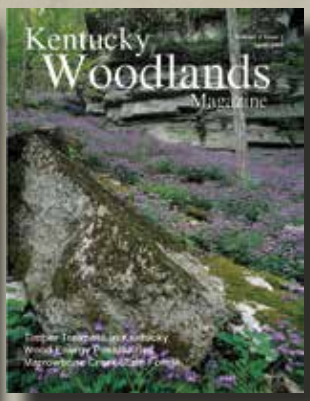
Naturalist Thomas G. Barnes, 56, a University of Kentucky professor with an uncommon devotion to documenting and championing the preservation of the state's flora and fauna, died in October 2014 at his home in Barbourville. Dr. Barnes, the state extension wildlife specialist and a full professor in the UK Department of Forestry, was the author of a number of books on the state's natural gems, a self-taught photographer and a conservationist who sounded the alarm that, without protection, Kentucky could lose some of its rarest wildlife treasures.

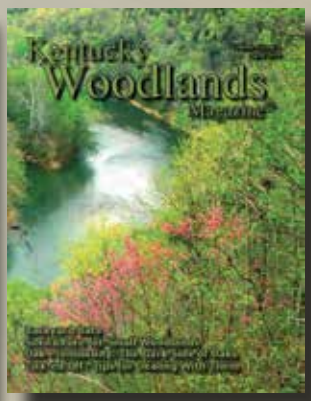
"I don't think people realize what we have here, how precious it is and how it's not a given it will stay that way," Dr. Barnes said in a 2002 Herald-Leader article about Kentucky's Last Great Places, a coffee table book for which he drove 20,000 miles, crisscrossing the state to photograph hidden destinations. Other works included *Gardening for the Birds, How to Find and Photograph Kentucky Wildflowers,* and *Wildflowers and Ferns of Kentucky,* a field guide he co-authored with S. Wilson Francis. His latest book was published this past summer: *Kentucky, Naturally: The Kentucky Heritage Land Conservation Fund at Work*, and he had been working on a book about waterfalls that has not yet been released.

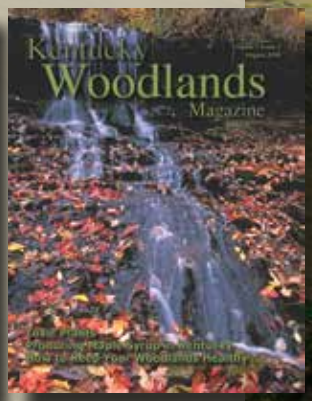
Of all the sights he had seen, Dr. Barnes said in 2011 that the trilliums covering Black Mountain in May were among his favorites. "When I am up there, I find it hard not to believe in a God who would make such a wonderful place for us to enjoy, because you know, we all think we should please God, but we never seem to consider that God is also trying to please us," he said. "It really is a beautiful gift, and we should not destroy it for some short-term gain." Dr. Barnes described himself as an optimist, but he lamented the destructive nature of practices such as surface mining and development.

In 2009, he contributed an essay and photographs to *The Gift of Creation: Images from Scripture and Earth*, a collection to which his brother, Loyola University biologist Paul W. Barnes, also contributed. The book sought to highlight the connection between faith and concern for the environment. Dr. Barnes, who grew up in Conde, S.D., earned a bachelor's degree from Huron College in South Dakota, a master's from South Dakota State University and a doctorate from Texas A&M. He came to the University of Kentucky fresh from graduate school. As an extension professor, he conducted research on using herbicides to restore native grasslands, developed wildlife programs for the extension service and gave frequent educational talks. He published scores of research papers, extension publications and magazine articles.

He is survived by his wife, Jamie; his son, Jeremiah; his daughter, Michaela; and stepchildren Ayman, Zak, and Jehan Abuzour.







Beginning with the first Kentucky Woodlands Magazine cover photo, Dr. Barnes has contributed countless photographs and covers for the magazine.

Photo courtesy: Tom Barnes

Hardwood trees produce a wide range of log types and primary forest products from low value biomass chips to high valued veneer. Understanding the characteristics of different log and product types helps in assessing the timber value of a woodlands.

Hardwood Timber Products and Tree Value

by Jeff Stringer

A tree's timber value is based upon the types, quantity, and quality of timber products that the tree contains, the cost of harvesting, and the cost of hauling it to market. All of these elements are highly variable. Harvesting costs are predominately based on woodland terrain (topography) and accessibility to a public highway. Transportation cost is directly related to hauling distance to markets. The other variables are associated with the characteristics of the trees (such as timber size). Woodland owners who want to effectively manage timber and/or are interested in timber value should have a basic understanding of common timber products and the tree characteristics that are needed for each product. This article provides information on the common hardwood timber products, their value, and the tree characteristics required to produce them.

A large tree may contain many different products while small trees may produce only one. Figure 1 shows a typical hardwood tree, in this case a white oak, containing several products. To maximize timber value, a logger would cut the tree into the different products (a process called bucking), separate the products on the log deck, and haul them to different markets. Timber products range significantly in value from a low value product such as pulpwood, to veneer – the highest valued timber product. The number of products in a tree is determined by the characteristics of the tree and the availability of local markets (see Market Availability section below).

Market Availability

Local markets vary regionally and can change based on supply/demand and hauling costs. Low value products normally can only be hauled short distances, generally 50 miles or less. High value products can be hauled much further. In many areas there is limited or no demand for biomass or pulpwood because the mills or yards that buy these products are too far away. If prices paid for these products increase, or hauling costs decrease, the market can expand. Conversely, veneer and stave logs are highly valued and markets for these products are extensive, so much so that they can be hauled great distances. Generally there are sufficient lumber mills that process construction, cant, pallet, tie, and lumber logs, and markets are also widely available.

Product Types and Specifications

Biomass/Energy Wood

Biomass (wood used for energy) is relatively low value compared to other wood products, so only the portions of trees that cannot be used for other products are used for energy wood. Typically the tops and small branches of larger trees, or possibly entire trees if they are poor quality, are used for energy wood. Often tops and branches are considered logging residues and are left in the woods. While this material can be used for biomass, leaving a portion in the woods is also ecologically important and a part of sustainable woodland management (see Markets and Sustainable Woodland Management section). All species can be used for biomass. Generally loggers chip this material at the log deck and discharge the chips into a semi truck. This process requires skidding the entire tree to the log deck and considerably more equipment, and it presents logistical challenges including the need for larger log decks and improved access.

Chipper at a logging site in western Kentucky.

Pulpwood

Pulpwood from hardwood trees is used to make chips for the production of white paper products. Generally loggers haul pulpwood to wood yards or mills that ultimately will debark and chip it. Normally all hardwood species with the exception of black walnut are used. Small end diameter requirement for pulpwood is 3 to 4 inches, and large end

Figure 1.

Biomass/Energy Wood

Generally branches and tops of any species with diameters less than those required for other products. Pulpwood – chipped to make paper. Generally small trees or tops/branches of larger trees.

Construction, Cants, and Pallet Logs

Generally sound wood from all species having knots, blemishes and staining that are unacceptable for the production of lumber.

Tie Logs

Used to make railway ties. Relatively free of decay, splits, slanting grain, or large and numerous holes and knots. A wide range of species can be used.

Lumber, Stave and Veneer Logs

Lumber Logs – Cut into lumber at sawmills. Must be sound, straight and relatively free of defects. There is a preference for larger sizes and preferred species such as oaks, black walnut, yellow-poplar.

Stave Logs – White oak logs used for barrels. Good quality logs with two sides free of defects (ex. indications of branches) are required.

Veneer Logs – Highest valued product logs must be free of defects. Generally preferred species such as oaks, black walnut, black cherry, and maple are consistently used, as are logs with larger diameters.

Photos courtesy: Jeff Stringer

Photos courtesy: Jeff Stringer

Typical load of hardwood pulpwood from western Kentucky.

diameters are 20 to 24 inches (based on the capacity of the mills chipper). Typically the minimum length is 8 to 9 feet. Pulpwood sticks (as they are commonly referred to) must contain little sweep or crook, less than 50 percent rot, and be free of charring. The latter occurs from wildfires or prescribed burns. Because of these size specifications, pulpwood can be cut from small trees 6 to 10 inches in diameter or from upper sections/branches of larger trees.

Small damaged trees can yield construction logs.

Construction, Cants, and Pallet Logs

Logs used for construction material, cants (large square products), and material for pallets must have structural integrity. The wood does not have to be aesthetically pleasing, but sound wood is required. A large number of knots, staining, and other blemishes (irregular patterns in the bark) are allowed. Logs used for these products can be cut from low value or degraded sawlog-sized trees 10 inches in diameter or greater.

Tie Logs

Tie logs are sawn into railway ties. Logs must be large enough (10 inches in diameter at the small end) to allow for cutting into 6 to 9 inch square or rectangular railway ties. Tie logs are at least 8 feet long. They must be free of decay, splits, slanting grain, or large and numerous holes and knots. A wide range of species can be used, and markets often have preferences for different species groups.

Tie logs are one of the common log types in Kentucky.

Lumber Logs

Sawlogs used for lumber production can vary significantly in quality and are generally 10 to 12 inches in diameter at the small end. Lumber can be sold in random lengths, and sawlogs typically are cut 10, 12, 14, and 16 feet, plus a 3- to 4-inch trim allowance. They must contain a limited amount of rot and be relatively sound and straight. Their value is also based upon the amount of lumber they produce that is free of knots and other defects. Therefore, the price paid for lumber logs is sensitive to the amount of knots and defects on the bark of the trees that are indicators of defects in the lumber. Value is also sensitive to species. Historically oak species, particularly white, northern red, and cherrybark, black walnut, and black cherry are in high demand. The demand for other species varies with consumer preferences.

Lumber is cut from straight, defect free hardwood trees. The larger, straighter, and cleaner the higher the value.

Stave Logs

Only white oak species are used for barrel production. Staves are the vertical wood pieces in whisky, bourbon, and wine barrels. The wood must be relatively free of defects. Typically stave logs come from the bottom (butt) log of larger trees, with a 16- to 18-inch minimum diameter. Logs

Stave logs, exclusively from white oak, are used to manufacture barrels.

Photo courtesy: Billy Thomas

must be greater than 8 feet in length, with very little rot and at least two sides of the log free of defects.

Veneer Logs

Veneer logs are generally the highest valued common timber product. Preferred species include white and red oaks, black walnut, black cherry, and maple. Demand for other species such as hickory or even yellow-poplar occasionally arise. Logs must be straight and free of blemishes on three or four sides. Such select qualities normally only exist on the butt log. Unfortunately, there are many woodlands that historically have been abused and may not contain any veneer trees. Rarely is the veneer wood volume greater than 10 to 15 percent of the total stand volume.

Markets and Sustainable Woodland Management

Having a variety of timber markets available helps enhance timber value. This variety of markets is important for those who are actively selling timber as well as those interested in long-term, sustainable management. Broad markets allow full utilization of trees, good quality and poor, as well as proper regeneration practices such as group openings. But most important it allows easier timber stand improvement practices such as thinning, release, and cull tree removal, thereby increasing the growing space for preferred trees. Value can be measured monetarily or can be intrinsic, such as wildlife, aesthetics, recreation, and other non-timber uses. Without markets for low value and small diameter trees, effectively managing large, high quality timber is financially difficult. Regardless, a broad array of timber markets helps woodland owners achieve long-term management objectives, using harvesting as a management tool.

Veneer logs must be straight, free of defects, solid and the right species. They command the highest price.

However, when landowners are not managing sustainably for the long-term, markets can be the sole dictator of which trees are harvested, and this practice can lead to problems. For example, having markets for only high value sawtimber will lead to high grading, taking the best trees and leaving the rest. This practice ultimately results in a degrading of the woodlands. When markets are present for small diameter material, small trees can be cut that could potentially grow into large trees with both significant timber and non-timber values, for example habitat and food for wildlife. Intensive biomass harvesting that includes the buds, small branches, and leaves can result in the removal of significant nutrients from the site unless biomass harvesting guidelines that specify leaving a percentage of tops scattered throughout the woods are used.

Responsible woodland management can alleviate these problems. Woodland owners should seek assistance from a professional forester. State foresters (for example Kentucky Division of Forestry) will assist in developing a Stewardship Plan and can give instruction on proper harvesting. Consulting foresters can do the same, as can some industry foresters, particularly those industries that are committed to sustainable management.

Finally, forest certification is a voluntary means of verifying the use of good forest management practices on private lands. Forest certification is available to landowners through the American Tree Farm System, the Sustainable Forestry Initiative, or the Forest Stewardship Council. These voluntary certification systems provide standards for sustainable forest management that most landowners with hardwood forests can easily meet.

In summary, forest management is more effective and long-term wood investments are more profitable when a variety of timber markets exist. So seek professional help to ensure the proper merchandising of your timber and assistance with sustainable management. Ultimately the use of sound forestry principles will ensure the proper application of forest product markets.

About the Author:
Jeff Stringer, *Ph.D., is an extension professor at the University of Kentucky and is responsible for continuing education and research in hardwood silviculture and forest operations. He is also an editor of the Kentucky Woodlands Magazine.*

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Woodland Recreation

by Billy Thomas

Woodlands provide many benefits to their owners as well as society. Those benefits include income opportunities from the sale of timber or other non-timber forest products, but that is not the only way woodland owners receive benefits from their woodlands. Another benefit woodland owners can receive from their property is derived from the recreational activities conducted in the woodlands. Although fun may not be the first thing you think of when it comes to woodlands, it is important to remember that woodlands can support a wide variety of recreational activities while at the same time producing quality timber and critical wildlife habitat.

Recreational activities by necessity increase the time an owner spends in the woods, producing several important outcomes. The owner is more aware and familiar with their woodlands, helping them recognize change. These changes include issues of trespass or natural occurrences, such as insects and diseases. Functionally, increased time in the woods improves monitoring of the woodlands. Ultimately, recreational time serves to increase an overall interest and awareness of the importance of caring for your woodlands. This time can be especially important when trying to establish strong connections to your woodlands and your heirs.

"Perhaps the rebuilding of the body and spirit is the greatest service derivable from our forests, for what worth are material things if we lose the character and quality of people that are the soul of America."
-- Arthur Carhart, U.S. Forest Service Landscape Architect, 1919

Woodland Recreation Benefits and Examples

Woodland recreational activities can take many forms depending on the attributes of the property (ex. access, steepness, location, etc.), interests and constraints (ex. legal, financial) of the owner, and the type and size of woodland property. Some of the more obvious woodland recreational activities include: hiking, wildlife viewing, hunting, camping, and many other recreational activities (see Table 1). Recreational activities certainly can produce physical health benefits, but woodland recreation can also benefit your state of mind. In fact, just being in the woods can have a positive impact on your outlook and overall health by reducing stress and providing the opportunity to relax. The Japanese call this "Shinrin-yoku," or "forest bathing," and have conducted scientific studies that document reduced cortisol (i.e. stress) levels from simply spending time in the forest.

Mixing Woodland Recreation and Management

Recreation is typically considered any activity that is done for enjoyment when you are not working. But woodland owners can make their woodland recreational activities productive as well by paying attention to what is going on in the woodland. Owners who spend time in their woodlands as indicated previously will be more attuned to growing conditions and threats such as invasive plants or trespass that pose a risk to their woodland. This type of observational monitoring is important. Many issues are best dealt with when caught at an early stage, invasive plants being one. But other issues such as trespass, dumping, etc. can be addressed more effectively if caught early. Monitoring is a valuable means of helping with these issues.

If woodland recreation is an important consideration for you and your family, one way to help ensure that recreation is incorporated into your woodland management activities is to make sure it is part of your management objectives. This effort will help to facilitate recreation when you are conducting woodland management activities or working on woodland access (ex. trails and roads). Foresters consider timber harvesting an important management tool—it

Table 1. Woodland Recreation Examples

Easy to Moderate Intensity	Moderate to Extreme Intensity
Camping	Canoeing
Dog Walks	Caving (Spelunking)
Fall Color Walks	Horseback Riding
Fishing	Hunting
Hiking	Mountain Biking
Nature Photography	Off-road Vehicles
Non-timber Forest Product Hunting (ex. Berries)	Paint Ball
Orienteering	Primitive Camping
Picnicking	Rock Climbing
Wildflower Walks	Trail Running
Wildlife Viewing	Winter Camping

Photo courtesy: Renee' Williams

is one of the few times when enough planning, equipment, and manpower come together to positively impact woodlands. When properly applied, timber harvest operations can be used to enhance recreational activities by improving access issues, improving view sheds, creating building sites, and increasing wildlife habitat/food. Likewise, there may be areas or times in your woodlands where you want to avoid mixing recreation and management, such as during an active timber harvest or hunting area during the hunting season. The next time you are working in your woodlands, consider how your actions can enhance or hamper your recreational activities.

Photo courtesy: Taylor Family

Covered shelters can provide a base camp for woodland recreation activities but are certainly not required to enjoy your woodlands. The image above is of the Taylor family shelter in Boyle County—see the "From the Woods" on page 12 to learn more about how they use their woodlands for recreation.

Reducing Risks and Avoiding Conflict

Because some recreational activities expose participants to more risk than others, you should not attempt any activity without first being aware of the risks. Some basic commonsense practices can go a long way in ensuring that your woodland recreational activities are enjoyable and safe for everyone involved. Make sure to point out or otherwise mark any trail hazards or other conditions that may pose a risk to family or friends using your woodlands. These include hazards on the ground as well as above your head. Always be attentive to hanging or dead limbs and dead trees directly adjacent to or overhanging trails and places where you normally spend time. Additionally, windstorms, heavy rains, or other severe weather events can make woodlands more hazardous than normal for a period of time after the weather event. Familiarize yourself with areas in your woodlands that are most prone to being impacted by weather events, and avoid them when appropriate.

Many woodland owners use ATVs or other off-road vehicles to get around their woodlands.

Photo courtesy: Taylor Family

Woodland trails provide an excellent way of enjoying your woods, but if they are not planned and maintained properly they can end up as a source of frustration and concern. Mixed-use trails such as those sometimes used for off-road vehicles and horses can be especially problematic because they are incompatible. When considering woodland recreational activities, make sure to consider the compatibility of various recreation and management activities so that you can prevent problems from occurring. It is also a good idea to be considerate of your neighbors when planning or conducting recreational activities to ensure your fun does not infringe on their rights.

Go Outside and PLAY!

Regardless of the woodland recreational activity you choose, get out and enjoy your woodlands! Even if you are not a woodland owner, Kentucky has an abundance of state forests and state parks that provide many opportunities and locations across the commonwealth for woodland recreation. Woodland recreation does not have to be an expensive endeavor, and the returns to your health, state of mind, and wallet can make it worthwhile. Bring along your family and friends, and help spread an appreciation and understanding of the many benefits our woodlands provide.

Make time to get out and enjoy your woodlands. Not only will you be healthier, but you can also gain a better appreciation and understanding of your woodlands.

Links for additional information on woodland recreation:

- **U.S. Forest Service: http://www.fs.fed.us/recreation/**
- **Trail Design: www2.ca.uky.edu/KYWoodlandsmagazine/Vol_4_No_1/Woodland%20trails%20pg8-11.pdf & http://woodlandstewardship.org/?page_id=785**
- **Medicinal Plants: http://www.nps.gov/plants/medicinal/pubs/index.htm**
- **Kentucky's State Forests: http://forestry.ky.gov/Kentuckysstateforests/Pages/default.aspx**
- **Kentucky's State Parks: http://parks.ky.gov/**

About the Author:
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From the Woods...

Kentucky Woodlands Magazine interviewed Dr. Cliff Taylor to learn about his experiences with woodland recreation on his Tree Farm.

Dr. Cliff Taylor (second from right) and family members take a break during hike in their woodland.

KWM: Tell us a little about your woodlands:
Dr. Taylor: The timber tract we have used for recreation consists of 280 acres. We have owned it since before some of our children were born. We built a shelter house with a large fireplace that serves as a gathering place. We last harvested this tract in 1964. In 1959, we planted 5,000 pine trees seedlings but even though some pine trees were planted this is a hardwood tract with mature trees. In addition, we own some other tracts that adjoin this tract.

KWM: What are some of the types of recreation that take place in your woodland?
Dr. Taylor: We do the usual kind of woodland recreational activities such as: cook-outs, camping, socials with family, walking in woods in winter and fall, hunting turkey and deer as well as rock hunting.

The shelter house built by the Taylors has greatly enhanced their use and enjoyment of their woodlands.

KWM: What are some of the challenges you have faced related to conducting woodland recreational activities on your woodland?
Dr. Taylor: Our shelter house is in a remote location and lacks running water, electricity, and at first did not have a restroom. Females in our family were not impressed until we could get a portable restroom installed.

KWM: What advice do you have for other woodland owners considering woodland recreational activities on their property?
Dr. Taylor: If a family wants to use their woodland for recreation and if it is to be passed to the next generations, parents can build a shelter house with a fireplace to create a gathering place for the family. The fireplace can be used for cooking and heat when it is cold. If older family members want the next generation to inherit or own the present woodland, then getting the younger generations involved in recreation and management is very important.

The Taylor family has a long history of managing their woodlands and incorporating woodland recreational opportunities into their family activities. They are widely recognized as outstanding stewards of the land.

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Kentucky Woodland Owners Association

Not for the Fast Buck Crowd

by Jack Rentz

www.kwoa.net

Some time ago I attended a forestry field day in Fleming County, accompanied by my daughter and grandson, who was about four years old at the time. The forester who conducted the session commented that it was good that we brought my grandson along because his generation would be the first one to realize any financial benefits from tree seedlings that we plant on our property.

This concept is not new to anyone who grows hardwoods with the idea of a financial return. According to University of Kentucky Forestry Extension it takes 60-80 years for most hardwood tree species to grow from seedling to economic maturity, although most owners who harvest timber did not plant their trees as seedlings and many have trees with a variety of ages. This time span has big implications for timber as an investment.

Planning and planting for the future. Kentucky's hardwoods generally naturally regenerate, but seedlings can be planted in areas where there are no trees or you want to change the species composition.

Directly or indirectly, a lot of woodland management is devoted to dealing with this long time horizon. If properly followed, these management practices generally have the benefit of improving hardwoods as an investment. Good woodland management helps owners understand the characteristics of their property and helps them address woodland threats such as invasive species and diseases. It also improves timber quality, which should improve the financial return and the possibility for interim harvests, which would generate cash flow prior to the harvest at maturity.

Many woodland owners don't have the background in forestry that would be necessary to undertake good woodland management practices on their own. However, plenty of help is available from the Kentucky Division of Forestry, University of Kentucky Forestry Extension, and private consulting foresters. In addition, the activities of the Kentucky Woodland Owners Association provide members with educational activities and the ability to network with other woodland owners.

Funding for management practices is available through programs from the Natural Resources Conservation Service, part of the U.S. Department of Agriculture. These programs do not represent a direct financial return to the landowner, but they provide the opportunity to fund a portion of approved management activities with no obligation to repay the funds as long as the terms of the program are met.

Woodland certification also has the potential of improving the value of timber at harvest. Additionally, the certification process requires that proper woodland management procedures are followed. Help is available from the Center for Forest and Wood Certification (www.forestcertificationcenter.org), managed by the University of Kentucky Department of Forestry.

Some woodland owners look to non-timber crops such as mushrooms, ginseng, and honey to generate regular income. Others realize regular income by leasing their land to hunters.

Another key in maximizing financial return from woodland ownership is to work with a consulting forester. The value of the expertise provided should produce dollar results that far exceed the fee charged.

In addition to educational and networking opportunities, membership in the Kentucky Woodland Owners Association provides support for activities that have benefits to woodland owners in the Commonwealth. On an ongoing basis KWOA advocates for adequate staffing at the Kentucky Division of Forestry, the agency that employs service foresters that assist landowners. Other examples are KWOA's support of efforts to require taxing authorities to bring woodland tax valuations in line with the financial realities of woodland ownership, and recent successful efforts to avert the closing of the state seedling nursery in Morgan County.

For more information log on to www.kwoa.net

Kentucky Tree Farm Committee Newsletter

Meet Some of the Newest Kentucky Tree Farmers

The Kentucky Tree Farm Committee asked some recent Tree Farmers how they got involved in the program and to share a little information about their Tree Farm.

Burchell Blevins, Knox County

The Blevins family decided to take part in the Tree Farm program for a couple of different reasons. Their family is active in the outdoors and woods. Sustaining their forest for future generations is a major priority for them. The Tree Farm program allows them to do just that. Their Tree Farm is in the hills of Knox County and consists of 200 acres, extending from the creek bottom to the top of the ridges. Assorted hardwoods along with ponds and streams provide all that is needed for native wildlife. It gives them great pride and satisfaction to see the change that occurs in the woods year after year. Mr. Blevins strongly recommends the program for anyone who is passionate about their woodlands.

Roger Weber, Pendleton County

Mr. Weber retired in 2000 and built a house on his 102-acre property, located in Pendleton County. Mr. Weber heats with wood, which prompted him to contact the Kentucky Division of Forestry (KDF) to find out which trees he should utilize for firewood. During the KDF on-site inspection, Mr. Weber learned that programs such as the Environmental Quality Incentives Program are available through the Natural Resource Conservation Service to assist in the management of his woodlands. He also is interested in planting trees on an annual basis. Although he is a new Tree Farmer and is just getting started in the management of his woodlands, Mr. Weber is most proud of the large trees on his property. He considers the control of invasive species his biggest challenge. He encourages woodland owners to get involved as soon as possible, because he would have been in the program a long time ago had he known about it.

Robert Volk, Franklin County

Mr. Volk joined the Tree Farm Program because he wanted to demonstrate that the management of his forestland is being conducted using sound and proven principles with professional assistance. His original 20 acres were purchased in 2010 to provide a place for his horses, but it only had forestland present in small strips along the road borders on his farm. In 2012, he purchased an additional 10 acres of forestland that borders the property along the east boundary. This area really lends itself to management and includes some mature timber. The general configuration of the forest borders creates a serene sanctuary for abundant wildlife, and large mature oaks in the pastures, along with two ponds, greatly amplify the wildlife habitat. Although the property is only two miles by road from Interstate 64 (one mile as a crow flies), the quiet seclusion is what makes him so proud to own his property. His best advice for woodland owners is to seek professional assistance from the Kentucky Division of Forestry and get started with a Forest Stewardship Plan.

Broyles Heirs, Pulaski County

It all began in 1955 with two brothers Glenn and Boyd Broyles, who believed in "conservation and doing the right thing" by their land. Their Tree Farm started with 235 acres and now has grown to 475 acres. The Broyles heirs continue to maintain the Tree Farm and are proud to continue their brothers' legacy by seeking the advice and utilizing the services of the Kentucky Division of Forestry and the Natural Resource Conservation Service. Being active/proactive in the management of the forestland is key to the continuation of conservation and doing the right thing.

In the next issue of the Kentucky Tree Farm Committee newsletter you will meet Kentucky Tree Farmers Bill and Chris Lagermann of Metcalf County and learn how they got started as Tree Farmers and how they are working hard to involve their children and grandchildren. For more information about the Kentucky Tree Farm program please visit www.kytreefarm.org or call 502.695.3979.

Photo courtesy: Whitney Cranshaw, Colorado State University, Bugwood.org

Figure 7. Exit holes of the walnut twig beetle. Their high number in a single location indicates that the holes are not entry holes or due to other causes. Because juvenile bark beetles don't usually travel far when feeding under the bark, the general rule of thumb is that a few adults go in to lay eggs and many new beetles come out.

Thousand Cankers Disease: What You Need to Know

by Jody Thompson

Introduction

Seven states and rising. That's where Thousand Cankers Disease (TCD) has been found and quarantines issued in the Eastern U.S. since 2010 (Fig. 1).

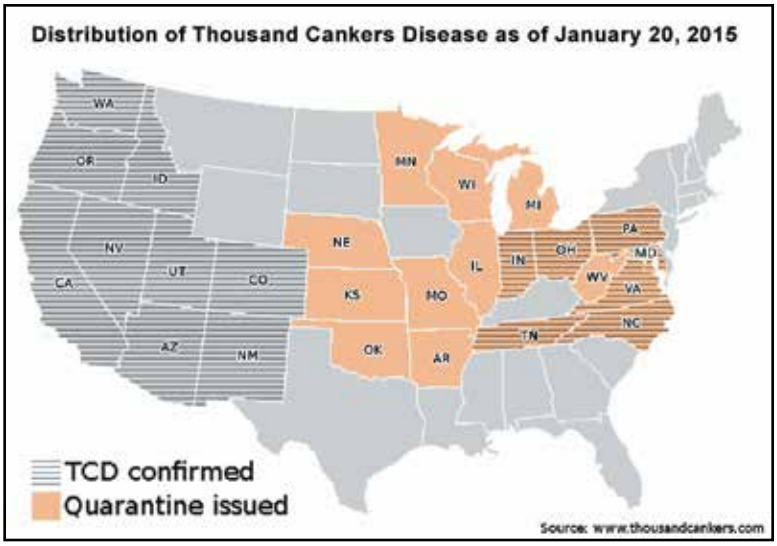

Figure 1. Thousand Cankers Disease locations and states with quarantines. Source: http://www.thousandcankers.com/media/images/TCD_Confirmed_State_Map_1_2015.png

TCD refers to a fungus that is spread by the walnut twig beetle; once the fungus is inside the tree it creates many small cankers that disrupt nutrient flow in the tree and leads to tree mortality. It was first discovered in Colorado in 2001. Kentucky has yet to find TCD, but we have realized that this may be one of those "it's just a matter of time" situations. The initial find in the Eastern U.S. was in Tennessee; over the past four years, the vectoring insect, infecting fungus or both has been found in Virginia, Pennsylvania, Ohio and Indiana. In 2013, it was found very close to Kentucky in Butler County, Ohio, and now experts are trying to figure out the details of the spot in Indiana. Some of these spots, such as Tennessee and Virginia, are well-established. Other spots, though, seem to be relatively new, such as Ohio and Pennsylvania.

What Happens When TCD Gets Here?

The blunt answer is that it's going to start killing trees. This doesn't necessarily mean that it's time to start cutting walnut. We certainly can't compare this problem to Emerald Ash Borer (EAB). EAB kills quickly, including healthy trees, which is different than most of our tree pests. TCD is a slower progressing problem, and by the time a tree is dying from it, the infestation is usually several years old. Also, remember that it hasn't been found in Kentucky yet. Even if it is found here, though, we don't expect it to immediately take over the entire state. Like many pests, many areas may remain unaffected for a long time. However, it is important to understand that the trees at risk are walnuts growing in plantations, orchards, remote woodlands and home landscapes. Essentially, walnuts in all locations are at risk.

How Does Thousand Cankers Disease Work?

Where Did TCD Come From?

TCD is native to parts of the southwestern U.S. In its native habitat, TCD has a job: it helps get dying trees out of the way and decomposed. This is similar to the function of thousands of other species of insects and fungi that are found living harmlessly everywhere trees grow, including many native to Kentucky.

However, people have moved TCD from its native

habitat and spread it to areas where there are no checks and balances to control it. We don't know exactly how it got to this part of the country, but with walnut logs, nursery stock and firewood moving between endless varieties of origins, the possibilities are enormous.

How Does TCD Kill Walnut Trees?

TCD is an insect and disease complex of the walnut twig beetle, *Pityophthorus juglandis* (Fig. 2), and the associated fungus, *Geosmithia morbida*. When this tiny beetle with fungal spores stored on its body chews its way into a tree, it initiates a localized fungal infection. The infection results in a small, shallow area of dead tissue under the bark that we commonly call a canker (Fig. 3).

Photo courtesy: Javier Mercado, Colorado state University, Bugwood.org

Figure 2. The walnut twig beetle, Pityophthorus juglandis, is a native of the southwestern US, where it is not a pest in Arizona walnut.

Photo courtesy: Elizabeth Bush, Virginia Polytechnic Institute and State University, Bugwood.org

Figure 3. Small canker found under the bark of a walnut branch. On very small branches, the cankers can be very shallow making them easy to accidentally scrape off.

Like other complexes, many, many beetles simultaneously attack a single tree. Eventually, there are enough attacks that the cankers grow together (Fig. 4). After a point of significant infection and compromised tree health, other fungi can easily establish and contribute to the tree's decline, and the walnut tree dies.

Photo courtesy: Ned Tisserat, Colorado State University, Bugwood.org

Figure 4. Many cankers will form and eventually grow together. This will contribute to the destruction of the phloem tissue and the death of the tree.

Identifying TCD

How Do You Know If You Have TCD?

Any level of walnut tree decline during its normal growing season should be examined. From late May to the beginning of September, look for dead twigs and branches, wilting leaves and small dead areas just under the bark of branches (Fig. 5). Look for yellowing leaves prior to September, because at the end of the summer, walnut will start to naturally lose its leaves sooner than most other trees (Fig. 6). The first stage in this natural leaf loss is yellowing leaves, which can be similar to decline caused by TCD.

Photo courtesy: Karen Snover-Clift, Cornell University, Bugwood.org

Figure 5. Walnut dying from TCD. Branch death and wilting leaves are common symptoms.

Photo courtesy: William M. Ciesla, Forest Health Management International, Bugwood.org

Figure 6. Late season yellowing of walnut leaves just prior to leave drop. This is a natural event that can be mistaken for health issues.

Dead twigs and wilting leaves alone do not mean that your trees have TCD, but noticing any level of the previously mentioned signs is the first step toward finding out if you do. Also, dead branches can be misleading. Damage, other insect pests and excessive heat can cause individual branches to die, especially branch tips. Drought and compacted soils can also lead to walnut decline and death like they will for any other tree. Diagnosis can be tough, and an infected walnut can look like a lot of trees dying from a lot of different things.

If you suspect that a tree has TCD, look at the smaller branches first. They will have the thinnest bark and will be easier to examine. Also, smaller branches are usually attacked first because of their thinner bark. As things progress and many more bark beetles begin living in a tree, they will eventually attack lower areas of a tree with thicker bark.

The first things to look for are exit holes (Fig. 7 on page 16) where beetles chew their way out of the wood. If you think that you have found some, scrape the outer bark away very carefully (Fig 3). One lesson learned early on was

that when working with very small branches you can very easily scrape the canker off, and you would never know that it was there. This is less of a problem on larger branches. If after scraping thin bark off a branch, you find a gallery within a darkened/dead area, you should be suspicious and contact someone to verify what it is.

Unless looking in a canker using magnification, don't bother looking for the beetles, because they are tiny (Fig. 8). Saying

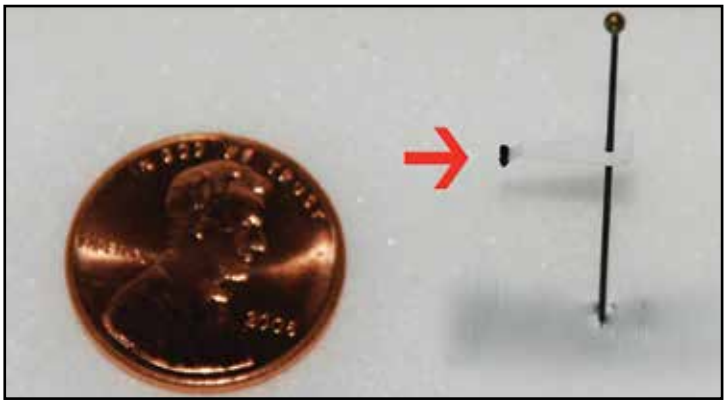

Photo courtesy: Eric R. Day, Virginia Polytechnic Institute and State University, Bugwood.org

Figure 8. Walnut twig beetles are small by any standard. However there are many types of small beetles, so identification must be made by a professional.

this is a tiny beetle, by the way, is an understatement. Even in the world of tiny insects, the walnut twig beetle is tiny. If you find tiny beetles, they will be very difficult to identify unless you have been trained to identify the large number of beetle species in the world.

Essentially beetle identification should be verified by a professional. Also, it can look similar to other tiny beetles that may be found in walnut, so, there is a danger in assuming that you have TCD just because you find a small beetle on a tree. This happens more often than you might think. The fungus will also require professional identification.

Managing TCD

Can We Protect Trees from TCD?

This is one of the most common questions asked about any sort of problem, and one that for TCD unfortunately has no good answer. There are no chemical controls known to stop TCD. It is logical to assume that we can spray something to stop it or save individual trees, because there are other pests and diseases for which that will work. Perhaps we will eventually have a solution, but that hasn't happened yet.

The best first course of action is to contact a tree professional to help you make decisions about your specific situation. Examples of professionals include foresters, consulting foresters and Cooperative Extension professionals, all of whom can work across numerous situations. Also consider certified arborists, tree care specialists who work across home and municipal landscapes.

Ultimately, the most important thing you can do is simply take care of your trees by managing them for overall health. The following are answers to a few common questions about TCD:

- Can't we kill the insects and stop them from spreading when we find them at a new spot?
  - The short answer has consistently been No. Because it is established in several areas and across numerous states, we can't know where all of the insects are. So, the disease will continue to spread, and we will continue to find it after it has become established in new areas. It's impossible to find all of these insects when there are millions of walnut trees in Kentucky alone.
- Pesticides work for my other problems, why don't they work on TCD?
  - Even the best insecticides don't kill all of the pest insects that can occur inside a tree. Some will kill most of them, but there will usually be a few that get missed. A single insect can often lay hundreds of eggs and occur by the hundreds of thousands in an individual tree. We never see most of what's out there.
- When is it too late to do something if my trees have TCD?
  - It depends on your goals for those trees.
    - Veneer – Has the potential to reduce higher quality logs to a lower grade.
    - Lumber – Has the potential to reduce lumber grade.
    - Nut Production – Anything that affects tree health affects nut quality and volume.
    - Ornamental – Anything that affects tree health affects ornamental tree quality and safety.
    - Naturally Occurring – As long as the tree lives, it will provide many of its original benefits.
- What is the government doing to stop TCD?
  - There is no federal quarantine for TCD due to the decision through APHIS that it would do little to affect the spread of TCD.
  - Many states, however, have developed their own quarantines. Kentucky is still formulating a decision about a walnut quarantine.
  - Trapping programs are in place in states throughout the eastern U.S., including Kentucky.

How To Get Help:

Contacts:

Kentucky Division of Forestry
502-564-4496
http://forestry.ky.gov/Pages/default.aspx

University of Kentucky Office of the State Entomologist
859-257-5838; ky-ose@lsv.uky.edu
http://www.uky.edu/Ag/NurseryInspection/

Local Cooperative Extension offices
http://www2.ca.uky.edu/county/

Consulting Foresters
http://kacf.org/index.php/find-a-forester/

University of Kentucky Forestry Extension
859-257-7597; forestry.extension@uky.edu
http://www2.ca.uky.edu/forestryextension/index.php

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Part 2
Tracking Certified Wood
Making Certified Wood Products Legitimate

by Jeff Stringer

Certified wood products require that all or a portion of the wood contained in the product comes from or represents wood from a certified forest. As was discussed in Part 1 of this series all entities that take ownership of the wood along the supply chain have to be certified. For the woodland owner this requires Forest Management (FM) certification and for the industries involved it requires Chain of Custody (CoC) certification. One of the key components of the Chain of Custody certification is the requirement of third party verification of the purchasing, handling, storage, manufacturing, shipping, and invoicing of certified wood and wood products. Third party verification of all those involved in the supply chain provides proof for the consumer that their purchase of certified wood products is supporting sustainable forest management. This verification is an important part of providing legitimacy to forest and wood certification. Understanding how this works provides woodland owners with a better understanding of certification and their part in the production of certified wood products.

Certified Claims – Tracking the Movement of Certified Wood[1]

Normally, as wood flows down the supply chain the only time an actual certified label is applied is on a finished product. A log coming from a forest or lumber from a mill does not have a label on it. However, the certified wood needs to be accounted for (tracked) as it moves down the supply chain. This tracking is done with what is called a claim. A claim is wording in contracts, invoices, or other paperwork that provides a description of what and how much certified material is being sold. For example, whether it is a 20-ton truckload of pine pulpwood from a logger, a load of 500 board feet of oak lumber, or a finished product like a set of cabinets or flooring going to a builder, the claim must be contained on documentation associated with a transfer of ownership. Tracking starts with the first transaction in the supply chain, the sale of the wood by the woodland owner (in certification terms, the FM certificate holder). For example, timber is purchased from the FM certificate holder by a logger. A written claim must be attached to this transaction, typically included in a contract. In this case the contract would include the FM certificate number and a description of what is being sold (mixed hardwood pulp, pine sawtimber, etc.) and the fact that 100 percent of what is being sold is certified (the claim). Having the FM number, general timber description, and volume or tonnage estimate (if available) in the contract provides the purchaser (in this example a logger) with documentation of the certified claim. A 100-percent claim is standard for nearly all timber purchases because the entire woodlands is certified, thus all the timber and fiber is certified. The logger must not mix a load of this certified wood with uncertified wood. The FM number, timber description, 100-percent claim, and volume estimate (unless the mill's scale receipts are used) specified in the contract provides the timber buyer with most of the necessary information required by CoC standards.

The second step of this supply chain is the transaction between the logger and a mill. The paperwork attached to this transaction would typically be a load ticket presented to the mill with each truckload delivered. The load ticket would indicate the logger's CoC certificate number and a designation of what type of product makes up the load, for example hardwood pulpwood, softwood pulpwood, or mixed or species specific sawlogs, veneer, etc. The load ticket would also include the claim and the name and address of the mill the logs are being delivered to. When a logger brings a load of certified pulpwood or sawlogs to a mill the claim is normally 100 percent, meaning that all the wood on the truck is from a certified forest (i.e. the product being delivered is 100 percent certified).

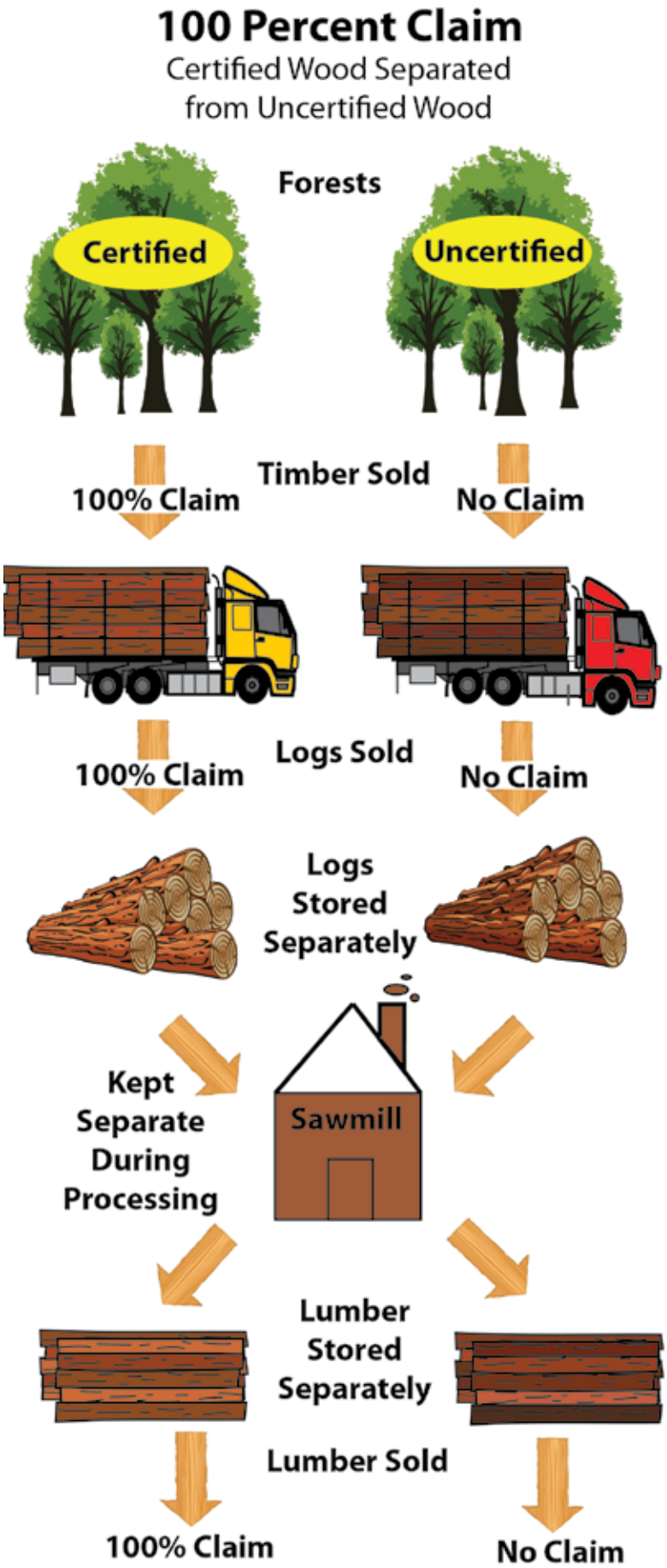
Separating Certified from Uncertified Wood

To this point the supply chain, starting at the forest and moving to the mill, is relatively simple. However, at the mill things can become interesting. The mill has options on how it handles the certified wood. It can keep the certified wood physically separated from the uncertified wood or it can be mixed. Which of these methods is used depends upon a number of factors. One of the most important considerations is whether the mill's customers want a product that is entirely composed of certified wood with a 100-percent claim or whether they want a product that is a mixed of certified or uncertified wood.

100-Percent Claim

If the client wants lumber that has a 100-percent claim this means they only want lumber that was sawn directly from logs harvested from a certified forest. If the mill has orders for lumber that requires a 100-percent claim, it must keep the certified wood separated and identified as 100 percent from the uncertified wood during storage, manufacture,

Figure 1



and shipping (see Figure 1). This practice would be very easy if ALL the wood the mill received was harvested from certified forests. However, in most instances there is not enough certified wood to run a mill, therefor they have to purchase both certified and uncertified wood. A mill might have to keep separate piles of logs, lumber, or chips, which is cumbersome for most mills, adds costs, and in some instances would be nearly impossible to achieve. The latter is the case for most pulp and paper mills. This situation results in most mills combining logs from both certified and non-certified forests during storage and manufacture.

So, when mixing occurs how can a mill still sell a certified product? The following example will illustrate how the CoC standards allow for this possibility. This example uses a mill buying logs by the board feet. However, the same principle applies to logs, pulpwood, or chips being purchased by the ton.

Mixed Claim

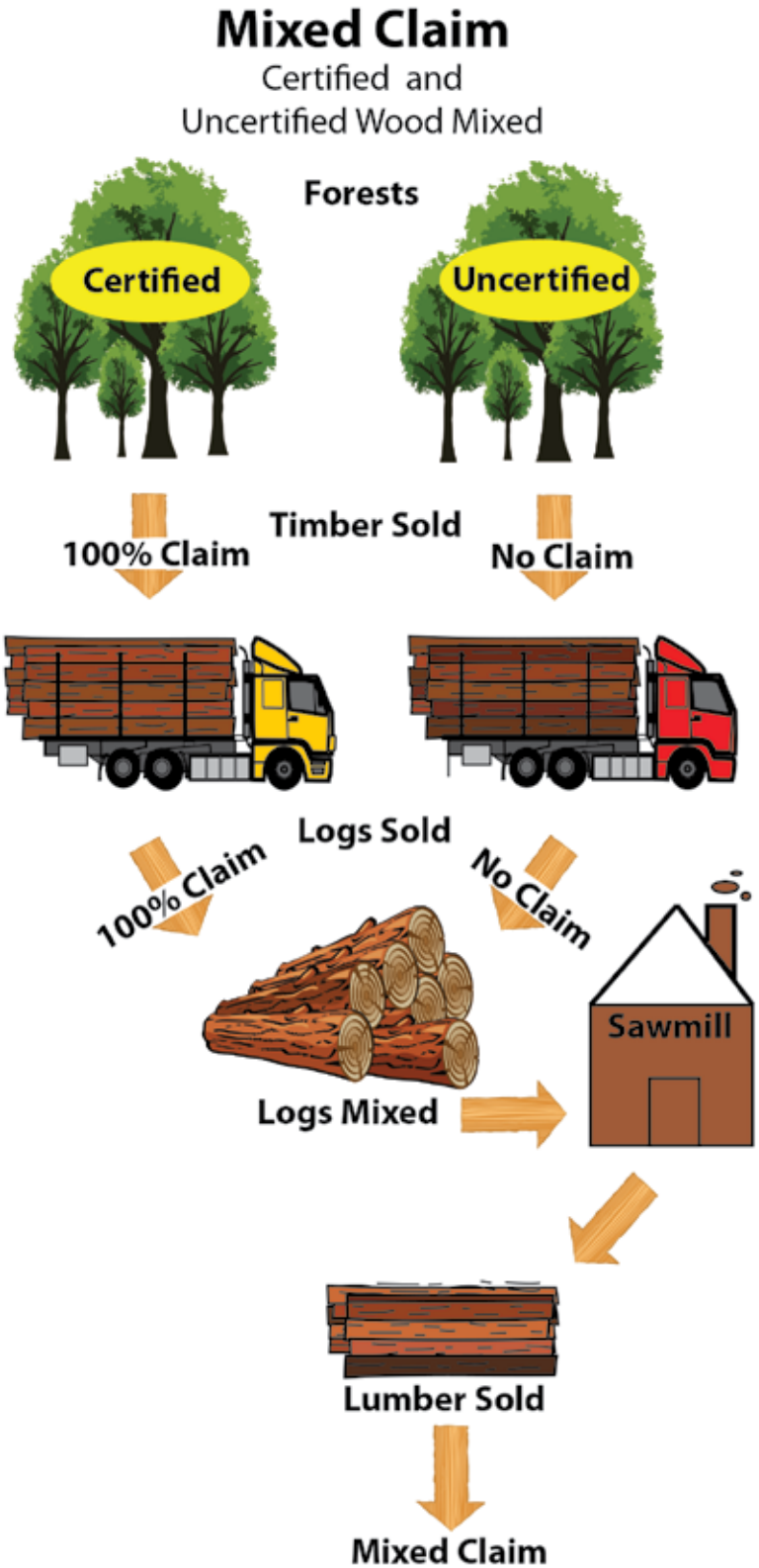
Over a week multiple loads of logs from a certified forest come into the mill totaling 100,000 board feet (bf). The mill records the load ticket number, board feet, species and type/grade of the logs from each load it receives into their CoC system.

From mill studies the mill knows how much product is made from the logs. In this case, how many bf of lumber is produced from the 100,000 bf of logs. If the mill sells chips it could also determine the ton of chips produced from milling 100,000 bf of logs. For this example the lumber yield is 105,000 board feet of lumber. This lumber volume (and associated chip tonnage) is recorded and is now available for sale. The different certification systems allow mills to use several types of bookkeeping procedures to track how much certified product they have to sell. Some use a percentage, some use a credit system. This example describes a credit system, but the same basic principle applies for all systems.

Once the amount of certified product is determined, the certified logs are then physically placed into log piles and the mill with uncertified logs and processed into lumber or chips as part of normal operations (see Figure 2). If there are no orders at that time for certified lumber or chips, the lumber or chips produced from the original 100,000 bf is sold to fill regular non-certified orders. However, the mill retains the board feet or tons of certified credits that it can sell when certified orders come in.

Two months later the mill gets an order for 50,000 bf of certified lumber. The mill has this quantity of certified credits in its credit account of the right species and product/grade and fills the order. The invoice would indicate 50,000 bf of lumber and have a mix credit claim, and 50,000 bf of credits would be deducted from the credit account. Note the claim is now mix credit and not 100 percent. The mix claim indicates that the logs used to produce the lumber may have not come from a certified forest. The mill can continue to sell certified lumber and chips as long as they have credits (in this example 55,000 bf remaining in their account). Once the credit account goes to zero for a particular grade

Figure 2



of lumber or chips they can no longer sell certified products of that grade until their credit account has been replenished. Credits in the credit account are only good for one year from the date they are entered into the account. After a year the credits disappear.

Several points arise from this example of the mixed system. One is that mix credit certified products may not actually contain wood that comes from a certified forest. The mixed product represents wood that at some point was purchased from a certified forest in the same quantities. This is allowable because there is no difference between the properties of wood that comes from uncertified forests and that from certified forests. However, the key point of this system is that it can prove that there were certified management standards used on an appropriate number of forest acres as a result of the purchase of mixed claim or labeled wood product. Thus the use of mixed products supports sustainable management, which is the whole goal of the forest and wood certification – promoting the proper management of our forests.

One important issue has not yet been addressed: What type of wood is allowed to be mixed with wood from a certified forest? The answer is not just any wood. The wood must be what is called controlled wood for FSC products and certified sourced wood for SFI products. Part 3 of this series will discuss what these terms mean and what ramifications this designation has for forest management.

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[1]The information and examples are designed to explain in general terms how tracking occurs in CoC systems. Differences between systems (SFI®, FSC® or PEFC®) exist, and different industries handle technical aspects of the CoC requirements differently.

Register Now for the Woodland Owners Short Course

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August 29
West Region Woodland Owners Short Course - Christian County

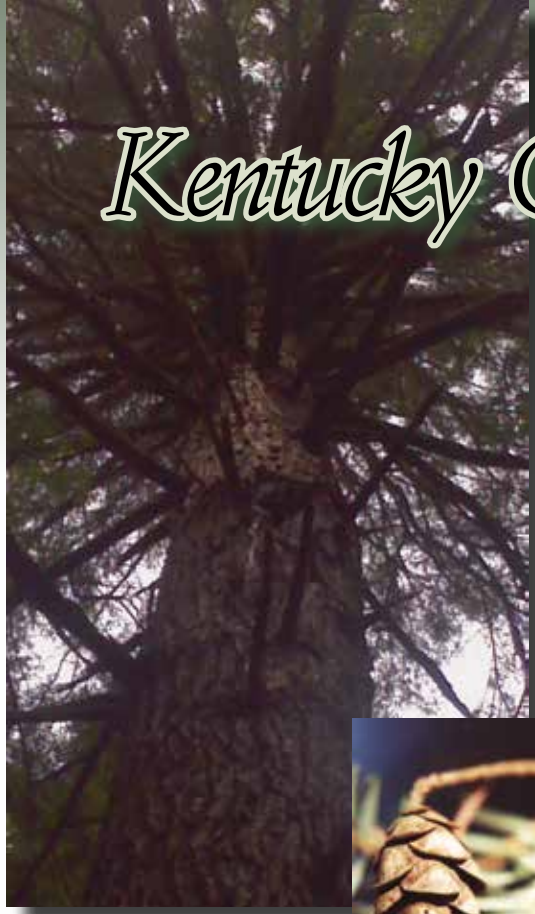
September 26
East Region Woodland Owners Short Course - Carter/Rowan counties

If you would like to register online, visit www.ukforestry.org.

Kentucky Champion Tree Program

A Giant in the Shade – Eastern Hemlock

by Diana Olszowy



Above: Kentucky State Champion eastern hemlock in Letcher County. Right: Hemlock needles and cones are small but the importance of hemlock to wildlife is really big.

Hemlock photo courtesy: Kentucky Division of Forestry
Pine cones photo courtesy: Bill Cook, Michigan State University, Bugwood.org

For those who frequent the forests of eastern and southern Kentucky, these iconic species are often the first tree species that comes to mind. Eastern hemlock is commonly found in the Appalachian regions of North America from Nova Scotia south to northern Georgia and Alabama and west to Minnesota. In Kentucky, hemlocks thrive in areas where there is drainage of cool, moist air – on moist rocky ridges, valleys and ravines, hillsides and lakeshores. They prefer growing in partial shade and don't have any problem growing in full shade conditions. Hemlocks are unlike any other species; they have the ability to create their own microclimates. The area beneath their canopies is cooler and moister because of the dense, multi-layered growth habit that has the ability to produce year-round shade, which limits the amount of sunlight that can reach the forest floor.

Kentucky's reigning champion eastern hemlock is located in Letcher County, where it stands 145 feet tall and is more than 13.5 feet in circumference. This magnificent specimen has a nearly 100-foot spread which provides critical winter habitat for many animals, amphibians, birds and fish such as trout. Eastern hemlock is usually considered a medium to large tree that averages 70 feet in height.

Two-sided needles grow along the stem, usually flattened and blunt; two silvery stripes less than an inch long are located on the underside of the needle. Hemlock cones are small, less than a half-inch long, wind pollinated and usually mature in August/September. Hemlocks serve as an important food source for animals such as deer, rabbits, sapsuckers, squirrels and voles. The needles, twigs, bark, sap and seeds are all edible depending upon the animal's tastes. Historically, the hemlock was used only for pulpwood or as a source of tannin for tanning leather; now lumber is manufactured from hemlock for cheap construction purposes. The Native Americans used the moist inner bark to make a poultice for wounds and sores. Even today hemlock oil, distilled from the needles and twigs, is used in liniments.

The hemlock's biggest threat is the hemlock woolly adelgid, (HWA) an insect that comes from Asia. HWA was first found in Kentucky in 2005 and has expanded to 30 eastern and southeastern counties. This magazine has discussed the infestation of HWA on numerous occasions, the most recent article in KWM Volume 7, Issue 2. Our reigning champ shows battle scars from its recent bout with HWA, but thankfully it was treated before it was lost and now it can continue to propagate the next generation.

Photo courtesy: www.bio.brandeis.edu

Healthy hemlock needles are on the left. Hemlock needles in the image on the right are being attacked by the tiny but destructive hemlock woolly adelgid. Effective treatments are available for the hemlock woolly adelgid. For more information ask your forester or county extension agent.

Photo courtesy: Michael Montgomery, USDA Forest Service, Bugwood.org

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kentucky WOODLANDS

U.S. Fish and Wildlife Service Issued a Special Rule to Focus Protections for Northern Long-Eared Bat

The northern long-eared bat is native to much of eastern North America and is very vulnerable to the white-nose syndrome which has been found at numerous locations across Kentucky.

In response to the severe decline of the northern long-eared bat that is common to Kentucky, the U.S. Fish and Wildlife Service ruled to list the species as Threatened under the Endangered Species Act (ESA). However, the ruling provides provisions for forest management including timber harvesting to occur as long as buffers are maintained around known caves where they hibernate. The rule also restricts clearcutting and other similar harvests from areas around trees that are known roost trees (where mother bats congregate to rear their pups) during early summer. Unlike caves, roost trees are not mapped or "known" and private landowners will not have to survey for them.

Emerald Ash Borer Found on White Fringetree

The Emerald Ash Borer (EAB) was discovered attacking a white fringetree in Dayton, OH this past fall. The discovery has many people concerned that other trees might be at potential risk as ash trees are killed off and populations are reduced. While many have worried that this may happen this was the first documented instance. It should be noted that the white fringetree and ash trees are in the same family (Oleaceae). Other members of this family include olives, forsythia, and privet—which is an exotic invasive shrub that is already causing problems in Kentucky.

White fringetree

Photo courtesy: John Ruter, University of Georgia, Bugwood.org

Act Relating to Timber Harvesting in Kentucky

Kentucky State Senator Joe Bowen of Owensboro introduced Kentucky Senate Bill 92 which has been signed by the Governor. This bill is commonly called the Bad Actor Bill because it requires Specifics loggers or operators who have received bad actor designations and have not paid fines and repaired sites to provide prior notice to the Kentucky Division of Forestry before engaging in any timber harvesting operations until they have paid all civil penalties and performed all required site remediation. Beginning on January 1, 2016 the Division will have the authority to issue an emergency order requiring any three time or more repeat bad actor to cease all timber harvesting operations until all required site remediation has been performed and all civil penalties have been paid or a repayment plan has been established and maintained.

Upcoming Dates To Remember:

2015 Dates:	Event:	Location:	Contact:
May - Dec.	Kentucky Master Logger 3-Day Program Offerings	Across the state through Dec.	www.masterlogger.org
June 12-14	Ky Master Woodland Stewards Program	Robinson Forest	www.ukforestry.org
August 15	Central Woodland Owners Short Course	Franklin/Woodford counties	www.ukforestry.org
August 29	West Woodland Owners Short Course	Christian County	www.ukforestry.org
Sept. 9 - 10	KY Wood Expo	Lexington, KY	www.kfia.org
September 26	East Woodland Owners Short Course	Carter/Rowan counties	www.ukforestry.org

NEWS TO USE

KY Master Woodland Stewards Program Accepting Applications

Applications are currently being accepted for the Kentucky Master Woodland Stewards Program. The idea behind the program is to provide interested woodland owners with advanced woodland management skills and to create forestry ambassadors across the commonwealth. The field portion of the program will take place at UK's historic Robinson Forest and will also include a number of webinars before and after the field portion. Applications must be received by May 15. You can apply online at www.ukforestry.org.

Space is limited so if this is an opportunity you are interested in please submit your application as soon as possible. For more information about this unique opportunity, please contact Billy Thomas at 859.257.9153 or billy.thomas@uky.edu.

Photo courtesy: Chris Osborne

The camp at UK's Robinson Forest.

Forestry Fall Webinar Recordings ONLINE

The 2014 Forestry Fall Webinar Series wrapped up in November but you can check out the recordings anytime by visiting www2.ca.uky.edu/forestryextension/webinars.php. We have a total of 10 webinars available on a variety of topics—there should be something of interest to everyone. All the webinars last approximately one hour and are FREE to view.

Service Forester's Handbook Available

The Service Forester's Handbook is a highly sought after tool used by foresters and natural resource professionals working in the field. This convenient pocket guide is now available as an app and interactive website. The Service Forester's Handbook provides a quick-reference for basic forest and land measurements, volume tables, silvicultural recommendations, site index curves, forest measurement formulas and more.

The Southern Region Extension Forestry (SREF) staff, working with experts in the field, have updated and organized all existing information, including modern, state of the art approaches to forest management, to redesign the overall look and feel of the book. The online version can be found at http://handbook.sref.info/. To download the mobile app version search for "Service Forester's Toolkit".

Tax Tips for Woodland Owners

U.S. Forest Service specialist Linda Wang recently released the Tax Tips for Forest Landowners for the 2014 Tax Year annual bulletin. You can get your copy by visiting http://www2.ca.uky.edu/forestryextension/PDF/Tax-Tips2014.pdf. Make sure to check out this valuable resource and feel free to pass it along to your tax preparer as well.

Test Your Knowledge Review

Answers from KWM Vol. 9 Issue 1

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

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