



Kentucky Woodlands Magazine

Volume 4 Issue 1
April 2009

**Woodland Health
Ice Damage Assessment
Woodland Trails**

Kentucky Woodlands

Volume 4 Issue 1 Magazine

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

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From the Editors of the Kentucky Woodlands Magazine:

The first few months in 2009 have indeed been interesting and this edition of the magazine highlights some of the issues that emerged. The short legislative session witnessed a wide range of forestry-related bills and a summary of each is provided by the Kentucky Woodland Owners Association.

Certainly, the biggest issue affecting woodland owners in 2009 was the ice storm. The photo guide of ice damage should help you assess damage to your trees and provides links to additional information on ice storm damage publications. The ice storm certainly reminds us that we can not take the health of our woodlands for granted. As a woodland owner, understanding what woodland health is and how to assess the health of your woodlands is important. We hope that the article "Woodland Health" helps you better understand the underlying principals and indicators of forest and woodland health. It is also important for many woodland owners to easily walk through their woods and the article, "Woodland Trails: layout, building, and maintenance" will provide you basic information needed to develop and maintain your trails.

This issue will also feature the first Kentucky Tree Farm Committee Newsletter that contains updates about the American Tree Farm Program in Kentucky and we hope to provide this as a regular feature of the magazine. As always, this issue also contains our standard departments covering Kentucky Champion Trees to how to kill invasive plants. We hope you enjoy and find useful this issue of the magazine and please provide us your comments on the tear-out or visit the Kentucky Woodlands Magazine on-line at www.ukforestry.org.



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Lyon County storm debris.



Photo courtesy: Susan Fox

About the Cover:

Susan Fox, Lyon County Extension Agent, contributed the cover photo of the January ice storm damage in Kuttawa, KY (Lyon County). The storm caused wide-spread damage to timber and landscape trees in western Kentucky. Thousands of utility poles snapped causing power outages that covered entire counties. It took 21 days to restore electricity to the entire county. Lyon County alone has removed more than 379,000 cubic yards of ice storm debris. This is fairly representative of other western Kentucky counties impacted by the ice storm. In Lyon County, this material is being converted to mulch.

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Pathogens such as the fungi that causes beech bark disease are killing American beech trees in states north and east of Kentucky. The fungi and the scale insect that transmits the fungus first appeared in Nova Scotia in 1890. Threats like this to individual species are mounting and can reduce the diversity of tree species in our forests and impact wildlife, timber, and recreational opportunities.

Woodland Health

Photo courtesy: Jeff Stringer

by Diana Olszowy and Jeff Stringer

Time changes everything and Kentucky's woodlands are no exception. Recent ice and wind storms have brought significant attention to the condition of our woodlands, raising the question: Will they recover? In most cases, the answer is yes. However, the bigger question is whether they are healthy. Healthy woodlands include healthy trees and a diversity of species that work together to respond and recover from environmental stresses. A disturbance due to a natural disaster, wildland fire, or even insect and disease outbreaks will cause a change in a woodland. How it responds to that change defines how healthy it is. Steps can be taken to help your woodlands withstand all kinds of disturbances. The first step is to determine the health of your woodlands.

Determining Woodland Health

Many factors contribute to woodland health, and to compound the problem, woodlands are constantly changing. This change is normal and expected. Trees die, and new ones are constantly regenerating. So the old adage "If a tree falls in the forest and no one is around to hear it, does it make a sound?" should probably read "If a tree falls in the forest, what will grow back in its place?"

Woodlands go through several developmental stages as different trees become established, grow, compete with each other for space, water, nutrients, and sunlight, and eventually die. The process is referred to as succession and is ongoing throughout the life of the woodland. We've all seen abandoned fields in the process of converting back into a woodland, and the many stages of plant growth that occur over many, many years are the different successional stages. Early successional species such as woody shrubs, eastern redcedar, and pines make way for fast-growing hardwoods such as yellow-poplar, maple, and ash; eventually, oak, hickory, and beech will seed into the site if there are nut-bearing trees close by. Oak, hickory, and beech will not magically appear in the woodland, and a successional stage with yellow-poplar, maple, and ash could easily remain dominant for many years.

During any of these successional stages, a disturbance can alter the hierarchy and encourage fierce competition at all woodland layers, from soil organisms to the understory tree species to the dominant canopy trees. Healthy woodlands have the ability to continue to regenerate native species, even when stressed by natural disturbances, and maintain a natural assemblage of species in the understory, midstory, and overstory.

Characteristics of a Healthy Woodland

Although many disturbances such as wind and ice storms can damage our woodlands both monetarily and aesthetically, most woodlands, if they are healthy, have the ability to bounce back. Being able to assess and determine the health of a woodland and the potential risks that it might be subject to is invaluable to a woodland owner. Gauging the condition and health of a woodland and making a reasonable assessment of risks allows one to plan for the future and start to take actions that help restore the woodlands to a healthy state where it will have the capacity to respond well to disturbances. Although there are many indicators of woodland health, some indicators that can easily be determined, especially for second-growth woodlands, include:

- Diversity of native overstory species having full, well-balanced crowns.
- Diversity of native herbs, shrubs, and understory tree species.
- Trees of the proper age and vigor to produce abundant seed crops and sprout from root suckers or stumps.

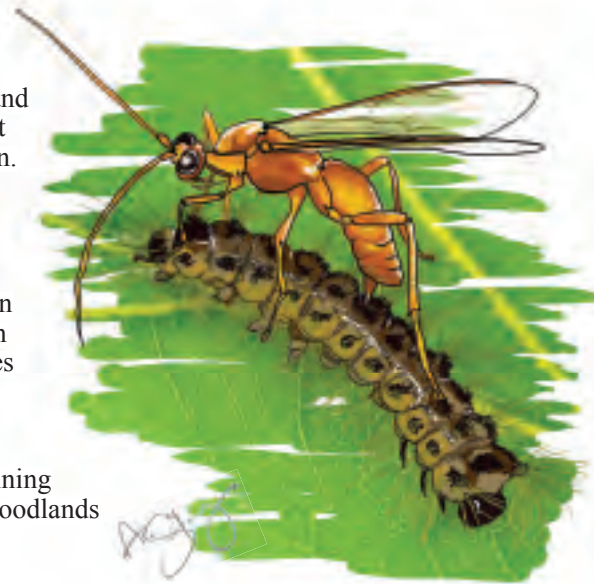
Several of these indicators emphasize “diversity” and “native.” Our woodlands are naturally diverse. Maintaining diversity allows the woodlands to adapt to disturbances over the long run. For example, if a woodland is dominated by one species and an insect or disease enters the woods that kills that one species, it will open the woodlands up to significant invasion. If nonnative exotic species are present in or around a woodland, it can be at serious risk from invasion that may eliminate native species. Unfortunately, there are several examples of a native species being functionally wiped out of our woodlands. The most notable example is the American chestnut. A European disease, the chestnut blight fungus was introduced in the United States and spread throughout the natural range of the American chestnut, wiping out a very important species. Other more recent examples include the hemlock woolly adelgid, which has entered Kentucky and is threatening to kill all or a significant number of eastern hemlock trees in stands where it has cropped up. The emerald ash borer is poised to enter Kentucky from the north and will threaten our native ash species. Maintaining diversity means that there will be enough species present to occupy the woodlands if one species collapses.

If you were a woodland owner in the 1930s and had a significant number of American chestnut in the woods, this loss would seem catastrophic. Fortunately, at that time in the United States, there was limited pressure from invasive exotics and enough native species around that eventually regenerated and filled the niche left by the loss of the American chestnut. Could the same be said today? Certainly, the situation has changed significantly as to the numbers of invasive species that have become established in the United States and developed sufficient populations poised to take advantage of any opening or disturbance in a woodland.

It should not be surprising that invasive species are at the top of the list of threats to woodland health. In many instances, the woodland ecosystem has not evolved or adapted to deal with species from the other side of the world. Our woodlands have adapted to deal with some wildfire, the destruction of scattered overstory trees, and the occurrence of native insects and diseases. However, the onslaught of invasive plants, insects, diseases, and, in some cases, animals has occurred so quickly that the woodland system and our native species have not had time to adapt and develop countermeasures to deal with this invasion. Some of these invaders have already taken their toll. However, a significant number of these threats have already spread quietly throughout Kentucky and are waiting to erupt. Some invasive species are expected to have marginal but important impacts, while others are predicted to be catastrophic.

Invasive species can take advantage of natural or manmade disturbances that could normally be overcome and establish themselves, initiating a long-term debilitating blow to the woodland ecosystem. This single fact has changed the nature of woodland management in the United States. Without the threat of invasive exotic species, woodlands could be maintained in a less healthy state or we could ignore our wood-

Invasive understory plants can establish themselves to the point of hindering the natural regeneration of native trees as is shown in this picture of a thick carpet of Japanese stilt grass stunting the development to regeneration in a shelterwood harvest.



Overtime insect and disease threats to our woodlands can potentially be moderated using biological control, like wasps that lay their eggs in gypsy moth caterpillars. However, many of these controls are not yet sufficient enough to stop most exotic insect and disease threats.



Photo courtesy: Chris Oswalt



Defoliations naturally occur in Kentucky. The white oak tree above was totally defoliated by native insects. These types of stress inducing problems can normally be overcome by a healthy tree when there is time for the tree to recover before another stress occurs. If multiple stresses occur, like those caused by a defoliation and then a drought, tree mortality can quickly become apparent.

lands altogether (a situation now termed as managing through benign neglect), and they would, in most instances, be able to fend for themselves. However, this is no longer the case.

Attention and some degree of management are required to ensure that woodlands have the qualities listed above that will allow them to have a fighting chance. Even then we often have to intervene to assist woodlands that are under a barrage from invasive exotic species. Woodlands must be able to adequately regenerate a diversity of native species. This is why a healthy woodland is recognized as having trees that are of the proper age and vigor and are capable of producing abundant seed crops or vigorous sprouting. The continuous development of seed from a variety of species and rootstocks that can sprout are necessary to naturally regenerate after a disturbance (either natural or manmade). If there is a limited capacity to regenerate, the woods are losing diversity and may be subject to a higher degree of invasion.

Disturbances

Disturbances are common to Kentucky's woodlands, including those caused by humans, those that are natural, and those that are a combination of the two. Some types of disturbance can be very destructive from an economic standpoint and can result in a reduction or short-term loss of woodland health but are not so harsh that a woodland cannot eventually recover. For example, over 90 percent of the wildfires in Kentucky are caused by humans. They are the result of debris burning, unattended campfires, and, unfortunately, intentionally set arson fires. When a wildfire burns a tree, it not only damages the economic value of the tree, it also provides an entry point for opportunistic insects and diseases. With the tree and the woodlands already under stress from fire damage, this secondary attack can lead to tree mortality. At this point, the health

of a woodland is not good, but it generally still has the ability to recover over the long-term as long as other disturbances don't compound the problem. This is why natural resource professionals can advocate the proper use of prescribed burning and at the same time denounce arson-caused wildfires.

There are other manmade disturbances that woodlands can recover from even though recovery can take a long time. A case in point is the widespread timber harvesting that occurred throughout Kentucky prior to and during the industrial revolution. Woodlands that were cut very heavily were often subject to burning at the same time. Woodlands that developed from these events were different from the original relatively undisturbed woodlands. They may currently have tall overstories of native species, but it will take several hundred more years for some of the herbaceous layers and understory plants and animals to fully reestablish. This can happen as long as a woodland is not subjected to other disturbances for which it has little or no defense. Unfortunately, multiple disturbances can and do occur, and invasive species are poised to capitalize.

Each disturbance reduces the health and resiliency of our woodlands. A poorly planned timber harvest reduces species diversity, and multiple unplanned selective harvests can leave old low-vigor trees present in the overstory. Couple this with a wildfire, late spring frost, defoliation by a native insect, drought, and the presence of an invasive species or two, and the stage is set for a negative long-term reduction in woodland health and maybe even a loss of a woodland dominated by native species.

Our Aging Woodlands

One issue that is normally raised when woodland health is discussed is the aging of our woodlands. A significant percentage of our overstory trees developed from abandonment of agricultural land or from the regeneration and growth spurt associated with initial widespread and intensive logging in the late 1800s and early 1900s. These events caused the development of a generally even-aged overstory that in some cases has not been harvested or has been "selectively" cut several times in the late 1900s. The selective cutting usually left trees of low commercial value; this included species that were not commercially valuable or individual trees that had bad timber form or were hollow. Regardless, there has been a continued aging of overstory trees, and many species that have relatively short life expectancies such as black oak, scarlet oak, cottonwood, and black locust have died or are starting to die off. Further, as other species age, they are more susceptible to mortality. Generally, this mortality occurs when droughts or defoliations stress these older trees. This is natural, expected, and is a part of the process of our woodlands turning from an



Some insects like the hemlock woolly adelgid are invading Kentucky. Large areas and tens of thousands of hemlock trees growing around streams and rivers are at risk, reducing overall biodiversity and negatively impacting stream life.

Timber stand improvement work and improvement harvests can be used to remove exotics and reduce overcrowding of native species. Regeneration harvests using appropriate regeneration methods such as group openings, shelterwood harvests, or, in the case of an extremely degraded stand, a small clearcut can be used to develop an appropriate age class distribution in your woodland. Regardless of whether active management is used or not, scouting for invasive exotics is a practice that is required for most woodlands. In all cases, this work should be done with an eye to maintaining species diversity, providing for the capacity to regenerate now or in the future, and eliminating exotic species that are present. Ultimately some degree of management is needed to properly care for woodlands and ensure long-term health and resiliency.

even-aged woodland to an uneven-aged one. Even though this is natural, it can impact the look and value of our woodlands and can lead to the establishment of invasive exotic species. This is why aging is often discussed as a critical element to woodland health. This aging will not lead to a loss of woodlands, but it will lead to changes that can cause serious concerns about long-term woodland health if other disturbances manifest themselves in these aging woods. This is why something as simple as allowing a second-growth woodland to develop into an old-growth woodland must be planned for and managed.

Managing for Woodland Health

To help improve or maintain a healthy woodland, you must be aware of the risks and understand the current condition of the woodland and gauge its health relative to its ability to withstand disturbance. Consulting with a forester or wildlife biologist is one of the best ways to get an idea of the health of your woodlands. For example, it is relatively easy to determine the age of the overstory trees and whether they are healthy with full, vigorous crowns. Are there invasive species currently in your woodlands or directly adjacent that should be dealt with?

It is also possible to accurately predict the regeneration potential of your woodland and what species will regenerate if a natural or manmade disturbance kills or removes a portion of the overstory trees. There are certainly acute disturbances such as ice storms and droughts and long-term disturbances from global climate change that are beyond our control. They have occurred in the past and will continue in the future. Although you cannot stop these, you can understand how your woodland will respond and start to conduct management practices that improve the health and resiliency of your woodlands.

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2009 Legislative Session - Bill Watch

The Kentucky Woodland Owners Association (KWOA) spent considerable time and effort in 2008 developing the ground work for legislation. The following bills relating to forestry were sponsored during the legislative session of 2009 including some bills not sponsored or supported by KWOA. Due to the short session none of the bills passed. However, sponsoring the bills this year was an attempt to start the ball rolling for successful passage in the next regular length session in 2010.

HB 122 ACT relating to fire ecology.

Create a new section of KRS Chapter 158 to require schools to include fire ecology in the science core content; require fire ecology to be taught in the public schools no later than the 2010-2011 academic year. Sponsors: Rick Nelson, Mike Denham.

HB 211 ACT relating to forestry and biomass.

Amend KRS 149.330 to include removal of woody biomass in definition of "timber harvesting operations" including energy production but excluding firewood cut for personal use only from definition of "timber harvesting operations". Sponsor: Leslie Combs.

Note: This amendment was supported by the Kentucky Forestry Best Management Practices Board so that the Kentucky Division of Forestry (KDF) could inspect commercial logging operations that are also removing biomass for fuel.

HB 235 ACT relating to forest health and agricultural forest products.

Create a new section of KRS Chapter 149 to establish a Forest Health Board. Sponsors: Tom McKee, Mike Denham.

Note: The development of the Forest Health Board (attached to KDF) is a key position of the KWOA and the bill was developed with the aid of KWOA. The house unanimously passed this bill. Unfortunately it eventually ran out of time. All parties believe it will be passed next session.

HB 396 ACT relating to timber theft investigation.

Create a new section of KRS Chapter 149 to authorize the Division of Forestry to develop an investigative timber theft and forest fire arson unit with the authority to make arrests. Amend KRS 15.380 to require forest crime investigators to be certified as peace officers. Sponsor: Leslie Combs.

Note: KWOA supports the development of a timber theft and arson unit IF it is funded. KWOA has no interest in saddling KDF with an unfunded mandate.

HB 397 ACT relating to forest conservation.

Amend KRS 149.348 to increase the maximum civil penalty for violation of bad actor provisions. Sponsor: Leslie Combs.

Note: The KWOA supported an increase of the fines for Bad Actors (loggers that violate the KY Forest Conservation Act). This was also supported by the Kentucky Forestry BMP Board and KFIA.

HB 481 ACT relating to the sale of timber.

Create a new section of KRS Chapter 364 to require the seller of trees, timber, or forest products to produce the instrument vesting



Graphic by: Aaron Stringer

title to the goods in the seller; require the purchaser to keep the instrument for no less than two years; provide for a penalty of one hundred dollars per instrument for failure to comply. Sponsor: Leslie Combs. **Note:** This bill was proposed by individuals in eastern Kentucky that are advocates for timber theft victims. While KWOA is whole-heartily opposed to timber theft, KWOA was not supportive of this legislation as it was viewed as not being effective in stopping theft.

KWOA's mission is to promote economically and environmentally sound forest management, advance the skills of Kentucky woodland owners, provide communications and networking among woodland owners, serve as an advocate for Kentucky woodland owners in legislative activities and inform the public about the importance of woodland management and what it contributes to Kentucky. To advance this mission KWOA will continue to work hard with legislators and partners to see that effective legislation is developed that will help Kentucky's woodland owners.

New KWOA Web site

We have recently updated and changed the address of our Web site. To learn more about KWOA and all the work we do on behalf of Kentucky's woodland owners please visit us at www.kwoa.net or contact Betty Williamson, KWOA president, at 270.821.8657.

Photo courtesy: Diana Olszowy

Photo courtesy: Ray Campbell

Evaluating Ice Damage

by Jeff Stringer

Ice can cause a wide range of damage to woodland trees, from annoying, but un-harmful to catastrophic. This photographic guide will provide information that can help you assess tree damage relative to timber value loss¹. If you feel that you have significant damage to your timber trees contact a professional forester for assistance.

High Value Veneer -

High value veneer logs that are lying on the ground (1) or have main stem breakage (2) need to be removed quickly prior to rot, staining, and drying. It is best to remove them prior to the middle of the summer. Partially thrown trees (3) that are off the ground and still attached to the root wad (that is partially in the ground) have more time before they degrade.

Evaluating Top Damage -

A range of damage is common after ice storms. Typically most species that have less than 30 percent of the top branches damaged will be fine in the long-run (4). Trees with approximately 50 percent of their top branches removed (5) are suspect, some may live and some may die, often depending upon conditions during the next growing season. Trees with more than 50 percent of their top branches removed (6) will do poorly or die, either right away or in subsequent years.



Photo courtesy (4): Susan Fox

Photos courtesy (all but #4): Jeff Stringer



Top Damage to Small - Fast Growing Species - Fast growing species such as yellow-poplar can re-grow tops relatively quickly compared to slower growing species such as oaks. Figure 7 shows a yellow-poplar in the center that will re-grow its top easily. However, the two yellow-poplars on either side will probably sprout, but it will be a long time before they will re-grow a top sufficient to re-establish significant growth. Yellow-poplars that still have 30 percent of their crown intact (8) will recover.



Pines -

Pine stands can be particularly hard hit (9). Stands with this type of damage should be salvaged relatively quickly. Pine timber is very susceptible to staining that can start to occur the first growing season after damage.

¹ Consult FORFS 09-02 “Ice Damage – Timber Salvage Decisions” at www.ukforestry.org.

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WOODLAND TRAILS

LAYOUT, BUILDING AND MAINTENANCE

by Shad Baker

TRAIL HISTORY

Trails have always been a part of Kentucky woodlands. From the millennia-old swath through Cumberland Gap trampled as bison crossed between the grassy fields and cane-breaks of Kentucky to the companion grounds of Virginia and Tennessee, to the Trail of Tears forged across western Kentucky as early Americans were forced on a long, treacherous, and often fatal trek to resettle west of the Mississippi River, trails have defined Kentucky's history and played a huge role in shaping its future. Many of these one-time paths later became the corridors for our modern highways, including U.S. 25 in southeastern Kentucky, U.S. 23 in eastern Kentucky, and U.S. 60 in central Kentucky. Almost every major thoroughfare in the commonwealth began as a humble trail.

Woodland trails are used for a wide range of activities. Some are used by woodland travelers to reach a cherished destination like a hunter's trail that provides for a stealthy approach to a favorite hickory tree or a trail to a prime birding habitat. Hikers, horseback riders, and many other woodland visitors enjoy a trail that allows them to take in miles of scenery without needless struggle or damage to the land. Many Kentuckians are relearning the importance exercise plays to their health and wellness, and there is no better workout for the body and mind than a regular walk in the woods. Ask anyone who has spent more than 20 minutes on a treadmill, and they'll tell you that they would much rather be outdoors where the scenery changes and the exertion level naturally varies. Finally, woodland owners build working trails to help protect and manage their properties.

THE NEED FOR PLANNING AND DESIGNING A WELL-BUILT TRAIL

Most people will recognize that a well-planned and well-built trail allows them to better use and manage their land for almost any purpose. Even as a road permits us to quickly and easily get from one town to another, well-placed trails make timber evaluation and logging easier, fire suppression more manageable, and recreational pursuits more pleasant, and they benefit the property owner in countless ways with minimal disturbance to soil, vegetation, and wildlife habitats. The one-time disturbance caused during trail construction pales in comparison to the wear and tear created when many different routes are taken under varying weather conditions and over many years. Properly built trails also afford us the opportunity to teach the next generation about wildlife, forestry, conservation, or any other woodland subject. Little feet are more likely to join us on a well-worn path than in pushing through green-briar or cedar thickets.

Signs can be a valuable enhancement to a trail system. Signs are often used at trailheads and junctions to inform trail users of destinations and distances. Additional signs (reassurance markers) can be useful if the trail is long or difficult to follow.

Photo courtesy: Shad Baker

Public access to trails on private land can have a tremendous potential benefit for the landowner. Some may be proud to learn that their land is appealing enough to draw others to visit. Others may be surprised to learn that lands used by public trail systems typically also enjoy a significant tax break while allowing the landowner to retain almost all other rights. A case in point is the 80 percent tax break for private landowners who have a conservation easement for the Kentucky Pine Mountain Trail in southeastern Kentucky. In exchange for permitting public use of your land, you may find that you can





still enjoy your land as before and with a greatly reduced tax burden.

TRAIL ESTABLISHMENT

Whether a trail is kept small for foot traffic or widened enough to permit horse-drawn wagons, a well-designed and well-built trail makes traveling through the landscape easier. But good trails don't just happen spontaneously: they have to be designed and built. A trail that just "happens" is almost always too steep or too narrow, lies poorly on the contour, and is typically badly eroded. Frequently, such trails cross through or actually meander directly up streambeds, disturbing the soil and muddying the creek. Such trails typically fall into disuse when the damage is severe, and a new, equally poor trail develops. This type of trail should be retired and re-vegetated.

The first step in building any trail is to consider its primary purpose. Do you want it wide enough to permit a vehicle to access areas for woodland management purposes or narrow so that unwanted visitors don't turn your land into an ATV obstacle course? Is it to be a ridge-line trail to monitor boundary lines or a trail along a stream to allow for easy access to a favorite fishing hole? Once this decision is made, you can move onto deciding the actual location of the trail and the construction methods to be used.

Tie surveyor's plastic flagging in trees and brush to help you get a rough idea of where the trail should go. You may want to use a device called a clinometer to make sure the trail doesn't exceed 10 percent slope (10 feet of rise or fall for every 100 feet of horizontal distance). Maintaining a grade of less than 10 percent protects the trail from gulleying and helps prevent fatigue by users (you'll want to be able to enjoy the trail when you are 80 or more, right?). Any stream crossings should be gentle; slopes of less than 2 percent are preferable. You'll want to pass on the upper side of large trees to avoid damaging roots with the digging. Doing so will also save you a lot of work, as tree roots make for tough digging. Once the general path has been established, use staked flags to denote the upper edge of the trail-bed to be dug. While the slope of the trail bed is important, the slope of the hillside that the trail is on also plays a part in its construction. Figure 1 provides an idea of the proper use of cut and fill as the slope of the hillside increases.

If you opt to have someone else do the construction, you should know that the cost of a foot-trail averages roughly \$2 per foot. Several firms around the region and country specialize in trail building for public and private groups. This construction cost can be significantly reduced if you are willing to take some time and build it yourself. If you choose to do it on your own, you will want to refer to publications that contain detailed information on trail establishment (see the section on the next page on "Trail Resources"). These resources will help you understand the basics and provide suggestions for tools, techniques, and other relevant information.

With the trail marked and a firm knowledge of trail building techniques in mind, it is now time to choose the construction method. Will you use hand tools or mechanized equipment? This decision is a mix of personal preference, physical ability, and the intended trail use.

Those seeking to build a low-impact, natural-looking path that doesn't disturb wildflowers and minimizes unwanted uses will likely prefer to dig the trail by hand. This approach typically requires only hand pruners (loppers), saws, fire rakes, and a Pulaski (a combination of a heavy-duty grubbing hoe and axe). The loppers and saws are for cutting back limbs and shrubs, while the fire rake and Pulaski are for removing duff (the organic root layer) and then digging and shaping the trail-bed.

Those wanting a larger trail-bed for horses, ATVs, or other uses will likely prefer a rubber-tracked back-hoe, mini skid steer, or a light dozer. Keep in mind that while the digging itself may be easier with this approach, you will still want to put a fair amount



Photo courtesy: Shad Baker

Overtime trails can become entrenched and require maintenance. In addition to rehabbing the trail surface, working to redirect water off the trail (by busting through the berm on the left and installing cross-drain structures) can increase the life of the trail. Try to include users in the maintenance and upkeep of the trail as it is their best interest that the trail be kept in peak condition.

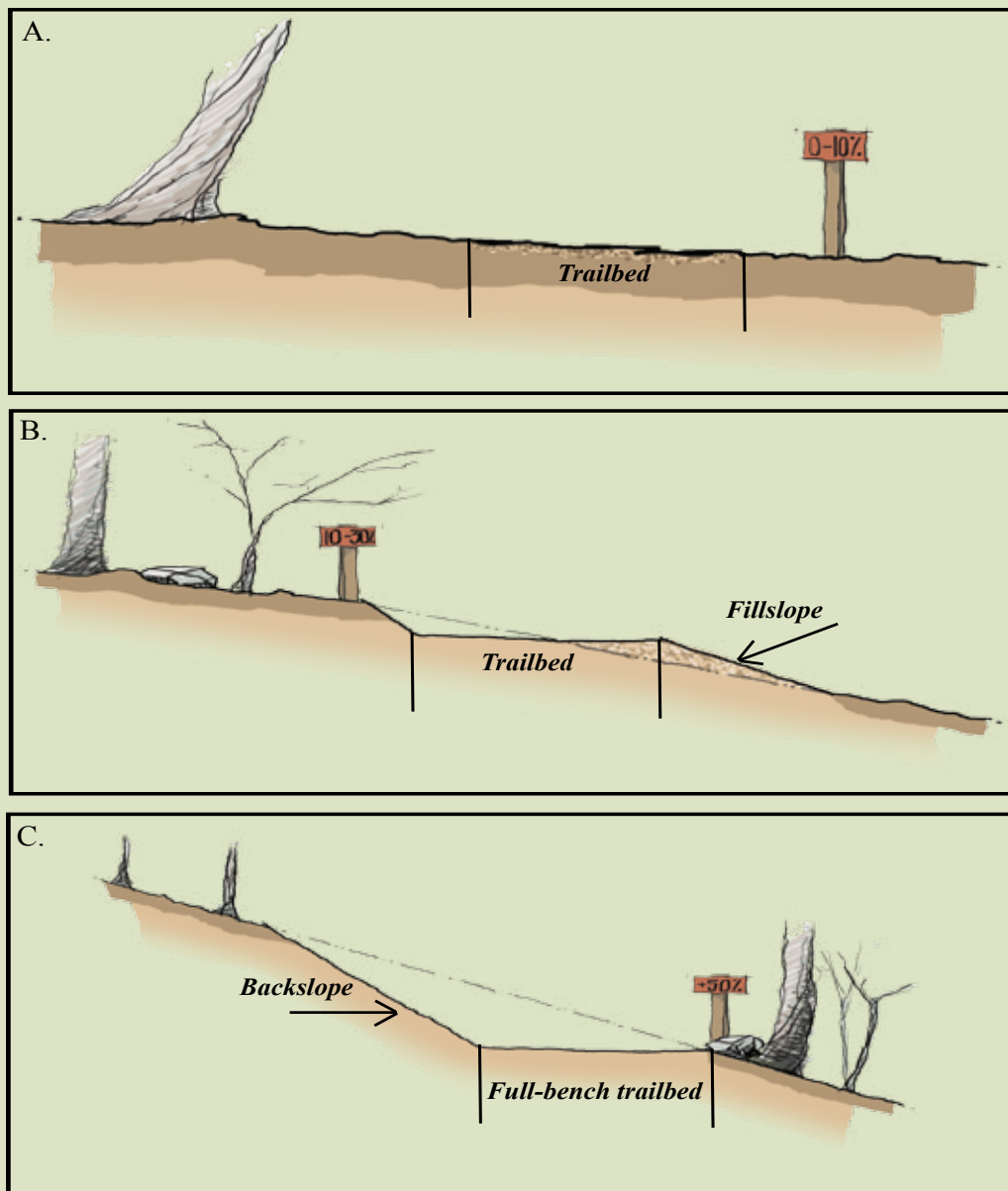


Figure 1. When establishing trails on hillsides the amount of excavated material generally increases as the slope increases.

- (A) Slopes less than 10% require little excavation to create the trailbed, and the small amount of excavated soil can be deposited over the hill.
- (B) As the slope of the hill increases, some excavation may be needed. Fill can be used to create part of a foot trail, but it needs to be compacted and used only to a limited extent. If the trail is to be used for horses, avoid using fill to form the trailbed.
- (C) On steep slopes (>50%), a full-bench trailbed should be established; the excavated material should not be used for the trailbed.

For more specific information on all aspects of trail construction and maintenance please see "Trail Construction and Maintenance Notebook, USDA, Forest Service, 2007 Edition" by visiting www.fhwa.dot.gov/environment/fspubs/07232806/index.htm.

of effort into the design and layout. Otherwise, you'll end up with a muddy mess that requires more money and time to repair later. In making a larger trail, consider whether you intend to harvest timber at some point. If so, a wide, well-designed trail system with gentle turns can greatly lessen the impact ecologically and aesthetically.

Many of the same principles involved in designing and maintaining a successful logging road or skid trail also figure into successful trail design and maintenance. Your greatest adversary is erosion. Minimizing erosion means that trails must be well drained, and water must not be allowed to run in a concentrated flow down the trail so that a gully is eventually formed. Where possible, build the trail so that it is sloped a bit (1 percent) across the trail (this is termed outsloping). The outsloping allows water to flow in an even sheet across and off the trail. There will be places where the water will collect or where the trail is not outsloped. A variety of different drainage structures can be used to drain water from the trail at these locations. These are referred to as cross-drain structures. They are designed to stop the downward flow of the water and move the water across the trail and into the undisturbed soil. These include partially burying a pole across the trail or constructing a shallow dip at an angle across the trail so it catches water moving down the trail and directs it into undisturbed soil. These should be spaced so that water does not come close to creating a gully. Overtime, trail use will tend to compact the center of the trail and therefore channel water down the middle. This means you'll occasionally want to knock off the

outer edge of the trail (berm) and permit the water to flow off the trail.

Other regular maintenance will include clearing blow-downs, lopping limbs back from the trail (approximately 3 feet on either side of the trail edge), and removing piles of leaves or sprouting seedlings (sassafras is especially prolific in many trails in the state). A string trimmer is good for this task, as it will brush away the leaves and kill any sprouting seedlings. If you have waited too long, a blade attachment can help. This discussion shows how varied the size, steepness, and implements used to construct and maintain trails are relative to their use. Table 1 provides a summary of key elements by trail use. In conclusion, building a proper trail is gratifying and will help everyone enjoy the woods. A proper trail must be well planned, making sure to keep the slope gentle and provide proper drainage. Watch your trails and plan for proper maintenance, and they will provide you with many years of enjoyment.

Table 1. Trail Types and General Guidelines

Trail Types	Specifications
Foot	<ul style="list-style-type: none"> • Limit width to 3 to 5 feet. • Maximum slope of 10% on short sections. • Hand dug or machine assisted. • Use outslloping to manage erosion.
Horse	<ul style="list-style-type: none"> • 5 to 8 feet minimum width. • Slope is variable; 20 to 25% maximum for short sections. • Hand dug or machine assisted. • Outslloping generally not effective; use cross-drain structures for drainage.
ATV	<ul style="list-style-type: none"> • 6 to 10 feet wide. • Slope variable. • 30 to 35% maximum for short stretches. • Both outslloping and cross-drain structures can be used for drainage.
Vehicles	<ul style="list-style-type: none"> • 8 to 12 feet wide. • Slope less than 15% when possible. • Machine constructed. • Outslloping and cross-drain structures can be used for drainage.
Logging	<ul style="list-style-type: none"> • 12 to 16 feet wide. • Slope less than 40% when possible. • Machine constructed. • Cross-drain structures preferred for drainage.
Fire	<ul style="list-style-type: none"> • Limit width to 8 to 10 feet. • Slope is variable but should be minimized. • Machine construction. • Outslloping should be used to facilitate drainage.
Multiple use	<ul style="list-style-type: none"> • Match width to the widest use. • Use a combination of water control structures, and minimize grade.

A FEW FAMOUS KENTUCKY TRAILS

Bad Branch State Nature Preserve Trail – 7.4-mile trail on a 1940s logging road that permits views of Bad Branch Gorge, 60-foot high Bad Branch Falls, mature hemlock forests, and High Rock.

Pine Mountain Trail – 44 miles and growing; affords multiple cliff-line views of Cumberland Plateau, pioneer homesteads, moonshine still remnants, upland bogs, rock-shelters, and historic sites in the largest remaining wilderness-type area in the state.

North-South Trail – 65 miles; runs the length of the Land Between the Lakes; follows old logging and fire roads through meadows, mature forests, and old home sites.

Sheltowee Trace National Recreation Trail – 269 miles; multi-use; runs the length of Daniel Boone National Forest, cliffs, canyons, gorges, waterfalls, and historic sites.

Wilderness Road National Recreation Trail – 2.6 miles; follows or parallels Wilderness Road of historic fame; mixed oak forest.

TRAIL RESOURCES

- *The Complete Guide to Trail Building and Maintenance* by Carl Demrow and David Salisbury, 1998.
- *Lightly on the Land: The SCA Trail-Building and Maintenance Manual* by Robert C. Birkby, 1996.
- *Appalachian Trail Design, Construction, and Maintenance* by William Birchard Jr. and Robert D. Proudman, 2000.
- *Trail Construction and Maintenance Notebook*, USDA, Forest Service, 2007.

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Kentucky Tree Farm Committee Newsletter

What is Tree Farming?

The term “tree farming” was first used in the 1940’s to introduce the public to sustainable forestry terminology they could easily understand. Farming implies continual stewardship and production of goods year after year. By linking the term “farming” with trees, foresters could communicate the concept of sustainable production of forest products over time. From the beginning, Tree Farms were viewed as more than pine plantations or Christmas tree farms. Even the first Tree Farms certified into the American Tree Farm System (ATFS) were varied in nature and contained many different habitats and stages of forest regeneration, from seedlings to mature timber. To this date, biodiversity remains a critical component of a Certified Tree Farm. To join and remain in ATFS, Tree Farmers must pledge to maintain their land for clean water and healthy watersheds, abundant wildlife, and recreation - as well as wood.



Since 1941, ATFS has educated and recognized the commitment of private family forest landowners in the United States. Currently, ATFS has certified 24 million acres of privately owned forestland and over 90,000 family forest owners who are committed to excellence in forest stewardship, in 46 states. Tree Farmers share a unique commitment to protect wildlife habitat and watersheds, to conserve soil and to provide recreation for their communities while producing wood for America. **About the Tree Farm sign:** Water, Wildlife, Recreation, and Wood. The four sides of the Tree Farm sign tell the story of sustainable forestry: a thriving forestland that has clean water, a healthy wildlife habitat and recreational opportunities.

Getting Enrolled in the Tree Farm System

by Pam Snyder, Kentucky Division of Forestry

Enrolling in the ATFS is a relatively simple process for landowners. The first step is to have a forest management plan that meets the forest sustainability standards established by the ATFS. Landowners can contact their local Kentucky Division of Forestry forester to get a forest management plan written for their property at no cost. Also, to enroll in the system to become a certified Tree Farmer, landowners can contact a consultant forester or industry forester who is certified as a Tree Farm inspector. In most cases, a consultant forester will charge a small fee to write a qualifying Tree Farm plan on the property.

Landowners have two options to start out in the ATFS before they are qualified as a Certified Tree Farmer.

Option 1

Landowners are placed into a pioneer status and have five years to implement a small portion of their forest stewardship plan or Tree Farm plan. They need to re-contact the inspecting forester to be reevaluated and inspected to be certified as a Tree Farmer. Landowners do not have to wait the entire five years before they are reevaluated.

Option 2

The landowner’s property is inspected by a certified Tree Farm inspector, whether a KDF forester, consultant forester, or industry forester. The inspecting forester uses ATFS performance measures and indicators to make the evaluation and notes whether the landowner is implementing the forest management plan or the Tree Farm plan. The landowner can be certified as a tree farmer right away. It strictly depends on the certifying forester’s knowledge of the property to make sure it meets all ATFS forest sustainability criteria.

A landowner may contact any certified inspecting Tree Farm forester across the state or the Kentucky Tree Farm Committee for further details.

About this Newsletter...

This newsletter is produced by the Kentucky Tree Farm Committee and is supported by the American Tree Farm System 2009 Small Grants Program. Additional newsletters will also be in the 2009 August and December issues of Kentucky Woodlands Magazine.





Kentucky Tree Farm Committee

The Kentucky Tree Farm Committee administers the Tree Farm program in Kentucky and promotes actions that sustain woodlands, watersheds, and wildlife habitat through the power of private stewardship. Family woodlands certified by the ATFS are recognized by the Sustainable Forestry Initiative and the Programme for the Endorsement of Forest Certification and meets current standards qualifying Tree Farms as certified wood. The Tree Farm System operates as an informal partnership encouraging resource management professionals from all disciplines and segments (forest industries, public agencies, private forestry consultants, and forest landowner organizations) to work together and offer expertise to family forest owners. The Kentucky Tree Farm Committee carries out its mission by:

- Certifying and re-inspecting Kentucky Tree Farms as part of the American Tree Farm System.
- Providing Tree Farm certificates and signs to recognize Kentucky Tree Farmers.
- Recognize the Kentucky Outstanding Tree Farmer of the Year.
- Recognize the Kentucky Outstanding Logger of the Year.
- Recognize the Kentucky Outstanding Inspector of the Year.
- Sponsor Tree Farm field days and educational programs.
- Undertaking special projects designed to educate Kentucky landowners on proper forest management.

2008 Kentucky Outstanding Logger of the Year

by Pam Snyder, Kentucky Division of Forestry

Chris Conrad with West Star Logging has been chosen as the Outstanding Logger of the Year by the Kentucky Tree Farm Committee. This award is based on performance on multiple criteria in the areas of Kentucky Master Logger Program, Safety Practices, Annual Production, Crew and Equipment Capacity, Logger Leadership, and Outreach



Chris Conrad (second from left), his sons Ross & Trevor, and dad William "Bootie" Conrad.

Activities, to name a few. The committee reviewed applications from across the state and completed on-site inspections of the finalists. West Star Logging has a six-person crew that primarily operates in McLean, Daviess, Christian, Ohio, Hopkins, Muhlenberg, and Henderson counties. Conrad has cultivated an excellent working relationship with landowners by offering pre- and post-harvest meetings to his clientele. His crew practiced sustainable logging and best management practices before they became mandatory under the Kentucky Forest Conservation Act. He is a second-generation logger, a director and member of the Green River Logger's Council, and a member of the Kentucky Forest Industries Association. He promotes logger safety classes and is very proud of his profession and his family's long history in the logging business.

2008 Kentucky Tree Farmer of the Year

by Tad Norris, Kentucky Division of Forestry

After a statewide canvass, Henry Duncan has been chosen as the 2008 Kentucky Tree Farmer of the Year. Duncan owns and actively manages 150 acres of forestland in Logan County and has done so for the past 39 years. He is a farmer and a lifelong conservationist.



Henry Duncan

Duncan's roots run deep in the Mud River-Duncan Hill region just north of Russellville. His great-great grandfather settled in the area in 1803 and opened a tannery. Such operations required a lot of wood, so it is safe to say that Duncan's family has recognized the importance of forestland for over two centuries.

Notable practices completed by Duncan include a 33-acre commercial, improvement harvest, the creation of 5.4 acres of hardwood riparian buffers, and the protection of his forestland from grazing. His farm is always open for educational uses, and he is a member of the Kentucky Water Watch Program and is Vice President of the Kentucky Woodland Owners Association. He is also a certified Forest Steward and past Tom Wallace Farm Forestry Award winner.

Duncan says he "hopes to use this opportunity to let landowners with holdings of all sizes know that they can manage and grow their resource in a sustainable manner while also improving its long-term, economic worth."

Kentucky Tree Farm Committee Contact Information

For more information about the Tree Farm program in Kentucky, please visit www.KyTreeFarm.org, call 502.695.3979, or ask your forester.



Forest Health



Invasive Plant Hit List: Privet

by Joyce Bender

When I was a girl, my father would spend considerable time trimming a long privet hedge that defined one side of our property. He fussed to get the sides straight and the top even. I went along behind him and collected the cuttings as he snipped with his hedge clippers. Little did I know then that I would grow up to have my own reasons to fuss about privet. Privet in Kentucky refers to two species *Ligustrum sinense*, the Chinese privet, and *L. vulgare*, the European privet. Introduced from China and Europe in the mid-1800s, both of these species were widely planted as ornamentals and for hedgerows and have now been reported as aggressive invaders of our woodlands.

Privet is a very serious pest plant south of Kentucky, with Georgia as its stronghold. Driving north of Atlanta in January, I was stunned to see the heavy concentrations of this evergreen shrub in every woodlot I passed. Privet needs to be contained now in Kentucky so that it does not expand its range to the crippling levels observed to our south. Current distribution information for Kentucky is incomplete. We do know that Chinese privet is more widespread across Kentucky and has been documented from 41 counties, with concentrations in southeastern Kentucky, central Kentucky, and far western Kentucky. European privet has been documented from 22 counties and is scattered from far western Kentucky to several southeastern localities.

When not in bloom, both species look similar. These shrubs can grow to a height of around 30 feet. The trunks have pale gray bark and tend to be multiple stemmed with many leafy branches.

The half-inch to inch and a half-long leaves are opposite and almost perpendicular to the stem. They are thick, with an elliptical shape and somewhat rounded tips. When in flower, the numerous fragrant white clusters are found at the ends of branches. The tiny flower is tube-shaped with four lobes at the tip. On the Chinese privet, the stamens extend from the tube, while the stamens on European privet remain within the tube. The fruits look like tiny purplish-black beads hanging in dense clusters from the branches. Thousands of seeds can be produced by one shrub.

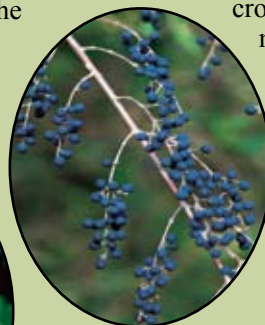
Privet exhibits many of the “red flag” characteristics typical of aggressive invaders. It is found in a variety of habitats, in both upland and lowland situations. The wide range of habitat preference enables privet to impact more natural communities and disrupt more ecosystem functions. It is commonly found in floodplains and along stream banks as well as in forests and even along the margins of rocky limestone glades where it is crowding out our native upland privet. Chinese privet is more shade tolerant than European, but both do well in low light levels. The prolific number of fruits guarantees successful reproduction. Fruits are eaten by birds and mammals, enabling the plant to be transported great distances.

Vegetative reproduction can also occur through root sprouting. Privet will quickly form dense thickets that shade out other vegetation, making it impossible for native trees, shrubs, and forbs to become established or for their seeds to even germinate. The lack of native plants for food and cover will force wildlife to go elsewhere to find life’s essentials. Controlling privet can be overwhelming if the thicket is extensive. It is always best to remove the plant



Privet, introduced from Europe and Asia, is a serious invasive problem in the southern U.S. and is quickly becoming a troublesome invader in Kentucky. Privet infestations like the one pictured are very common in the south.

Photo courtesy: James H. Miller, USDA Forest Service, www.forestryimages.org



Privet flowers (left), fruit (top), and bark (right).



Photo courtesy (flowers): Ted Bodner, Southern Weed Science Society, www.forestryimages.org

Photos courtesy (fruit/bark): James H. Miller, USDA Forest Service, www.forestryimages.org

Photo courtesy: James H. Miller, USDA Forest Service, www.forestryimages.org



Privet seedlings like the one above can easily be hand pulled especially when the soil is moist. Deal with it early before it gets established.

from an area as soon as it is found or when an infestation is light. Small plants and seedlings can be pulled by hand, but care must be taken not to leave any root material behind that could re-sprout. Foliar applications can be effective in situations where the privet has formed a monocultural stand and no native species are at risk from drift or drip. Cut stump treatments allow discrete application of herbicide to the target plant. Immediately after horizontally cutting through the stem (close to ground level), apply herbicide to the cut stump's surface. You can use a spray bottle and small sponge brush to facilitate treatment. Using the table below, consider what will be the best fit for your situation. It is important to monitor the site after treatment in case any plants were missed or if some re-sprouting occurs. There are other herbicides that are listed for control of privet, and more information can be found at the following Web site: <http://se-eppc.org/publications.cfm>

Table 1. Control methods for privet (*Ligustrum* spp.).

Method	Timing	Details and Cautions
Hand pulling	Any time soils are moist.	Use for seedlings or small plants large enough to grasp that are not in fruit.
Herbicide ¹ (foliar)	Late fall or early spring when other species are dormant is ideal, but temperatures should be above 65°F for best absorption.	For plants head height or less. Foliar applications of 2% glyphosate. Accord is labeled for use in woodlands. Can also use triclopyr at 2% (Garlon 3A).
Herbicide ¹ (cut stump)	June–January	For plants greater than 1 inch in diameter. Thoroughly wet stump with herbicide immediately after cutting. Use 25% glyphosate or 25% triclopyr.
Herbicide ¹ (basal bark)	Fall, winter, early spring	For plants greater than head height. This method is effective throughout the year as long as the ground is not frozen. Apply a mixture of 25% triclopyr and 75% horticultural oil to the basal parts of the shrub to a height of 30-38 cm (12-15 in) from the ground. Thorough wetting is necessary for good control; spray until runoff is noticeable at the ground line.

¹Other herbicide brands can be used for control. The herbicides that are listed are those commonly used regionally and are labeled for use in forests (woodlands). Mention or display of a trademark, proprietary product or firm in text or figures does not constitute an endorsement and does not imply approval to the exclusion of other suitable products or firms.

Graphic courtesy: USDA PLANTS Database, USDA NRCS PLANTS Database, www.forestryimages.org

About the Author:

Joyce Bender is the Branch Manager for Nature Preserves and Natural Areas at the Kentucky State Nature Preserves Commission, she is responsible for managing the state nature preserve system. She and her staff oversee the protection and management of 59 areas encompassing 25,000 acres across the commonwealth. She is active in invasive plant issues, serving as the president of the Kentucky Exotic Pest Plant Council (EPPC) and the vice president of the Southeast EPPC.

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www.KyForestHealth.org

Kentucky Champion Tree Program

AMERICAN HOLLY: NOT JUST FOR CHRISTMAS ANYMORE



Kentucky's State Champion American holly.

Photo courtesy: Tad Norris

by *Diana Olszowy*

Although not a particularly common tree in Kentucky's woodlands, the American holly is indeed a welcome sight during the doldrums of winter. Its bright red berries and distinct glossy green leaves make it a popular favorite not only in the woods but also in the landscape.

American holly is native along the East Coast from Massachusetts to northern Florida, and since 1620 it has been synonymous with Christmas. Legend has it that when the Pilgrims landed on Plymouth Rock, the native holly reminded them of their own European holly which had for centuries been a symbol of Christmas. Because of its popularity as a decoration, American holly started to become scarce, causing two states (Delaware and Maryland) to pass a law banning the sale of fresh American holly.

American holly is a slow-growing tree, eventually reaching heights of 35 to 50 feet and trunks averaging 30 to 50 inches in circumference. Kentucky's state champion American holly measures 54 feet in height and over a whopping 91 inches in circumference—that's over 7.5 feet around! The champ resides in Bath County and has its own urban legend. In the early 1900s, this champ was a mere seedling growing along the roadway when it was spotted and removed by two young men on a bootlegging whiskey run from Owingsville to Peasticks for their employer. The seedling made the horse-and-buggy ride with the boys and was stored with the hidden whiskey. Later, it was planted in their employer's yard and nicknamed the "whiskey tree," due to its felonious connection to the trip.

American holly prefers moist, slightly acidic soils and grows well in full sun to partial shade. It is not a major commercial species, but its wood is some-

times used as inlay for fine furniture and veneer; it is most commonly used for piano and organ keys.

Both male and female trees must be present for berry production. The berries appear on female trees in mid-autumn and serve as a major food source for winter-migrating flocks of small birds such as cedar waxwings and American goldfinches as well as local residents such as quail, deer, squirrels, and turkeys.

By far, the biggest market for holly lies in the urban realm. Hundreds of cultivars of American holly have been developed and hybridized over the years, providing a variety of tree forms, leaf characteristics, and fruit colors. It has become one of the most preferred species to include in the landscape as a hedge, screen, or as a specimen tree. Apparently, American holly is not just for Christmas anymore!



American holly berries.

Photo courtesy: Kerry Johnson,
Mississippi State University Extension
Service, msucares.com

About the Author:

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Test Your Knowledge



A.

Though most would think twice before messing with my thorny disposition, I do have a large sweet fruit (bean pod - hence the name) and my thornless cousin is a popular landscape tree. Do you know me?

Photo courtesy: Jeff Stringer



B. You only ever see me when my apple tree buddy is growing nearby. I am a fungus that attacks redcedar stems and apple fruits at the same time. Close relatives of mine also attacks hawthorn and quince in the same way. I'm not usually a significant threat to either host but I can make apples look rather bad. What am I?

Photo courtesy: Joseph O'Brien, USDA Forest Service, www.Bugwood.org



C.

I like all types of tree species in the walnut family, including hickory, pecan and butternut. My pals and I first eat the lower part of the leaf in late spring and then chow down on the upper part of the leaf later in summer. Occasionally, we can even kill our host, but don't sweat it – it's not that common. Who am I?

Photo courtesy: Charles S. Lewallen, Private Photographer; Oklahoma



D.

I'm usually relatively round and can get extremely large (current record is 50 pounds). I am edible but best if you harvest me before my flesh begins to darken. The spores within me are dispelled by wind and rain and I can hold trillions of spores – yes that's trillions! What am I?

Photo courtesy: Alexey Sergeev, Department of Physics, Texas A&M, www.asergeev.com



E. Most folks know me by my "leaves of three." Chances are you have probably rubbed me the wrong way and my urushiol oil caused your skin to develop an itchy rash within a day or two. When burned, I can actually do the same thing inside your throat and lungs if the smoke is inhaled, so be careful. I can grow in shrub form, climbing or ground vine so have your calamine lotion handy. Do you know me?

Photo courtesy Charles T. Bryson, USDA Agricultural Research Service, www.Bugwood.org

Answers to Test Your Knowledge can be found on page 25.

Forestry 101

Forestry for Woodland Owners

Forestry 101: Dealing with Ice and Storm Damage

by Doug McLaren and Carol Spence

The ice and wind storms of winter 2009 will be permanently ingrained in the memories of many Kentuckians. The loss of life and the homes that were lost or severely damaged affected lives across the state.

The storm confined many woodland owners inside, where they listened helplessly to the barrage of trees crashing down and limbs snapping under the tremendous strain caused by ice and high winds. They could only imagine what damage was being created in their woodlands. When landowners could survey the severity of the damage, some found their hardwood stands had numerous treetops and limbs severely damaged or completely broken off, and they wondered how the storm's damage would affect the value of their timber.

As a timber owner, don't rush into making rash decisions concerning the need for timber cutting based on your initial assessment. Forest trees are very resilient, with a natural ability to recover from the damage. A tree's survival is usually related to the extent of the



Storm events can have a significant impact on woodlands. However, the damage may not be as bad as it appears; woodland owners should work with a professional forester to assess storm damaged woodlands.

Photo courtesy: Susan Fox, Lyon County Extension Office

damage to its live crown. Much of the damage created in winter storms does not become fully evident until the crowns of the trees are completely leafed out in the summer. Many of the stems that looked severely damaged back in the winter may not look as bad now that the canopy has filled in.

Typically, trees with less than 50 percent of the live crown damaged or removed will probably be suitable to continue in an established forest management plan. Owners should consider harvesting or making improvement cuts in trees that lost more than 50 percent of their crowns.

Other factors play into the decision about which trees need to be removed from the stand. Species, age, quality, and general health of the tree all play a role in the future management in the stand. Younger trees will survive better than older ones. Unhealthy stems are less likely to continue to grow. Trees known to have

the highest value—those that could be used for veneer, for example—should be evaluated first. Remember that during the life of any forest stand, thinnings are often prescribed. Thinnings will always increase the growth of the remaining stand. It is possible that these recent storms might have provided a natural thinning that can be beneficial to the remaining, more valuable trees in the stand. Remember also that the management of a tree in a woodland setting is extremely different from the management of a tree in an urban setting.

Woodland owners should not rush into making any rash decisions about timber harvesting due to January's ice storm, and they do not have to face the dilemma of determining the future of their damaged woodlands alone. The first priority is to take care of safety concerns and then to rely on the advice of a professional forester who can adequately evaluate the degree of damage within a stand. The forester will evaluate and prescribe the cuttings that are necessary to improve the woods.

For your benefit and the benefit of your woodland stand, proceed with deliberate care, and contact a professional forester to help you make the right decisions. State foresters can be found by contacting the Kentucky Division of Forestry at www.forestry.ky.gov or 502.564.4496. Consulting foresters can be found at www.kacf.org.



Woodland owners are strongly encouraged to work with professional foresters in the management of their properties.

Photo courtesy: Billy Thomas

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Woodland Owners Short Course

by Billy Thomas

Kentucky woodlands are primarily family owned—nearly 80 percent of Kentucky’s woodlands are privately owned by individual families or trusts. It is these family woodlands that provide the vast majority of wildlife habitat, water filtering, erosion control, biodiversity, recreational opportunities, and the raw materials for a wood industry that generates more than \$8 billion annually in Kentucky.

Unfortunately, most family woodlands are unmanaged, and their potential is not being realized. In fact, some experts believe that the “average” Kentucky woodland is worth only 25 percent of its potential value because of past practices and lack of management—and that is purely from a timber perspective. When you factor in the non-timber benefits our woodlands also provide, then it is easy to see that many family woodland owners are missing a tremendous amount of potential by not managing their woodlands.

How can family woodland owners realize their woodlands full potential? The saying “information is power” is very applicable in this situation, and fortunately there is a great deal of information and expertise to assist woodland owners in the management of their property. To support woodland owners in getting the most from their woodlands, the Woodland Owners Short Course (WOSC) partners are pleased to announce the 2009 offering of the program. We have made changes to make the program more family friendly, and for the first time, the WOSC will be conducted on Saturdays. It will feature three programming tracks including one for youth ages 5 to 17, one for new or inexperienced woodland owners, and one for experienced woodland owners who have been managing their woodlands for a while. If you have not attended a previous WOSC because it was held during the week or there was nothing for your children to do, we hope the new format will be more accommodating to you and your family. Even if you have attended a WOSC in the past, there will be lots of valuable information to help you get the most from your woodlands.

Woodland owners participating in the program will self-select into one of two programming tracks when they register. Placement into a track will be based on which category most closely reflects your experience and interest levels.

I don't know my options as it relates to managing my woodlands.

I am not sure of the services and assistance available to help me manage my woodlands.

I am fairly new to woodland ownership.

Consider registering for the Green Track.

I have identified objectives for my woodlands and have a management plan.

I have worked with forestry and other natural resource professionals in managing my woodlands.

I have owned my woodlands for some time and am looking to become more active in its management.

Consider registering for the Gold Track.

Follow the arrows and select the track with two or more statements in which you most relate.

Registration begins at 9 a.m. (local times) with lunch served at noon. The WOSC will end around 4:30 p.m.

Bring your kids! Environmental educational programming will be offered at each location for youth ages 5 - 17.

There will be plenty of fun activities to keep the kids engaged throughout the day.

Supporting Kentucky's Family Woodlands



Couples are strongly encouraged to attend—this will allow one of you to be at each of the classes. And there will plenty of fun activities to keep the kids engaged throughout the day.

In 2009, the WOSC will be held at the following locations:

- Central Region: Grant County, June 13 (Lloyds Wildlife Management Area)
- East Region: Boyd County, August 29 (Boyd County Fairgrounds)
- West Region: Breckinridge County, September 26 (Breckinridge County Extension Office)

Regardless of your woodland interests or experience level, the 2009 WOSC will have something for you. Plan to bring

About the Author:

Billy Thomas is a Extension Forester with the University of Kentucky Department of Forestry. He works primarily on non-industrial private forest issues and is the associate editor for the Kentucky Woodlands Magazine.

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the family and join us for an educational experience that will have lasting benefits for you and your family. We look forward to working with you this summer!

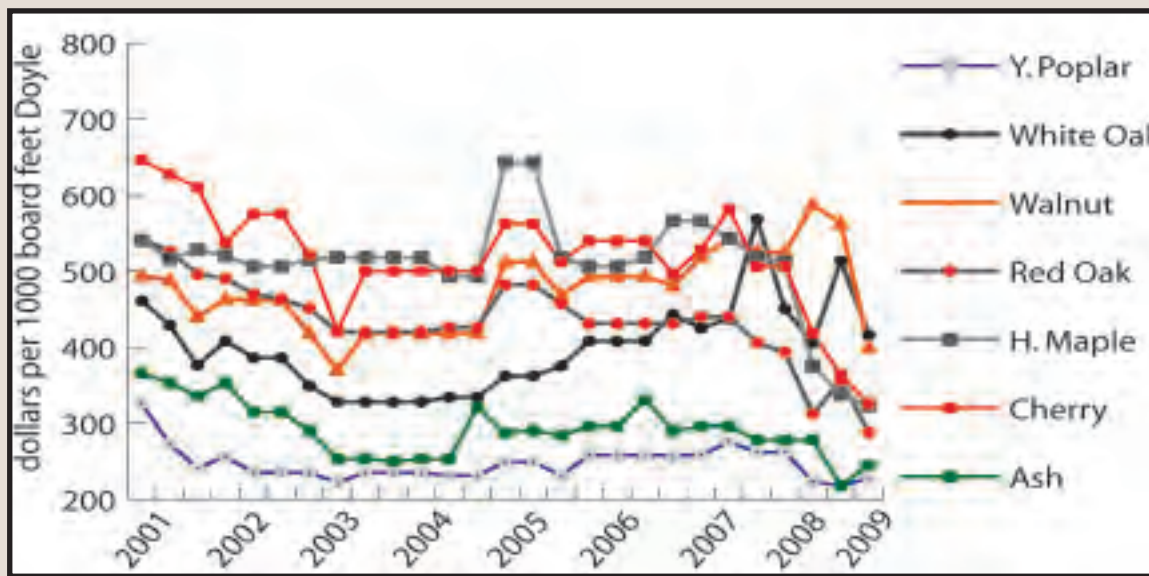
For a listing of partners and specific course topics, see the registration form in this issue or visit www.ukforestry.org to register online.



Photos courtesy: Billy Thomas

Kentucky Delivered Log Prices Statewide Average – 2001 to 1st Quarter 2009

Prices reported are averages for medium quality (grade 2) logs delivered to sawmills across Kentucky through the first quarter of 2009*. Values are dollars per thousand board feet (Doyle scale). Stumpage values (the value of the logs in the tree) are typically one-half to one-third of log values.



*Data collected by Chris Nevins, Kentucky Division of Forestry Timber Harvest Compliance and Forest Resource Utilization Section and summarized by Jeff Stringer, University of Kentucky Department of Forestry Extension. In-depth log price reporting can be found in "Growing Gold" by the Kentucky Division of Forestry at www.forestry.ky.gov.



Goldenseal

All photos except where listed courtesy: Tom Barnes

Non-Timber Forest Products

Medicinal Plants

by Deborah B. Hill

We know people have harvested and processed forest plants for medicinal purposes since the beginning of recorded history. One of the great dangers of losing the Amazon jungle is that we keep discovering highly valuable medicinal plants there, and there's no telling what we'd miss out on if it were gone. Our native temperate forests are also filled with useful plants. Ginseng (*Panax quinquefolium*) is perhaps the best known one in Kentucky, as it is easily the most commercially valuable. However, if you read health supplement labels in all the "big box" stores or other similar locations, you

will find goldenseal (*Hydrastis canadensis*), blue cohosh (*Caulophyllum thalictroides*), black cohosh (*Actaea racemosa*), bloodroot (*Sanguinaria canadensis*), wild ginger (*Asarum canadense*), slippery elm (*Ulmus rubra*), witch-hazel (*Hamamelis virginiana*), mayapple (*Podophyllum peltatum*), and many other forest plant-derived substances. There are established markets for these plants, although not as obvious

as corn, soybean, or cattle markets.

Annual sales of medicinal plants are now about \$60

billion worldwide. Some national organizations purchase medicinal plants, as well as local brokers scattered all over Kentucky, many in the eastern part of the state. Since these "crops" are new and different, the grower needs to find out when and how to harvest the various useful parts of these plants. Most of them need at least minimal processing—drying, for example—and need to be packed and shipped according to particular specifications. Contact buyers before harvesting to see what you need to do to create a marketable product from the raw material that you are about to harvest.

Identify Native Plants

Farmers and woodland owners would not start growing a new crop without doing some homework first. Growing medicinal plants is no different. Take the time to walk through the forest, especially in the springtime, and identify what plants are growing on the ground. Many medicinals grow together in the same area, so if you see a goldenseal plant, you may well see a ginseng plant, mayapple, or wild ginger. Most of them also will more likely be found on north- or east-facing slopes, where the microclimate is cooler and moister. They like shade—often



Bloodroot



Mayapple

Photo courtesy: David Stephens, www.forestryimages.org

close to 90 percent shade—and also moist but well-drained areas. They are therefore found in greater abundance on the mid-slope or base of a slope than the top. Some of them like to be near certain tree species, as the association is beneficial to them. Ginseng, for example, grows well under dense shade from tree species such as tulip-poplar or black walnut. Ginseng also requires calcium and does well under sugar maple trees, which supply calcium.

Many medicinal plants are perennials and will continue to appear on an annual basis if parts of the roots are left behind when harvesting or when—typically with ginseng—the fruits or berries are scattered in the area when the rest of the plant is harvested. Many of them also produce their valuable part or parts each year, although goldenseal, one of the more valuable species, takes three to four years to develop a marketable fibrous root system.

In addition to identifying the herbaceous plants (the ones growing close to the ground), learn to identify the trees and shrubs in the woods, and take soil samples to identify soil types and pH (see your county Cooperative Extension office for help with this). A pH of 6 to 7 is desirable for many of the common medicinal plants.

Identify Markets

The second step after identifying what is growing naturally in the woods is to find out what the market is for the plant or plants you want to grow. It is wise to determine the value of the proposed crop, as some are worth more than others, and if you are planning to “farm” these plants, their value should provide a reasonable return on investment.

Medicinal plants can be grown for raw products such as the roots, stems, bark, or leaves (or combinations of these from the same kind of plant). Some can be marketed fresh, but most are sold dried. They are bulky and need proper storage and packaging. Getting your product to market will involve shipping costs which will reduce the profit margin. Adding value or product packaging, such as making tinctures, lotions, steam-distilled aromatic oils, and soaps could bring higher prices and greater profit margins to the grower/producer.

Scouting your woodland will help you decide what grows best among your forest trees and whether you want to grow them as wild-simulated or forest farmed.

The term wild-simulated is most often heard in connection with ginseng. Ginseng, which has a taproot, takes many years to develop a root size that is valuable. Wild ginseng is the most valuable form of this plant, bringing \$300 or more per pound of dried root. Ginseng can be and is grown like any other shade-grown crop, under shade cloth in raised beds, but the ginseng that comes from that kind of management is worth only \$20 to \$50 per pound. Forest-farmed ginseng is usually in raised

beds formed in the forest, under a fairly dense overstory canopy. The beds are formed from materials on the forest floor, humus and leaf litter, and the ginseng is sown and managed there. Wild-simulated production, on the other hand, involves minimal disturbance of the forest floor and no “bed” structure for the growing plants. Wild ginseng has its greatest value when it has been grown undisturbed for 10 or more years; wild-simulated is almost impossible to distinguish from wild and takes about as long to develop. Commercially produced ginseng can form marketable roots in a shorter period of time but for far less economic return.

Ginseng’s monetary value is very attractive to prospective growers. However, since it takes so long to develop optimally valuable roots, it is difficult to secure a crop for that long, and the perennial problem with ginseng production is that the crop is poached before the owner can get it dug for market. Since several of the other species can produce a reasonable value in a shorter period of time, it makes more sense to look elsewhere. One success story is a Georgia farmer who has developed a wide range of products using organic goldenseal and has also developed a grower’s cooperative for the production of organic goldenseal. He is able to increase his profits by offering not only seed and roots for planting but also lotions, creams, and soaps containing the active ingredient of this valuable plant. Organic production of medicinal plants protects against contamination and brings premium prices. So check out your forest plants, do your homework for what might work on your land, and enjoy the profits!

For more information:

- W. Scott Persons and Jeanine M. Davis. *Growing and Marketing Ginseng, Goldenseal and Other Woodland Medicinals*
- American Botanical Council: www.herbalgram.org
- American Herbal Products Assoc.: www.ahpa.org
- Aveda Corporation: www.aveda.com
- Botanical Enterprises Inc.: www.bei-botanicals.com
- Botanical Liaisons: www.botanicalliaisons.com
- Elk Mountain Herbs: www.elkmountainherbs.com
- Frontier Herbs: www.frontiercoop.com

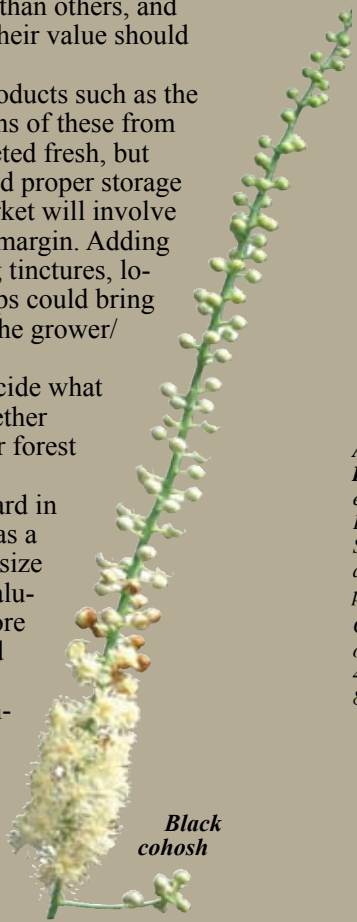
About the Author:

Deborah Hill, Ph.D. is a forestry extension professor and forestry extension specialist at the University of Kentucky Department of Forestry, she is responsible for programs in non-timber forest products. She also works with 4-H and youth, and in the areas of urban forestry, agroforestry, and permaculture. She has developed landowner programs in Christmas tree and shiitake mushroom production.

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Wild ginger



Black cohosh

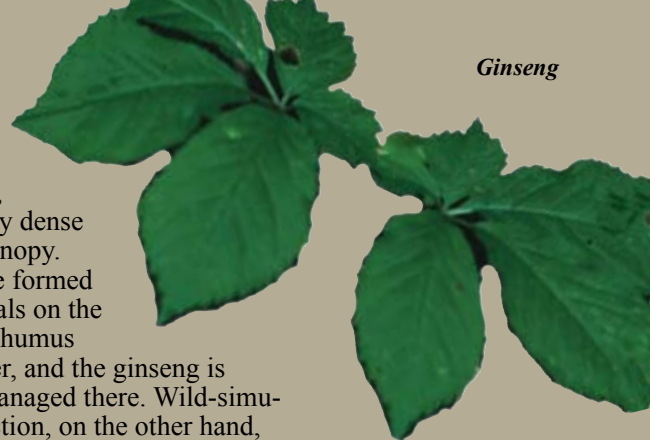


Photo courtesy: Charles T. Bryson, USDA Agricultural Research Service, www.forestryimages.org

Kentucky Woodland

Local Forestry Organization Grants Available through the Kentucky Division of Forestry

Through a new competitive process, the Kentucky Division of Forestry has been able to secure funding to be used to stimulate and encourage the development and maintenance of local forestry organizations throughout eastern and southeastern Kentucky. These groups are to be made up of, and completely controlled by, local citizens. They are to be grassroots-driven in every way, with agency folks offering support and technical assistance as appropriate.

Several such groups are already in existence, and their members include forest landowners, loggers, community leaders, forest industry representatives, environmentalists, and others who recognize the importance of forests to their communities. Experience has shown that funding (be it for advertising, paying for a speaker at local meetings, renting a “port-a-potty” for field events, conducting a mass mailing, undertaking a forestry project, or whatever may be needed) is a limiting factor in the success of these groups. We hope that these funds will alleviate such obstacles.

If you are interested in forming a local organization or are already a member of one and you need economic assistance with any organization activity, please contact Tad Norris at tad.norris@ky.gov or Diana Olszowy at diana.olszowy@ky.gov or call 502.564.4496 for more information. For more information about local forestry organizations, please visit www.ukforestry.org or contact Billy Thomas at billy.thomas@uky.edu or call 859.257.9153.

Master Tree Farmer Webinar Series Well Received: More webinars to come!

The first statewide web based educational program for Kentucky woodland owners was held in March at eleven county extension offices across Kentucky. Host counties included: Boyd, Breathitt, Bullitt, Clark, Harlan, Letcher, Lyon, Menifee, Monroe, Rowan, and Trimble. County extension agents served as hosts with strong support from foresters and other staff of the Kentucky Division of Forestry (KDF).

The format included live web based presentations broadcast from the UK Department of Forestry Extension office in Lexington, pre-recorded video segments from leading forestry experts from across the southern US, questions and answers sessions, and local discussions led by KDF foresters. The feedback from the participants and hosts was very favorable and many commented that they were happy to be able to attend a statewide educational program without having to travel very far.

Based on the positive feedback and continually shrinking budgets you can expect to see more of these web based educational programs in the future. Be sure to check out the next issue of Kentucky Woodlands Magazine for a listing of fall programs!



Master Tree Farmer participants at the Trimble County Extension Office. This webinar series allowed woodland owners to attend a statewide educational program without having to leave their county.

Photo courtesy: Michael Pyles, Trimble County Extension Agent

Upcoming Dates To Remember:

Date:	Event:	Location:	Contact:
June 1-5	Kentucky Forest Leadership Program	Jabez, KY	859.257.2703
June 13	Woodland Owners Short Course	Grant Co., KY	859.257.7597
August 29	Woodland Owners Short Course	Boyd Co., KY	859.257.7597
September 18-19	Kentucky Wood Expo	London, KY	502.695.3979
September 26	Woodland Owners Short Course	Breckinridge Co., KY	859.257.7597
October 15	Win With Wood	Robinson Forest, KY	606.666.4116

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

News To Use

Kentucky Woodlands Ice Damage Web site Available

If you are one of the many woodland owners or forestry professionals having to deal with the February ice damage there are resources available to help. UK Forestry Extension and the Kentucky Division of Forestry have established a Web site that contains ice damage publications, webinars, and sources for additional assistance. Visit www.kyicedamage.net for more information.



Invasive Species Removal - Payments Available in the Future

The Natural Resources Conservation Service working with the University of Kentucky Department of Forestry Extension has developed a payment plan for the removal of invasive shrub species such as bush honeysuckle or autumn olive from woodlands. This payment can be obtained under the EQIP and WHIP programs and is administered through you local Kentucky Division of Forestry forester. While the deadline for this years sign-up has passed, contact your forester to plan for next year. When the sign-ups are available next year the forester can assist with sign-up and will develop a treatment plan for your woodlands. Here are a couple of examples of the cost-share opportunities that were offered this spring: Removal of Woody Vegetation, \$4.31 per sq ft.; Foliar Application to Invasive Understory (under 4.5 ft tall), \$47.09 per acre; Cut Stump Treatment to Invasive Understory (< 200 Plants/Ac.), \$54.50 per acre; and Cut Stump Treatment to Invasive Understory (>1,600 Plants/Ac.), \$702.49 per acre.

Be sure to discuss cost-share opportunities with your forester as they are constantly changing. To find a Kentucky Division of Forestry service forester please visit www.forestry.ky.gov/distoff/

New Forest Health Specialist

at the Kentucky Division of Forestry



Jody Thompson started as the Kentucky Division of Forestry's new forest health specialist in January 2009. He graduated from Auburn University with a Bachelors and Masters degree in Horticulture. His education focused on entomology, plant pathology and plant biology. Jody worked for two years as a biologist in the Alabama Department of Conservation and Natural Resources, where he focused on coastal wetland restoration and biological inventories. Prior to moving to Kentucky, Jody was involved in pine beetle research with the Auburn University School of Forestry and Wildlife Sciences. Jody admits that he is "more comfortable here and enjoying this job more than any other place I've been."

Certification DVD Available

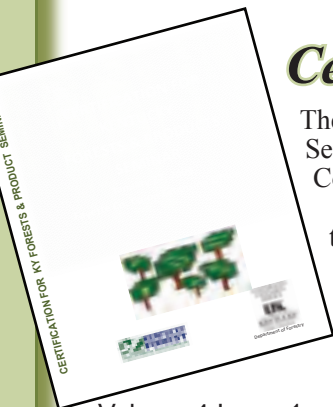
The Certification for Kentucky Forests and Products Seminar was held on Jan. 27, 2009 at the Fayette County Extension office.

Nearly 100 people attended the seminar and heard topics such as: Global & Economic Ramifications of Certification of Kentucky's Forests, U.S. Forest Service Perspective on Certification, American Tree Farm Endorsement of Certification, and more.

DVD's of the seminar are now available. Cost is \$35. If you are interested in ordering a copy of the seminar, please e-mail forestry.extension@uky.edu or call 859.257.7597.

Answers to Test Your Knowledge on page 17.

- A. Honeylocust
- B. Cedar-apple rust
- C. Walnut caterpillar
- D. Giant puffball
- E. Poison Ivy





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Course Registration Form

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www.ukforestry.org