

Kentucky
Woodlands
Magazine

Volume 5 Issue 2
August 2010

**Toxic Plants
Producing Maple Syrup in Kentucky
How to Keep Your Woodlands Healthy**

Kentucky Woodlands

Volume 5 Issue 2 Magazine

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

In this Issue...

A Word from the UK Forestry Chair	1
How to Keep Your Woodlands Healthy	2
Kentucky Tree Farm Committee Newsletter	7
Toxic Plants	12
Kentucky's Statewide Forest Resources	16
Nightmare on Elm-lined Streets	18


Departments:

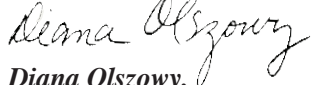
KWOA	6
Forestry 101: Monitoring Your Woodlands	8
Forest Health: Emerging Threats to Kentucky's Woodlands	10
Non-Timber Forest Products:	
Producing Maple Syrup in Kentucky	14
Kentucky Champion Tree Program	20
Test Your Knowledge	22
Certification Corner	23
Kentucky Woodlands News To Use	24

From the Editors of the Kentucky Woodlands Magazine:

You may have noticed that we often discuss forest health topics in this magazine. This is because the overall health of your woodland is the underlying factor that will ultimately lead to the success or failure of any management. Learning to recognize potential threats such as the occurrence of an invasive species near your woodlands, and taking steps to protect the woods before little problems become BIG ones is critical to your continued enjoyment and use of your woodlands. Getting into the habit of routinely walking through your woodlands and familiarizing yourself with its overall composition and condition will help you recognize any subtle changes or identify any problems sooner (e.g. invasive plant or insect infestations, storm damage, etc.) and the "How to Keep Your Woodlands Healthy" article and the Forestry 101 article "Monitoring Your Woodlands" will instruct you in how to assess your own woodland and to look for specific forest health threats before they get out of hand.

Also in this issue is an article on emerging health threats, such as Thousand Cankers disease and cogongrass. Though not yet known to be occurring in Kentucky, these threats have the potential to cause significant problems to our woodlands and all landowners should be on the lookout for them. Also included is an article on toxic plants commonly found in woodlands and yards. Don't miss the maple syrup production article in our regularly featured Non-Timber Forest Products section and American elm article in our Champion Tree section and many more articles of interest are included for Kentucky's woodland owners – so enjoy!


Jeff Stringer,
University of Kentucky
Department of Forestry


Diana Olszowy,
Kentucky Division of Forestry

About the Cover:

Tom Barnes, UK Extension Wildlife Professor, contributed the cover image of a waterfall in Hart county that arises from a spring in karst topography. "Karst" topography refers to an area with sinkholes, caves and springs--pollutants that are thrown or dumped in these sinkholes, caves and springs will eventually end up in our water. Kentucky has more than 90,000 surface miles of streams; to find out more about the water quality in your area visit <http://water.ky.gov/watershed/Pages/streamlakeconditioninfo.aspx>. Back cover photo: Natural Bridge courtesy of Reneé Williams, UK Forestry Extension

An image of Lake Cumberland through the trees.



Photo courtesy: Doug McLaren, UK Forestry Extension

Managing Editors:

Jeff Stringer
 Cooperative Extension Service
 University of Kentucky
 Department of Forestry

Diana Olszowy
 Kentucky Division of Forestry

Associate Editor:
Billy Thomas
 Cooperative Extension Service
 University of Kentucky
 Department of Forestry

Assistant Editor,
Advertising & Graphic Designer:
Reneé Williams
 Cooperative Extension Service
 University of Kentucky
 Department of Forestry

Proofreading and Web Support:
 University of Kentucky
 Agricultural Communications Service

Volume 5 Issue 2

Kentucky Woodlands Magazine (ISSN 2152-2391) is published under the direction of the University of Kentucky's Department of Forestry Extension and the Kentucky Division of Forestry and is sponsored by the Kentucky Forest Stewardship Coordinating Committee. Kentucky Woodlands Magazine is supported by funds from the Kentucky Forest Stewardship Program, U.S. Forest Service, Renewable Resources Extension Act, and the Cooperative Extension Services. Views and opinions expressed in the Kentucky Woodlands Magazine do not necessarily represent the opinions of its editors, the UK Department of Forestry or the Division of Forestry. The appearance of a logo, organization, manufacturer or product within the magazine does not constitute an endorsement by the editors, the University of Kentucky Department of Forestry or the Kentucky Division of Forestry.

Change of Address and Other Magazine Business:

Forestry Extension Office,
 Department of Forestry,
 University of Kentucky,
 216 Thomas Poe Cooper Bldg.,
 Lexington, KY 40546-0073
 859.257.7597
 E-mail: billy.thomas@uky.edu
www.ukforestry.org

Duplicate mailings:
 For duplicate mailings, please
 send both mailing labels to the address above.



Forestry Extension Office
 Department of Forestry
 216 Thomas Poe Cooper Bldg.
 Lexington, KY 40546-0073
 859.257.7597
www.ukforestry.org



Kentucky
 Division of Forestry
 627 Comanche Trail
 Frankfort, KY 40601
 502.564.4496
<http://forestry.ky.gov>



Editor's Note: The use of FSC mixed source paper indicates Kentucky Woodlands Magazine's commitment to sustainable woodland management. We are also pursuing the use of SFI paper produced on SFI certified and American Tree Farm System certified land.



A Word from the UK Forestry Chair...

Proud and honored . . . This is how I have described being the new chairperson of the Department of Forestry at the University of Kentucky. Incidentally, it is also how I felt when the editors asked me to write a column for this issue of your fine magazine. Honor is a fairly straightforward word; pride has two meanings. When I say proud here, I do not mean prideful. Instead, I mean that it is satisfying and fulfilling to be part of something that is important, relevant, and meaningful. Part of this pride stems from the fact that I get to work with a group of faculty and staff that I know is deeply committed and is trying to do the right things. Another part comes from the fact that I know we are involved in a significant and worthy profession. I believe this forms the basis of what we have in common with the woodland owners of Kentucky.

You know better than I do that there are over 465,000 woodland owners in Kentucky. I would be willing to bet that most of those folks are proud and honored to be counted in that group. Woodland owners, whether they are passively involved in their land or actively managing it on a daily basis, play an important role in Kentucky and throughout the region. The many significant ways that you contribute to the economy, the environment, and society in general are often detailed throughout the pages of this magazine. These are things woodland owners should be proud of and honored for by their friends, neighbors, and citizens of the state. The fact is, being a landowner is often hard work, particularly if one tries to do the right things.

We also have in common the very special relationship and rich tradition of partnership between landowners and their land grant university; the University of Kentucky has long been a shining example of that tradition, and this magazine is a clear example of that partnership. As the new chairperson of Kentucky's land grant forestry department, and

by teaming up with faculty and staff of the department, I intend to make sure that our teaching, research, and outreach missions stay relevant and meaningful. I want you to know that we value the longstanding relationship we have with Kentucky's landowners, and we will continue to work hard educating your children and conducting research and educational programs that help you improve your bottom line in an environmentally responsible manner. We will take that responsibility very seriously.

We have a great deal of work to do in the coming months; this is an important time for Kentucky's land grant forestry department – your forestry department. The department has recently completed a new strategic planning exercise, a significant curriculum revision, hosted a formal review of our undergraduate program by our professional forestry organization (The Society of American Foresters), and we have a new department chairperson. These all combine to create a valuable formative opportunity so it has never been more important that we stay engaged with our stakeholders. We want to hear from you.

Accordingly, one of the most important things I will be doing over the next year is making personal connections with our clientele and cooperators – and this means the woodland owners of Kentucky. Though I cannot claim to be a native Kentuckian, I was smart enough to marry a woman who was born and raised in this fine state. During my many visits here, I have grown to love the Commonwealth, and I look forward to spending more time on the roads and in the woods of Kentucky.

A handwritten signature in blue ink, appearing to be 'R. Williams', written in a cursive style.

How to Keep Your Woodlands Healthy

by Jeff Stringer

Everyone would agree that our health is a good thing, and this no less so for our woodlands. The health of our forests and our planet are subjects of serious discussion across the globe, in our nation's capital, and here in Kentucky. While global problems must be addressed through worldwide and national agreements and policy, the majority of woodland owners can assess the health of their woodlands and can contribute to improving woodland health. Before a landowner can approach the subject of improving woodland health, each owner must have some idea of how to define woodland health and be able to assess the health of their woodlands. Fortunately, there are ways of gauging the health of woodlands, what is causing woodlands to be unhealthy, and if it is, what can be done to improve woodland health.

What is a Healthy Woodland?

While the definition of forest health is vigorously debated, it is generally agreed upon that healthy hardwood forests in Kentucky have the capacity to regenerate and maintain a diversity of native tree, shrub, and ground layer species that are known to occur naturally together and are appropriate for the site and soils present. Generally, everyone can agree on the definition as described above. However, there are many differing opinions on how this definition is interpreted and applied, based on owner objectives. For example, someone may value their woodlands because of their potential to mature into old growth; others may value it for hunting or for timber production. These objectives are not fully at odds with one another. However, if the owners wanted to maximize a particular objective, the management plans they develop would be significantly different and so would their definition of what defines health. For example, it would be typical for an old-growth forest to contain dead and dying trees and develop an overstory that contains a relatively high percentage of shade-tolerant species, some of which are not in high demand for timber or wildlife. From a timber perspective, dead and dying trees represent an "unhealthy" condition, and if the understory contains regeneration of low-valued, shade-tolerant species, their presence would also be viewed as unhealthy.

Agencies and organizations, like woodland owners, can also define health differently. Some agencies and organizations may wish to allow forests maturation to occur with little regard for native species composition as long as it

develops naturally. Other agencies and organizations push to maintain a significant oak component in the forest as is currently present. Oak is important to wildlife and current timber objectives, but the predominance of oak is now generally understood to be present because of human-caused fire, either from Native Americans or early European settlers. While differences of opinion exist in regards to some of these issues, there is agreement on some aspects of forest health, and there are ways in which woodland owners can assess their woods and help the woods remain or become healthy.

Regardless of the differences of opinion that are discussed above, there are indicators of poor health and factors that contribute to poor health that everyone can agree upon, such as the following:

- dominance of exotic species in the overstory and understory
- degraded soils, trees, and understory plants as a result of abuses such as arson fires or poor logging practices
- debilitation of native forest species by exotic insects and diseases
- human-caused overstory decline and the proliferation of native insects and diseases

There are also practices that can be used by woodland owners who wish to maintain healthy forests regardless of ownership objectives.

This article provides some basic recommendations about maintaining the health of natural hardwood forests or woodlands as well as some recommendations that are tailored to catered individual ownership objectives. One subject that must be discussed and understood before moving forward with evaluating woodland health is the difference between individual tree health and woodland health. It is important to understand that healthy woodlands can contain individual trees that are in poor health and will eventually die. This is true whether we are discussing a woodlands that is being managed for timber production, old-growth, or recreation. It is similar for a human population, in that the population can be healthy but it will include those who are ill or lacking in vigor due to old age. The population is healthy as long as the entire population is not in this condition and young, healthy individuals are present to sustain the population. The same is true for woodlands. Woodlands may be healthy, even with individual trees that are in the process of losing vigor and/or are dead as long as

there is adequate regeneration and ages of trees to replenish and maintain native species composition.

Exotic Invasives – The Common Threat to Woodland Health

One widely agreed upon tenet of woodland health is that native species should have adequate growing space to maintain themselves and the woods should have the ability to regenerate native species successfully. This one tenet is universally at risk because of the occurrence of exotic (non-native) species that can do the following:

- reduce or stop the regeneration of native species
- occupy growing space to the detriment of growth of established native species
- reduce biodiversity
- reduce the value of the habitat for wildlife species

What to do if exotic species are present in your woods

If you know or suspect that you have exotic invasives, contact a forester to help determine if the invasion is significant enough to warrant control, and, more importantly, determine treatments and government payment programs that potentially could financially assist in controlling the invasive species. Typically, invasive species can occur as grasses, forbs, vines, and trees. They can cover the ground and can limit natural regeneration and out-compete many native species in

the understory and overstory. There are specific methods that have been developed to control the various species of invasive plants, and forestry and natural resource professionals should be consulted for specific and detailed control recommendations. Trying to undertake control of some invasive species without a technical understanding of the species and the woodlands situation could lead to ineffective control or make things worse. There are numerous examples in which landowners used the wrong concentration of herbicides (for example, foliar percentages for cut-stump treatments) or tried to mechanically control invasive species. The result was uncontrolled and drastic increase of invasive plants (for example, cutting tree-of-heaven without the use of herbicides can create uncountable numbers of root suckers).

Protecting your woodlands from invasion

While some woodlands may currently be without invasive species, it is very important for woodland owners to recognize that this might not always be the case. Where invasive species are present in surrounding areas, the risk of serious invasion must be anticipated. Woodland owners should know how to determine if they are at risk or going to create a problem, and how to deal with a problem if it occurs. Remember that just because exotic invasive species are not currently a problem, many factors (such as global warming, the advance of exotic species across the landscape, and

management practices that may be used) may well put your woodlands at risk for invasion.

Planning for invasive exotics

The following will help woodland owners plan for maintaining the health of their woodlands where exotic species exist:

- Find out what invasive species are present in your woods and county. Any forester or natural resource technical professional (state forester or wildlife biologist, consulting or industry forester, or NRCS district conservationist) should know what species a woodland owner should be aware of. Make a list of these species.
- Get readily available information on these species from the Internet or resources from agencies, universities, and organizations involved in exotic species control.
- Scout your property and adjacent areas, particularly roadways, power and gas



Photos courtesy: Jeff Stringer, UK Forestry Extension

One indicator of forest health is the ability to regenerate native tree species. This woodland has a dense understory of the invasive exotic bush honeysuckle that is profuse enough that it is stopping regeneration.

rights-of-ways, railways, fencerows, and disturbed areas such as surface mines and construction sites where invasive species seed can originate. Note these potential trouble spots on a map of your property and the surrounding area.

- Remove exotic species from your property, especially those that seed prolifically and can spread as a result of natural causes (wind/ice storms) or human disturbance (logging or site preparation).
- When conducting a timber harvest or other intensive practice that exposes soil, plan to scout roads, skid trails, and landings the second year after harvest to kill unwanted species.
- Plan regeneration openings where they are less likely to be invaded, know what species may invade, and be ready to scout the openings after establishment to kill exotics.

Age and Woodland Health

The aging of woodlands is not inherently bad. However, the aging of individual trees and species within woodlands can create problems for woodland owners and lead to problems with woodland health. Problems with aging trees occur in particular in wood-

lands where all of the trees, or at least the overstory trees, are approximately the same age, these species reach their biologic maturity, and main canopies start to decline precipitously. It also is a problem when older overstory trees are stressed from being too dense or when droughts or late spring frosts occur and insects and disease can aggressively attack the weakened older trees. Instead of having a few individual scattered trees dying, which is a hallmark of uneven-aged, old-growth forests, the above-mentioned conditions can cause a significant number of canopy trees to die, resulting in significant problems. Significant canopy mortality causes problems with use and enjoyment of the woods and can lead to invasion from exotics, harming the long-term health of the woods. Canopy mortality is much more likely to occur when overstory species are reaching their biologic maturity, which can vary by site. The table on page 5 provides a list of common species and ages at which these species have been known to decline and die based on expert knowledge of foresters across the eastern U.S. You can use this table to determine the potential for decline of your most numerous overstory species. Their decline can be exacerbated due to crowding; past practices leading to species that establish on soils and sites where they will not grow to their normal biologic maturity; past abuses to the trees themselves and to the soils from poor logging, farming and grazing, and uncontrolled wildfire; and weather conditions. Also, there is evidence that some species such as red oaks can lose their ability to produce abundant acorn crops needed for wildlife (and ultimately for their regeneration) as they approach their biologic maturity.

How to Deal with an Aging Woods

To deal with this issue, have a forester assess your woods for its age. Foresters can determine whether you have a predominance of overstory trees reaching biologic maturity. While some species such as white oak can potentially live a long time—400 years or more—many species, including white oak, can come to a premature end due to the crowding of the woods, past practices that have harmed the soil, and unusual or changing weather patterns.

Sometimes aged overstory trees show the approach of a premature end by the loss of major canopy branches, which is a sure sign of collapse. However, there are times when trees die without an obvious indicator. Regardless, if your overstory trees are reaching biologic maturity or they are in the range of 70 to 100 years old, you could be at risk for losses. In older woods, you need to plan and potentially undertake silvicultural practices that will ensure that overstory trees are kept at the proper density and the woods are capable of vigorously regenerating. Practices such as a midstory removal as part of the oak shelterwood method and possibly underplanting if seed or seedlings of the appropriate species are not present may be necessary. If the canopy is already in decline, you may choose to start regeneration where needed. Typically, regeneration can be started using group openings of 0.5 to 1.5 acres in size. Keeping stands in different age classes is a common practice of large forest owners. It ensures diversity and that some stands are always young and growing vigorously. Owners with small woodlands can achieve the same thing by establishing several age classes of trees by harvesting and regenerating group openings. It is one way of maintaining an uneven-aged forest. If the



Photo courtesy: Dylan Dillaway, Louisiana Tech. University

Trees reaching their biologic maturity can easily succumb to multiple stresses such as drought and defoliation. If a significant number of canopy trees are older the loss can be a problem for the overall health of the woodlands.

size of the openings are in the recommended range, you will be able to keep a wide range of species present in the woodlands.

Life Spans of Common Tree Species		
Species	Average	Range
white oak	194	90-250
American beech	168	100-250
sugar maple	162	90-200
northern red oak	151	90-200
chestnut oak	141	75-200
shagbark hickory	137	75-225
post oak	137	70-190
yellow-poplar	136	80-300
bitternut hickory	133	80-200
black walnut	131	75-200
white ash	129	80-150
black oak	129	75-200
mockernut hickory	127	60-200
pignut hickory	117	50-175
blackgum	116	80-150
pin oak	116	80-170
black cherry	115	70-175
sweetgum	112	80-125
shortleaf pine	110	75-200
eastern white pine	--	75-200
pitch pine	110	75-200
red maple	106	50-175
scarlet oak	105	65-150
Virginia pine	76	40-125
sassafras	69	30-175
black locust	--	15-150

Protecting Your Woods from Abuse

Care should be taken so that activities you undertake do not harm the woodlands. Also, you need to be concerned about protecting your woodlands from the carelessness of others. An unmanaged harvest can harm existing trees through uncontrolled skidding and felling and potentially ruin advance regeneration, seedlings and saplings that are required for regeneration of some species such as oaks. If soils are worked when they are wet and skidding is not controlled, significant compaction can occur to the soil outside of skid trails, landings, and roads that are expected to be compacted during a harvest. All these logging issues can be handled in a contract or agreement with the logger. Often a forester can help significantly with these issues. It is also important to protect your woodlands from unauthorized harvesting. It is helpful to have your boundaries clearly marked to aid in

making loggers working on adjacent property clearly aware of where the property boundary is.

The development of fire lanes and lines can help keep uncontrolled fires out of your woods. Use a forester to help place these lines and make sure that they are clear of leaves and other fuels during fire season. Typically, blowing leaves from fire lines during and after leaf fall and using a chainsaw on large fuel that is lying in or across the fire line can help stop or slow a wildfire. Also, fuel reduction may be needed, especially if your woodlands have been subjected to damage resulting in a significant amount of branch material on the ground. Fuel reduction can be achieved by using a slash treatment to get fuel on the ground so that it will rot quickly and tend to maintain more moisture than when it is up off the ground. This practice can be carried out by using a chainsaw or compacting it with a bulldozer.

Maintaining healthy woodlands is no accident. Often-times you must actively plan to ensure that your woods remain healthy or that an unhealthy woods is improved. In summary, these goals can be reached by:

- determining if exotic invasives are present and plan for their eradication
- protecting your woods from exotic invasives if their sources exist around your woodlands
- evaluating the age of your woods and making plans for establishing a variety of age classes if necessary
- protecting your woods from abuse due to logging, wildfires, and trespass

References

For additional information about the topics covered in this article please review the following articles that previously appeared in this magazine. These articles are also available by visiting <http://www.ca.uky.edu/KYWoodlandsmagazine/about.php>.

Silviculture for Small Woodlands. Kentucky Woodlands Magazine 5(1): 1-4.

Managing and Preventing Woodland Degradation. Kentucky Woodlands Magazine 4(3): 1-4.

Forestry 101: Aging Trees. Kentucky Woodlands Magazine 4(2): 16-17.

Timber Trespass in Kentucky. Kentucky Woodlands Magazine 3(1): 1-3.

Tree vigor. Kentucky Woodlands Magazine 2(2): 8-9.

Spring freeze, summer drought, and our woodlands future. Kentucky Woodlands Magazine 2(2): 1-3.

About the Author:

Jeff Stringer, Ph.D., is a hardwood extension specialist 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.

Cooperative Extension Service, Department of Forestry, University of Kentucky, 201 Thomas Poe Cooper Building, Lexington, KY 40546-0073; Phone: 859.257.5994; Fax: 859.323.1031; E-mail: stringer@uky.edu

***“Don’t it always seem to go that you don’t know what you got till it’s gone?”
-- from Joni Mitchell’s “Big Yellow Taxi”***

I have been very blessed this year and have had the opportunity to make several trips to other states. On a clear day in October, I flew to Charlotte and then on to Fayetteville, North Carolina. As I looked down from the plane, there was nothing but trees. On a clear day in July, I flew to Chicago. There was a big contrast in the scenery from the plane windows on this trip. It looked like a patchwork quilt, with large blocks of agricultural fields outlined by thin bands of trees along the ditches and streams.

The city of Chicago should be commended on its “urban forestry” efforts. Wherever possible, the city is trying to grow trees in the concrete and asphalt jungle. On the trip downtown from the airport, I witnessed a lot of this effort. Unfortunately, I also saw many small groves of dead ash trees. I assume these trees were victims of the emerald ash borer. I spent time walking in just about every park in downtown Chicago, I can’t remember seeing a single live ash tree. I did see some live elm trees, which appeared to be receiving some type of treatment. It was an encouraging sight.

Since the early 1900s, Kentucky has been invaded by chestnut blight, Dutch elm disease, southern pine beetle, gypsy moth, hemlock wooly adelgid, and emerald ash borer. Now it appears that our black walnuts are in danger from thousand cankers disease, which has just been found in Knox County, Tennessee. The composition of our forests is rapidly changing due to all of these invasives. My own tree farm has changed drastically in the past couple of years due to the effects of drought, the ips beetle, and the ice storm of 2009. Areas that were once tall straight Virginia pine now look like matchsticks.

With all these “attacks” on our woodlands, it becomes more and more important to stay educated about what is out there in our forests. There are many, many sources of forest education in Kentucky. The Kentucky Division of Forestry, UK forestry extension, county extension offices, and consulting foresters are all excellent sources of information. Thanks to the Internet, forestry information is available from all over the world in just a matter of seconds. At the Kentucky Woodland Owners Association

(KWOA), we don’t claim to have all the answers to your forestry questions, but chances are we can direct you to the person who does have the answer. We attempt to keep our members informed and up-to-date on all the threats, dangers, and opportunities available for woodland owners. The only way for woodland owners to make good decisions concerning their forest management plans is to stay on top of all the threats and dangers and get into their forests to see what is there and what is happening.



Photo courtesy: Betty Williamson, KWOA President

The author’s woodlands, like many across the state, were significantly impacted by the 2009 ice storm. Do you know what to do if something happens to your woodlands? Being part of the Kentucky Woodland Owners Association will help you stay informed and prepared if something happens to your woodlands.

Don’t take your forest for granted. It might not always be there.....at least not as you know it now. To quote Joni Mitchell’s song “Big Yellow Taxi,” *Don’t it always seem to go that you don’t know what you got till it’s gone?*

Betty Williamson, President
Kentucky Woodland Owners Association
bettykwoa@bellsouth.net or www.kwoa.net



Kentucky Tree Farm Committee Newsletter

Kentucky Tree Farmer Profile

There are many great stories about Kentucky woodland owners and others involved with the Tree Farm program in Kentucky. From time to time we will use this space to share their stories.

Pete McNeill:

Pete was born on a small dairy farm in the Northwestern corner of North Carolina on the slope of Mount Jefferson. He was the second son of four brothers and five sisters. Pete joined the US Navy in 1944 and was stationed in the Pacific during W.W.II. After the war, Pete enrolled in Berea College where he met and married Anna Lou Planck in June 1950. After graduation with a degree in agriculture, they moved to Ashe County North Carolina and through the GI bill he taught modern farming practices to war veterans. In March of 1953, the McNeills relocated to Fleming County, Kentucky, purchased a farm and moved in with two children in tow. As the family grew, the farm was sold and Pete was employed for three years as a UK Extension Agent in training for Youth (4-H). In 1959 he took a



job as Assistant to the Manager of Fleming-Mason RECC, and again returned to a farm near Poplar Plains in Fleming County where both Pete and Anna Lou wanted to raise their children. Upon retirement from RECC in 1982, they moved back to the farm in Fleming County. Soon, Pete was recruited by Morehead State University to work in their rural development office. After retirement, this time from Morehead State University, Pete resumed farming full time which involved extensive management of the timber tracts that he had acquired and developed over the years.

Pete McNeill was one of the founders of the Kentucky Woodland Owners Association which was organized in the 1980s. In 1988, he was recognized as the Kentucky Tree Farmer of the Year, the Southern Region, and National Tree Farmer of the Year. He and Anna Lou remain as the only Kentucky recipients of the latter two awards. He has represented Kentucky forestry landowners at numerous national Tree Farm conferences and is an active KWOA board member, currently serving as treasurer of the board. Pete and Anna Lou have been married for 60 years. They have five children, twelve grandchildren, and four great-grand children. They currently own and manage over 1,000 acres of timberland in and around Fleming County. He is a member of the American Tree Farm System, KY Agriculture Water Authority, Kentucky Forestry Committee, and the Forestry BMP board.

Pete has not only done an outstanding job managing his Tree Farm, he has done a tremendous amount for Kentucky woodland owners.

Kentucky Tree Farm Committee District Chairs Directory

Would you like to know more about the Tree Farm program in Kentucky? Contact the Kentucky Tree Farm Committee district chair in your area.

District	Chair Name	Phone	Email
Bluegrass	Robert L. Volk	502.545.1808	robertl.volk@gmail.com
Central	Hagan Wonn	606.678.2842	haganw@somersetwood.com
Eastern	John Reinstette	606.216.0654	jreinstette@aol.com
Green River	Melven Hack	270.274.9810	mdhack@windstream.net
South Central	Scott Shouse	859.986.2373	bsshouse@maced.org
Southeastern	Bob Woford	606.784.9411	bobwoford@alltel.net
Kentucky River	Doug McLaren	859.257.2703	doug.mclaren@uky.edu
Northeast	Kevin Tudor	606.524.6444	kevin.tudor@domtar.com
Western	David James, Vice Chair	270.927.7214	david.james@domtar.com



FORESTRY 101

Monitoring Your Woodlands

by Doug McLaren

“Your kids are growing up so quickly.” How many times have you heard relatives or friends make this comment about your children? When you are with them on a daily basis, you don’t seem to notice how fast they are truly growing. The same can be said about your woodlands.

Unless you make at least an annual visit to the different sections of your woodlands and make some basic measurements of the trees, you, too, will be missing the gradual increase in increments of height, diameter, and value of these trees. You will also be missing the in-growth (new trees becoming established in the canopy) or death of some of those established stems.

As a good forest steward, it is important for you to monitor the growth of your woodlands. Few owners realize that the trees in their woodlands are in a constant state of change even without any management. The trees are constantly battling for the soil nutrients, sunlight, and water in each of the individual sites. This competition for needed resources by each tree is ongoing and there are winners and losers. The trees that are successful will usually dominate and become the largest trees within the individual areas. By monitoring this process you will be in a better position to influence your woodlands’ growth and development.

There are several factors that play into this competitive growth of trees. First is species. Some trees are natural born competitors. Yellow-poplar is a good example. During the late 1930s and early 40s, many of the old

grazing and corn fields in Kentucky were abandoned. If there was an old yellow-poplar, either in the field or in adjacent woodland edges, yellow-poplar would quickly dominate and become established almost exclusively, because the open fields were exposed to the sunlight necessary for the establishment and continued growth of yellow-poplar which can be very competitive in that environment.

Another example of competition is the dramatic

and swift seeding-in of an old field after a wildfire. Such a fire could expose the soil to new seeds in the mineral soil or seeds from adjacent windblown sources. Windstorms, ice storms, insects, and logging can have the same effect on the establishment of a new stand of trees as when the original canopy is destroyed or altered.

Soil texture, fertility, moisture, and depth will greatly affect the species of trees growing on a site. These factors also affect the rate of growth. Normally, deep soils will retain moisture and have more nutrients available for tree growth. Shallow soils can limit the amount of tree growth because of bedrock, gravel, or potentially excessive moisture.

The direction the slope is facing (its topography) and where on that slope the tree is found, has a tremendous influence on species



Photo courtesy: Ray Hicks, retired forestry professor

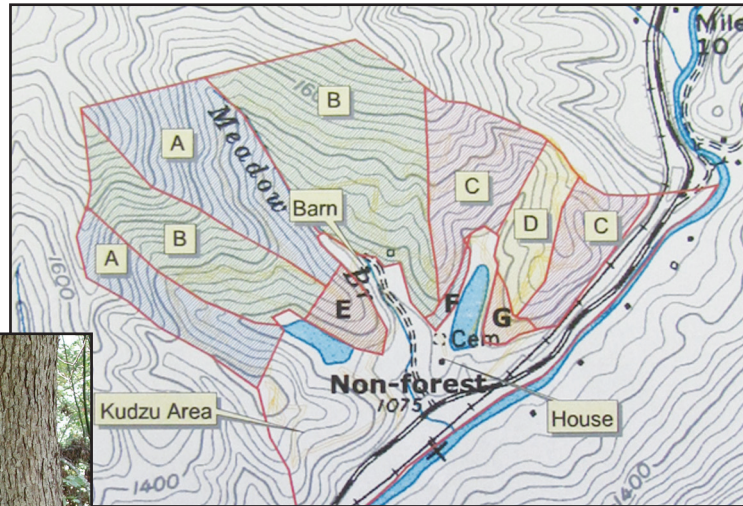
Many hillsides in Kentucky were cleared for agricultural production -- primarily corn. Most of these hillsides have reverted back to forests and in many cases are pure yellow-poplar stands.



composition and growth potential. Trees found near the top of the slope are more competitive in soils that are usually more eroded, thinner, less fertile, and unable to hold adequate moisture. Slopes that face south and southwest will receive direct sun during the hotter times of the day. These slopes have hotter and thinner soils, making trees' growth potential less than that of their neighbors on slopes facing north and northeast, which have cooler conditions. Trees at the bottom of any slope typically will be growing in deeper soils and have more moisture and nutrients. In general, trees growing on the lower north and northeast slopes tend to have better growing conditions.

How can all of this information about tree growth be used in your over all woodland management plan? Monitoring your woodlands on an annual basis will help you to make adjustments to your plan when necessary. This regular monitoring will also allow you to notice any problems in your woods before they become much more difficult to

address. Issues such as invasive species, insect problems, or even timber theft/ trespass are much easier to deal with when they have not been given time to become major problems. The map in your woodland management plan (which should be developed by a professional forester) should show you that your entire acreage has been subdivided into "stands," or smaller units, based upon growth potential and species domination. These stands will vary in size and shape and are based upon your individual management objectives.



Map courtesy: Kentucky Division of Forestry

A map is an important part of a woodland management plan. Maps created by professional foresters will designate the various "stands" for management and monitoring purposes.

Woodland owners should not feel alone when it comes to keeping up with their trees. Professional foresters, either Kentucky Division of Forestry, Kentucky Association of Consulting Foresters, or industry foresters, are available and willing to assist woodland owners in monitoring their woodlands. Spending some time with your cooperating forester on your woodland property is an invaluable way to tap into their knowledge and expertise.

Photo courtesy: Dylan Dillaway, Louisiana Tech. University

Foresters making their periodic visits will take growth data from each of these individual areas and be on the lookout for any problems that may require an update to your woodland management plan. Between the visits of your cooperating forester you should consider making some basic measurements to help in maintaining and monitoring the growth and health of your woodlands. A better understanding of the trends that are developing in your woodlands will provide you and your forester a quick reaction time for making timely updates and alternative choices in your ever-changing woodlands' plan. In the next installment of Forestry 101, we will discuss how to go about such monitoring. Information is power, and the more information you have, the better off you will be in getting the most out of your woodlands ownership experience.

About the Author:

Doug McLaren is an Area Cooperative Extension Specialist with the University of Kentucky Department of Forestry. Cooperative Extension Service, Department of Forestry, University of Kentucky, 107 Thomas Poe Cooper Building, Lexington, KY 40546-0073; Phone: 859.257.2703; Fax: 859.323.1031; E-mail: dmclaren@uky.edu

The direction a hill faces will significantly impact the productivity of the hillside. North facing slopes will have cooler growing conditions and retain more moisture than south facing slopes.

Forest Health



Emerging Threats to Kentucky's Woodlands

by Jody Thompson

Numerous invasive species inhabit Kentucky, and more species are expected to invade in the future. Emerging threats to Kentucky's forests are invasive species that are predicted to be significant threats and are either on Kentucky's border or are expected to invade. Examples include gypsy moth, which can be found in Ohio and Virginia, among other states, and sudden oak death, which is found in ornamental nurseries throughout the Southeast. Gypsy moth and sudden oak death are important, but three other emerging threats deserve attention as well.

Asian Longhorn Beetle

The Asian longhorn beetle (*Anoplophora glabripennis*) is a destructive pest of at least 18 species of hardwoods. It prefers maple but can also be found in poplar, birch, elm, willow, cottonwood, mulberry, cherry, pear, plum, and black locust, among other species. The beetle was discovered in Brooklyn, New York, in 1996 but has also since been found in Massachusetts and New Jersey. It will attack healthy trees and often lay eggs on the tree from which it emerged, which can rapidly increase the number of beetles in a tree and accelerate the time to tree death.

The Asian longhorn beetle can be easily transported to new areas through the movement of parts of a tree that have been infested, including firewood. The only effective

methods of managing the beetles are to cut and remove infested trees or treat them with a systemic insecticide.

An adult Asian longhorn beetle is 1 to 1.5 inches long, shiny black, and has scattered white spots on its back. Its antennae are usually longer than its body (which has alternating black and white bands) and its legs can be bluish-white. There are many species of longhorn beetles in Kentucky and throughout the United States, so suspected beetles should be identified by a professional.



Photo courtesy: Dennis Haugen, USDA Forest Service, Bugwood.org

Asian longhorn beetle damage with finger pointing at egg laying site and circular exit hole seen in lower right part of photo.

Thousand Cankers Disease

Thousand cankers disease is a relatively new disease that, until now, has been killing walnut trees in the western United States. Recently however, it was discovered in Knoxville, Tennessee. The disease is suspected to have developed through the interaction of a bark beetle (walnut twig beetle) native to the western United States, a fungus of unknown origin, and black walnut trees. This disease is important because black walnut, which seems to be the most susceptible of the walnut species, is native to the eastern United States.

The walnut twig beetle, which doesn't normally kill its host, carries fungal spores into walnut trees when it bores into them.

The fungus kills tissue as it spreads throughout the area of the beetle's activity. Tree death occurs when the cankers come together around the tree, cutting off water and nutrient flow.



Early stage of canker formation at signs of beetle activity beneath the bark of a black walnut tree.

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



Left: Asian longhorn beetle adult.

Top right: Cottonwood borer. Bottom right: Pine sawyer

Photos courtesy: Left: Michael Bohne, Bugwood.org; top right: Charles T. Bryson, USDA Agricultural Research Service, Bugwood.org; bottom right: Natasha Wright, Florida Department of Agriculture and Consumer Services, Bugwood.org

Cogongrass

Cogongrass (*Imperata cylindrica*) is considered to be one of world's most invasive weeds. As with many invasive exotic plants, it is native to Asia. However, it is a noxious weed throughout much of the world. It was initially introduced to the United States by way of coastal Alabama in 1912 and has since infested eight other states: Alabama, Florida, Mississippi, Louisiana, Texas, Georgia, South Carolina, and Tennessee. Conservative estimates show cogongrass infesting over 1.25 million acres in Florida, Alabama, and Mississippi alone. Its closest infestation to Kentucky is in Henderson County, Tennessee. Long-distance spread throughout the Southeast has been through human activity such as moving soil contaminated with rhizomes and seed, contaminated machinery, and introducing it into landscapes as an ornamental plant. Additionally, the light seed can be blown for miles.

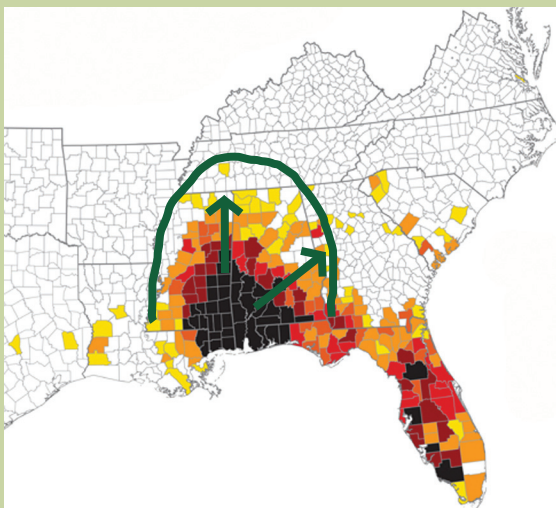


Above: Field taken over by cogongrass.

Above right: White, fluffy seed head of cogongrass.

Right: Leaf blade showing offset, white midrib. Most grasses have a centered midrib.

Photos courtesy: Above: Wilson Faircloth, USDA Agricultural Research Service, Bugwood.org; Above right: Division of Plant Industry Archive, Florida Department of Agriculture and Consumer Services, Bugwood.org Right: Division of Plant Industry Archive, Florida Department of Agriculture and Consumer Services, Bugwood.org



Modified from <http://www.cogongrass.org/distribution/index.cfm>

Range of cogongrass with the green arrows showing the prominent direction of spread. The map shows cogongrass spreading toward Kentucky. The darker the color the higher the number of infestations reported as of May 2010.

About the Author:

Jody Thompson is the Forest Health Specialist with the Kentucky Division of Forestry. His responsibilities include monitoring, identification and education for insects, diseases and invasive exotic plants in Kentucky's woodlands.

Kentucky Division of Forestry, 627 Comanche Trail, Frankfort, KY 40601; Phone: 502.564.4496; Fax: 502.564.6553; E-mail: jody.thompson@ky.gov

Editors Note:

Since this article was written the Kentucky Forest Health Task Force has begun deliberations regarding a quarantine to prevent the introduction into Kentucky of Thousand Cankers Disease (TCD) of Walnut.

This newly discovered disease of walnut is particularly lethal to black walnut, which is a valuable commodity for Kentucky; both for timber and nut production. Currently, the only known location of TCD within the native range of black walnut is in Knox County, Tennessee. Current known pathways of movement for TCD include forest product trade, nursery stock trade, wood crafter hobbyist exchange, research, and firewood movement due to an abundance of dead and dying walnut wood in western states. If Kentucky enacts a quarantine it will likely be similar to the one imposed for the Emerald Ash Borer. For the latest information on Thousand Cankers Disease of Walnut visit www.KyForestHealth.org.

(www.KyForestHealth.org)

Toxic Plants

by Tom Barnes



Photos courtesy: Tom Barnes,
UK Forestry Extension

The cardinal flower is an attractive wildflower that is popular with humming birds and butterflies. However, humans that consume large quantities can suffer from nausea, vomiting, diarrhea, weakness, convulsions, and ultimately a coma.

is so toxic that the honey made by bees that use its nectar gives rise to mad honey disease, which was first identified in Greece in the fourth century. While usually not fatal, mad honey disease lasts for about 24 hours and results in dizziness, excessive perspiration, weakness, nausea, and vomiting. It causes the heart to slow and beat irregularly. Think about it as you walk through the woods. Do you ever see the leaves of rhododendron browsed or eaten by much of anything? Eating the leaves of rhododendron can be fatal if you consume in excess of 0.02% of your body weight. While poisoning by rhododendron is rare today in adults, there have been cases in the past in which young children have died from eating rhododendron or azalea leaves. Azalea and rhododendron are closely related plants. In June 2008, nine Korean children died of azalea poisoning.

If you think poisoning from eating plants is rare in today's world, you couldn't be further from the truth. More than 63,000 calls are made annually to poison control centers because people, mostly children, have eaten toxic plants. Two plants, poison hemlock and water hemlock, account for most of the calls. So, just how toxic are these plants to people? About two bites of a water hemlock root will kill you deader than a mackerel, and in pretty short order, or about 60 minutes. About 30% of people who consume water hemlock die. The first symptoms of this disease occur in the gastrointestinal tract, with abdominal pain,



Water hemlock is a plant that grows in wet or moist areas and can be found along stream banks. This plant is considered one of the most violently toxic plants that grows in the United States.

nausea, and vomiting, followed by tremors and seizures.

Poison hemlock, an introduced invasive species that is common throughout the state, is less toxic, and no deaths have been reported in the past decade. The toxin in the plant usually does not kill; death occurs from respiratory failure. This plant contains alkaloid toxins that are similar in structure to nicotine. Symptoms begin with gastritis followed by tremors, ultimately resulting in a coma.

Okay, enough of the scary stuff. Let's discuss a few of the more benign species, such as poison ivy. Millions of people are allergic to this plant, and you can get a rash by touching it, indirectly when gardening tools have come into contact with it and its active agent, urushiol (which can stick to almost anything), or when the plant is burned and the urushiol becomes airborne and lands on the skin. It is also important to remember that all parts of the plant contain the toxin, and it is active all year (even in the winter). One of the most interesting new facts about poison ivy is that increasing carbon dioxide in the atmosphere is making the plant more robust, abundant, and toxic. Scientists at Duke University discovered this phenomenon in a 15-year study. As a side note, another allergen, ragweed, also is responding to global climate change. With increasing carbon dioxide levels, ragweed produces up to 55% more pollen. Given that one ragweed plant can produce up to a billion grains of pollen, a 55% increase is significant for the more than 36 million people who are allergic to this plant.

Did you know that mayapple contains more than 16 active toxic compounds? Most of them are found in the roots. While one or two ripe fruits can be eaten without negative effects, just touching the rhizome can cause dermatitis, and consuming the fruit in even moderate quantities can be fatal. Many herbalists



Rhododendron (left) and azaleas (right) are closely related plants that can easily be found in woodlands or planted near homes as ornamentals. Both are considered very toxic and should not be consumed.



collect this plant. It does have some anti-cancer properties, has been used to treat warts, and has effects on virtually every organ system in the body. But, because it is potentially fatal, consuming this plant for medicinal purposes is usually not recommended.

We will conclude with a group of plants that are flowering this time of year that some people consider the wonder herb and others consider a toxic nightmare. That group of plants is the Lobelias: cardinal flower, great blue lobelia, and Indian tobacco. This group of plants is toxic if consumed in large quantities and all plant parts are poisonous. When eaten, these plants cause nausea, vomiting, diarrhea, weakness, convulsions, and ultimately a coma. The active ingredients are several alkaloids plus at least one volatile oil. The supposed benefits of consuming these woodland herbs are their benefits in treating asthma, bronchitis, and coughs. Other purported benefits include treating depression, use as a laxative, and as a way to stop smoking. Of course Native Americans smoked Indian tobacco for its breathing benefits.

These are just a few of the interesting and potential toxic plants that occur in our woodlands. The next time out you might ask yourself: Is that cherry tree leaf toxic? Yes. Is that sourwood tree leaf toxic? No, even though it is in the same family as rhododendrons. Then you will begin to understand how plants affect people.



Indian tobacco, which can be found in fields and open woodlands, was used by Native Americans to address respiratory issues. All parts of the plant are considered poisonous and large quantities can be toxic.

About the Author:

Thomas Barnes, Ph.D., is an Extension Professor and Extension Specialist with the University of Kentucky Department of Forestry. His specialties are wildlife ecology, biodiversity, wildlife management, and ecosystems management.

Cooperative Extension Service, Department of Forestry, University of Kentucky, 206 T.P. Cooper Bldg., Lexington, KY 40546-0073; E-mail: tbarnes@uky.edu; Phone: 859.257.8633; Fax: 859.323.1031

Advertisements:



A spile, or spout, is inserted into maple trees so that maple sap can be collected.

Non-Timber Forest Products

by Deborah Hill

All photos courtesy except maple leaf: Carol Spence, UK Ag Communications



Photo courtesy: Chris Evans, River to River CWMA, Bugwood.org

Producing Maple Syrup in Kentucky

Kentucky woodland owners may find that they have a lot of maple trees in their woodlots. If these trees are larger than 10 inches in diameter, and if there are 25 to 40 maple trees per acre, those owners might want to think about making maple syrup as an option for increasing income from their woodlots.

Maple syrup has been produced in the United States since before Europeans arrived, so a lot of information is available in various forms (look for videos on YouTube, or visit MapleTrader.com). Kentucky is not likely to be competitive with the established northern markets, but there are good opportunities for producing “Kentucky” or “southern” maple syrup on a smaller scale, especially as a niche market product or what is called a “cottage industry,” meaning small scale and often cooperative production.

Maple syrup is a natural sweetener, often used on pancakes and waffles. It has recently been determined to have antioxidants and other beneficial chemicals in it, so it not only tastes great, it’s GOOD for you! It’s made by concentrating the naturally sweet sap of maple trees by boiling it down until it thickens into a sugary syrup. It takes many gallons of sap to make one gallon of syrup (40:1 is the industry standard), which is why the “real” stuff is so expensive. All maples (*Acer* spp.) can produce maple syrup. The higher the sugar content of the sap, the fewer gallons it takes to make a gallon of syrup. Sugar maple (*A. saccharum*) and black maple (*A. nigrum*) are the best producers (volume of sap) and have the highest sugar content in their saps—75% of all commercial maple syrup is from sugar maples.

How do maple trees make maple syrup? The tree leaves

are factories that make sugars as food for the continued growth of the tree. In the fall when the leaves change color, the trees shut down their food-producing activities and prepare to store food in their roots for the winter. As daylight increases after December 21, the trees prepare for the warm days of spring and for leaf production. Sap begins to move upward in the trees, at that point containing the stored sugars from the roots. Temperatures affect this sap flow—a combination of cold nights (20°-35° F) and warm days (45°-55° F) are optimal. For the northern part of Kentucky, it’s easy to remember to tap between Valentine’s Day (February 14) and St. Patrick’s Day (March 17). Farther south, it may be important to start earlier (mid-January). It all depends on that cold night/mild day combination. However, be prepared to tap any time after the New Year.

In a “sugar bush” (the term for a woodlot where syrup production is the major use) the trees are widely spaced so that they will grow in diameter and make large crowns. Crowns that are both broad and deep are extremely important for good sap production. Start in your woodlot by estimating how many maple trees you have per acre. Measure the diameter of



A relatively new way to collect maple sap is through the use of plastic tubing. The plastic tubing is connected to the taps and using gravity the sap flows to a collection reservoir such as a plastic bucket or holding tank.

the trees about 4½ feet from the ground to determine the number of taps per tree. To protect the trees' health, do not put taps in any tree smaller than 10 inches in diameter.

It is important to follow these guidelines. Over-tapping harms the trees; under-tapping reduces the sap yield without doing anything positive for the trees. A commercially profitable sugaring business should have 70-90 taps/acre and 20+ acres of woodland. Taking care of the trees—following the guidelines, clearing competition from the sap trees, pruning dead branches, etc.—is a good management practice. Aim for a sugar bush of 25-30 productive trees per acre.

Tree diameter (inches)	No. of taps
10-15	1
16-20	2
21-25	3
25+	4 or less

Making maple syrup from maple sap is one way to use a woodlot profitably. Check with a consulting forester or a service forester from the Kentucky Division of Forestry to develop a management plan. If a sugar bush is the desired outcome, the plan will show which trees should be cut to benefit the maple trees. Some of the material removed can be used to fuel the firebox used in syrup making. Maple syrup production is intensive work for a relatively short period of time (4 to 6 weeks) but is demanding when there are few other farm or woodlot demands.

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 primarily 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.

Cooperative Extension Service, Department of Forestry, University of Kentucky, 104 Thomas Poe Cooper Building, Lexington, KY 40546-0073; E-mail: dbhill@uky.edu; Phone: 859.257.7610; Fax: 859.323.1031.

From the Woods...

Producing Maple Syrup

A discussion with Lee Blythe of Federal Grove in Auburn, KY

KWM: *What gave you the idea to get started in maple syrup production?*

LB: Our successful Bed and Breakfast was looking for some kind of locally grown agricultural product to add value to our clients' experience. Strawberries didn't seem just right, and my father-in-law in Anderson County had made some small batches of maple syrup.

We have maple trees all over the property, so we thought 'why not?'

KWM: *How did you get started and how long have you been at it?*

LB: In 2009, we collected sap from about 110 taps and had the batch processed by some local Amish people in Allen County.

KWM: *What advice would you give someone wanting to start this business?*

LB: You must have TIME to devote to this— kind of like milking cows. Once the maple sap starts running in the late winter, you have to watch it 24/7. Watch the weather—you are looking for cold nights

followed by moderate days

(40s or 50s F). Know your trees— you can make syrup from any species of maple tree, but you need to be able to identify them without their leaves or mark them the fall before when the leaves are still on. Start with about 100 taps (remember that you can put more than one tap in big trees) and do a batch in a small evaporator (3' x 6'). It will be a slow process, measured in gallons of sap per hour. The first run needs to "sweeten" the evaporator. Once you have reached the correct concentration for syrup, the later batches will form syrup more quickly.

KWM: *Do you believe there is potential for people to be providers of sap instead of making the maple syrup themselves?*

LB: Yes! Considering the expense of the syrup-making equipment, that may be the wisest way for someone to get started. Spiles, tubing, and buckets aren't that expensive.

KWM: *Kentucky is famous for a number of things; do you think maple syrup could be next?*

LB: As a "cottage industry" or niche market, we could certainly develop a "southern maple syrup."





Kentucky's Statewide Forest Resources

Assessment and Strategy Now Complete

by *Diana Olszowy*

The Kentucky Division of Forestry's mission is to protect, conserve, and enhance the forest resources of the Commonwealth through a public informed of the environmental, social, and economic importance of these resources. The division worked with many state and federal partners, nonprofit organizations, and the general public in the development of the Kentucky Statewide Assessment of Forest Resources and Strategy Report.

Issue Development

The Division of Forestry completed the assessment and strategy in June 2010. After gathering input from all stakeholders, five primary issues for rural and urban forests were identified:

1. Forest Health
2. Water Quality and Quantity
3. Forest Loss and Fragmentation
4. Forest Management
5. Funding

For each issue, the following parameters were defined: issue description, forest resources, public benefits, key conditions, direct threats, contributing factors, and opportunities.

Assessment

and Strategy Sections:

The assessment provides a comprehensive analysis of forest-related conditions, trends, and opportunities within the state. The strategy provides a long-term, comprehensive strategy for investing state, federal and leveraged-partner resources to address landscape-scale priorities identified in the assessment. The strategy incorporates existing statewide forest and resource management plans and provides the basis for future program direction and agency and partner coordination.

Data Sources

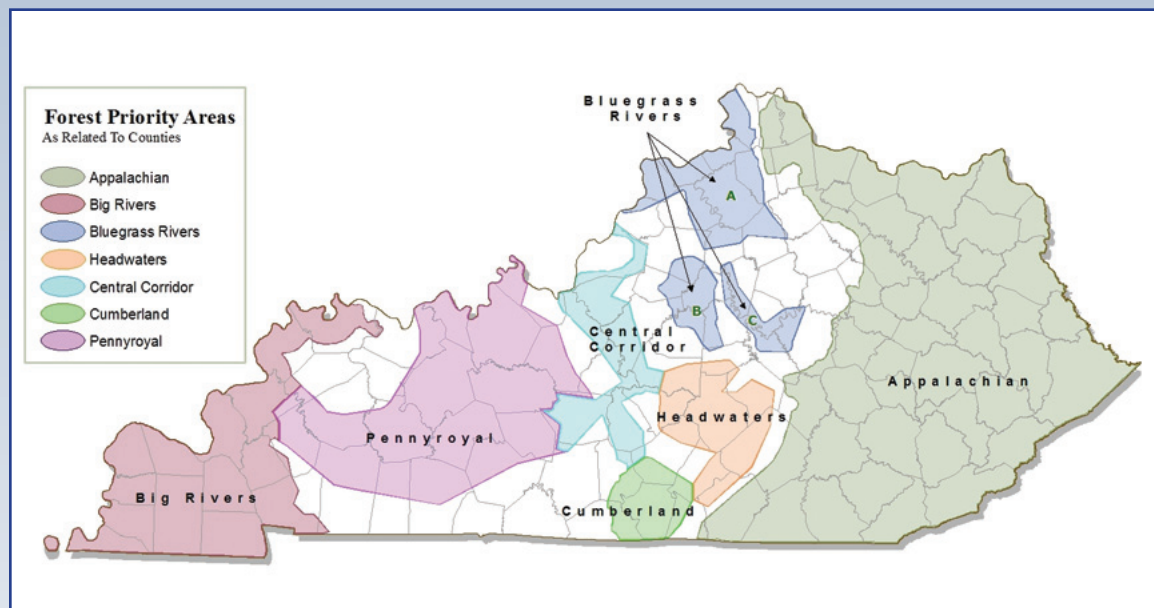
The division used data layers from the Kentucky State Nature Preserves Commission, the Kentucky Department

of Fish and Wildlife Resources, the Kentucky Division of Water, the Southern Forest Land Assessment, and many other key sources. These overlapping data layers helped identify common priority areas across the landscape.

Additional layers using population growth statistics, such as Radeloff's model, impervious layers statistics that have been developed for urban analysis, and data layers from our numerous partners were incorporated into the development of this comprehensive assessment and strategy document.

The citizens of Kentucky receive multiple benefits from our extensive forestlands, including timber and non-timber forest products; recreational opportunities such as hiking, hunting, and camping; and clean water and air. With so much at stake and because the general public, policymakers and land managers need information about our forestlands we prepared the Kentucky Statewide Assessment of Forest Resources and Strategy to serve as a resource for all partners involved in forestland management activities. The document can be viewed free online at www.forestry.ky.gov. If you prefer a hard copy, it is available, with a minimal postal fee for shipping.

Map courtesy: Kentucky Division of Forestry



About the Author:

Diana Olszowy is Stewardship and Education Branch Manager with the Kentucky Division of Forestry. She is also an editor of the Kentucky Woodlands Magazine.

Kentucky Division of Forestry, 627 Comanche Trail, Frankfort, KY 40601; Phone: 502.564.4496; Fax: 502.564.6553; E-mail: diana.olszowy@ky.gov

NIGHTMARE on ELM-lined STREETS

Photo courtesy: Edward L. Barnard, Florida Department of Agriculture and Consumer Services, Bugwood.org

by Diana Olszowy

Once a dominant fixture on many tree-lined streets across the U.S., the American elm was dealt a blow in the 1930s that still impacts this stately species today. The first colonists in New England took notice of this native hardwood tree's qualities and brought it forth from the woods to grace their streets and towns. That idea caught on, and American elms became an integral part of many a Main Street, USA. But this popular shade tree fell on hard times when an exotic fungus entered the U.S. from Europe and devastated over three-quarters of our wild and urban elms over the last 70 years. The fungus, called Dutch Elm Disease (DED), is spread by elm bark beetles and root grafting by adjacent trees. The trees react with defense mechanisms that further constrict the flow of water and nutrients, weakening the tree and often resulting in death.

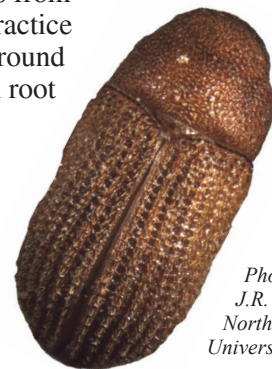
Our American elms were particularly susceptible to DED because of our own actions from decades ago of lining our streets with all one type of tree species. This monocultural practice contributed to the downfall of the American elm. DED, it turns out, can spread underground from the roots of one American elm tree to the roots of another. Since these trees often root graft, the fungus can pass from one tree to another in a chain reaction that would decimate a whole row along a street. But the planting of American elm trees en masse was not the sole culprit. The microscopic spores of the fungus are also transmitted from diseased trees to healthy trees by two kinds of beetles that tunnel under the bark. One is a European bark beetle, an import that preceded DED itself, and the other is our native elm bark beetle – see photos to right.

Though DED caused significant casualties in its 70+ year tenure, many resistant specimens still remain in our rural and urban areas, and these elms have taken on the responsibility of repopulating their species. American elms are tremendous seed producers of wind- or water-disseminated seed, referred to as "samaras." The seed matures in the spring and is ready to germinate within only a couple of weeks and wastes no time in getting established on a site. The seedlings can easily grow 3-4 feet or more in height in the first growing season and will establish on a variety of sites, but they prefer moist, bottomland sites in partial to full sunlight.



European elm bark beetle

Photo courtesy: Pest and Diseases Image Library, Bugwood.org



Native elm bark beetle

Photo courtesy: J.R. Baker & S.B. Bambara, North Carolina State University, Bugwood.org

Even though these seedlings are from DED-resistant parents, they are not 100% immune to the disease and can still succumb to the disease over a long period of time. About the time that DED arrived in the U.S. it had already devastated populations of European elm species, and geneticists were working on creating disease-resistant elm varieties that shared the American elm growth habit and the disease

resistance of Asian elms. This “breeding” proved to be difficult. The results were less than desirable until “breeders” from the Elm Research Institute and the U.S. National Arboretum came up with several DED-resistant varieties with Asian elm disease resistance and more of the American elm growth characteristics.

Some of these varieties, including “Liberty,” “Valley Forge,” “Jefferson” and “Princeton” elms, are beginning to be produced in enough quantities that they are available for private landscapes.

Please note that DED is a continually evolving wilting disease that has no cure. Though we may not be able to completely stop it from spreading, we can slow its progress by introducing disease-resistant varieties into the mix and not allowing pure elm plantings to occur. American elm is a tenacious species, but it is in a fight for its life.



A vascular wilt fungus causes Dutch Elm Disease. This fungus is transported from diseased to healthy trees by elm bark beetles or root grafts from nearby trees. Diseased trees have wilted foliage (left image) that will lead to defoliation and eventually death of the affected branches (center image). A look under the bark of affected trees (right image) will reveal a brown discoloration of the water conducting part of the tree.

For more information about Dutch Elm Disease visit www.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/PPFS-OR-W-2.pdf.

Photos courtesy: Right: Minnesota Department of Natural Resources Archive, Minnesota Department of Natural Resources, Bugwood.org Center: Left: Roland J. Stipes, Virginia Polytechnic Institute and State University, Bugwood.org

Tenacious American elm – 1 DED – 0

Common Diseases of Elm Trees

Elm trees are subject to several common diseases. Knowing which disease is impacting your elm tree is the first step in addressing it. The following table comes from the US Forest Service publication *How to Identify and Manage Dutch Elm Disease*; it provides an excellent symptoms comparison of three elm diseases.

Comparison of symptoms of three elm diseases.		
Dutch Elm Disease	Elm Yellows	Bacterial Leaf Scorch
Initially affects individual branches OR Affects lower crown nearest root graft	Affects the entire crown.	Damage initially observed on single branches, and spreads to entire crown; oldest leaves affected first.
Leaves wilt and turn yellow, then brown.	Leaves turn yellow and may drop early.	Leaves brown along margin, with a yellow halo.
Symptoms often observed in early summer, but may be exhibited any time of the growing season.	Symptoms visible from July to September.	Symptoms appear in summer and early fall.
<i>Visit www.na.fs.fed.us/spfo/pubs/howtos/ht_ded/ht_ded.htm for a complete copy of How to Identify and Manage Dutch Elm Disease produced by the US Forest Service.</i>		

About the Author:

Diana Olszowy is Stewardship and Education Branch Manager with the Kentucky Division of Forestry. She is also an editor of the Kentucky Woodlands Magazine. Kentucky Division of Forestry, 627 Comanche Trail, Frankfort, KY 40601; Phone: 502.564.4496; Fax: 502.564.6553; E-mail: diana.olszowy@ky.gov

Kentucky Champion Tree Program

American Elm

by Diana Olszowy

American elm is a deciduous tree, which before Dutch Elm Disease (DED), commonly grew to 100 feet in height and averaged 3-4 feet in diameter. The species is most easily recognizable by its graceful, arching, vase-shaped growth habit.

American elms are also known as water elms, soft elms, or white elms and are found throughout eastern and central North America, extending as far south as northern Texas and Florida and north to southern Canada. The American elm occurs naturally in an assortment of conditions, most notably on bottomlands and floodplains, and is often found growing with ashes, cottonwood, and sycamore. Elm has a very hard, dense, coarse-grained wood, which makes it difficult to split. It is used for containers, pallets, slack cooperage (baskets and barrels for dry goods) and curved portions of furniture (e.g. bentwood rockers, curved banisters, etc.).

Many types of elm are native to Kentucky, but among the three most predominant elm species – American, slippery and winged – only the winged elm shows resistance to DED. Unfortunately, winged elm lacks the graceful, elegant characteristics of its sibling, the American elm. American elm is a tenacious species, but it is in a fight for its life, and our current reigning champ is no exception. As a survivor of DED, this Lee County resident measures a whopping 18.5 feet in circumference and towers to 107 feet in height. Though it shows signs of decline, this champion still produces copious amounts of seed and continues to do its part to ensure that its species will survive to fight another day.

Above: The reigning American elm champion tree for Kentucky is found in Lee County. While it is in decline it continues to produce abundant seed.

Right: The distance around the Kentucky champion American elm tree is more than 18 feet!






Photos courtesy: Diana Olszowy, Kentucky Division of Forestry

About the Author:

Diana Olszowy is Stewardship and Education Branch Manager with the Kentucky Division of Forestry. She is also an editor of the Kentucky Woodlands Magazine. Kentucky Division of Forestry, 627 Comanche Trail, Frankfort, KY 40601; Phone: 502.564.4496; Fax: 502.564.6553; E-mail: diana.olszowy@ky.gov

Three Common Kentucky Elms

	American elm	Slippery elm	Winged elm
			
Leaves	<ul style="list-style-type: none"> • 3-6 inches • serrated edges • dull/smooth above and slightly hairy below 	<ul style="list-style-type: none"> • 4-6 inches • doubly-serrated edges • glossy, but sandpapery and very hairy below 	<ul style="list-style-type: none"> • 1-3 inches • doubly-serrated edges • dull/smooth above and hairy below
Twigs/ Buds	<ul style="list-style-type: none"> • slender, round, red-brown twigs with terminal buds chestnut-brown 	<ul style="list-style-type: none"> • rough, hairy, light gray twigs and dark red, hairy buds 	<ul style="list-style-type: none"> • reddish-brown and zigzagged with corky wings
Bark	<ul style="list-style-type: none"> • fissures layered in cross sections, alternating cream and reddish brown in a scalloped appearance 	<ul style="list-style-type: none"> • fissures layered in cross sections of light and dark brown 	<ul style="list-style-type: none"> • shallowly fissured with flat, long ridges layered in alternating brown and tan cross sections
Growth Habit	<ul style="list-style-type: none"> • large tree reaching 80 – 100 ft., clear bole and a spreading, vase-shaped crown with dropping branches 	<ul style="list-style-type: none"> • medium sized tree reaching 60 – 70 ft., tolerant of shade and often a sub-canopy tree 	<ul style="list-style-type: none"> • reaches 60 ft., common in fencerows and disturbed areas

Photos courtesy: American and Slippery elms: Paul Wray, Iowa State University, Bugwood.org;
Winged elm: Joseph LaForest, University of Georgia, Bugwood.org

Advertisements:

Do we have your contact information correct? Do you receive multiple copies of the magazine? Please let us know. Call 859.257.7597 or e-mail forestry.extension@uky.edu with corrections or updates. Please reference your subscription number above your name on the mailing label and list your addresses when e-mailing. Thanks!

Test Your Knowledge

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

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



1. Maple trees greater than 10 inches are candidates to be tapped—the larger the tree the more taps it can accommodate. A maple syrup business with 20 + acres of woodlands would need approximately how many taps per acre to be commercially profitable?

- a) 40 b) 80 c) 120 d) 160

Hint: See article on page 14.

2. We could not live without plants. However, some plants can be downright deadly to people. As little as two bites of this plant can kill you within 1 hour. What plant are we talking about?



Hint: See article on page 12.

- a) Cardinal flower c) Mayapple
b) Water hemlock d) Poison ivy

3. A new tree disease has been found that is a serious threat to walnut trees. The disease is caused by a newly identified fungus that is being spread by walnut twig beetles. This disease can kill an infested tree within 3 years. What is the name of this disease?

- a) Walnut canker disease
b) Million cankers disease
c) Thousand cankers disease
d) Hundred cankers disease

Hint: See article on page 10.



4. Kentucky has a wide diversity of trees; each with its own life expectancies. Of the oaks listed below which has the longest *average* life expectancy?

- a) pin oak
b) white oak
c) chestnut oak
d) scarlet oak



Hint: See article on page 4.



Hint: See article on page 9.

5. An important part of the woodland management plan is a map. This map will show the property boundaries, prominent features, and have the woodlands broken down into smaller units based on their similarities. Management

practices are often conducted in the smaller units. What is the name typically used for these smaller woodland units?

- a) Patch c) Plot
b) Log yard d) Stand

Producing Certified Wood

by Jeff Stringer



Woodland certification is gaining significant momentum, and woodland owners stand to reap benefits from having their woodlands certified. Certification can provide a number of monetary and tangible benefits to woodland owners. While these benefits include access to carbon markets and payments for other ecosystem services that may become available, sale of sustainably produced biomass, and increased technical assistance, one of the primary benefits of certification is preferential treatment in the sale of certified timber. Certified woodlands are the source of timber and pulpwood for the production of certified wood and wood products. Forest industries with the goal of marketing certified wood products must have a sustainable source of certified wood. They are willing to provide preferential treatment to woodland owners growing certified wood. The accompanying diagram shows each step along the path of wood movement from the certified woodlands to final market.

Markets Drive Industry Interest in Certified Wood

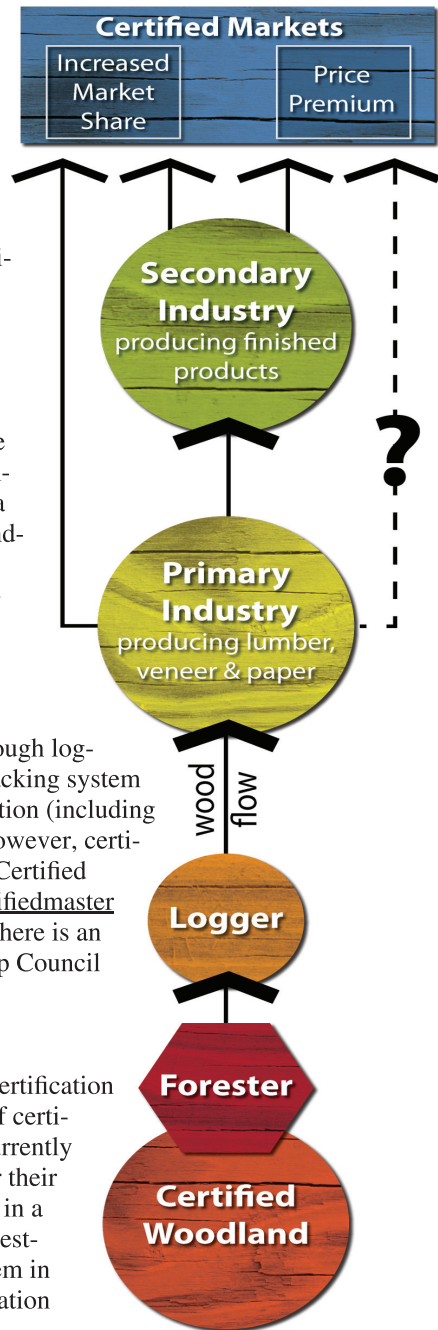
The diagram indicates that interest and the monetary support for certified woodlands and the benefit to woodland owners selling certified timber and pulpwood is ultimately driven by the strength of the markets for certified lumber, paper, and finished wood products. These markets include new customers who want certified products, which results in increased market share for the forest industry and a potential price premium. The price premium is currently weak and generally only available to secondary industries that make finished forest products (cabinets, furniture, etc.). Typically, primary forest industries producing lumber have seen only increased customers, not increased prices. Forest industries are responding to consumer demand. Their interest in buying certified timber that includes the specific type of certified system their clientele requires is based on this demand.

Loggers' Involvement in Certified Timber

The flow of certified timber and pulpwood from woodlands to forest industries generally comes through loggers. Any forest industry that is interested in procuring certified timber or pulpwood must have a tracking system that provides evidence of where each log or load of pulpwood sticks came from. Any logging operation (including landowners wishing to cut their own timber) can harvest timber growing in a certified woodland. However, certified loggers can ease the burden of tracking certified timber from the stump to the saw or pulpmill. Certified loggers, such as logging firms that are members of the Certified Master Logger Program (www.certifiedmasterlogger.com), can make it easier for forest industries to obtain certified timber and pulpwood. Also, there is an effort to reduce the amount of work required of landowners who want to become Forest Stewardship Council certified if they use certified loggers.

Woodland Owners and Foresters

From a woodland owners' perspective, the decision to certify woodlands and choosing the type of certification to pursue would be based on the interest of the forest industry in purchasing timber and what type of certified timber the industry wants (American Tree Farm, FSC, Green Tag, etc.). Forest industries are currently making these decisions based on market opportunities. Professional foresters are also gearing up for their involvement with certified forest management by increasing their understanding of what is required in a management plan for the different certification systems. Ultimately, woodland owners rely upon foresters to assist them with the development of an acceptable management plan for the certification system in which they are interested. Foresters can also help woodland owners with determining which certification system is best for them and help them develop a means of selling their certified timber.



About the Author:

Jeff Stringer, Ph.D., is a hardwood extension specialist 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.

Cooperative Extension Service, Department of Forestry, University of Kentucky, 201 Thomas Poe Cooper Building, Lexington, KY 40546-0073; Phone: 859.257.5994; Fax: 859.323.1031; E-mail: stringer@uky.edu

KENTUCKY WOODLANDS

Forestry Fall Webinars

Kentucky woodland owners and other interested individuals are invited to attend a Forestry Fall Webinar Series that is being hosted by various local extension offices. The Forestry Fall Webinar series is an excellent opportunity for woodland owners and those with an interest in forestry to get a significant amount of information in a relatively short

time, without having to drive great distances to attend. All webinars run from 6:30 to 8 p.m. (EDT). To find a webinar near you visit www.ca.uky.edu/forestryextension/fallwebinars.php or call 859.257.7597. Previously recorded webinars are available for viewing by visiting www.ca.uky.edu/forestryextension/audio_video.php

Fall Forest Fire Hazard Season (October 1 thru December 15)

The Kentucky Division of Forestry is preparing for an active wildfire season this year as low humidity, low fuel moisture and increased fuel loads could cause high to very high fire conditions.

“The division has been fighting wildfires consistently since drought conditions began in September,” said Leah MacSwords, director of the Division of Forestry. “Our firefighters face many risks and we’ve already suffered one serious injury this season; therefore, we’re urging everyone to take extra precautions this year. I also urge the public to be extra vigilant in protecting their homes from wildfires. Report any arsonist activity they see to local law enforcement. The life or home they save may be theirs or their neighbors.”

During fall forest fire hazard season, it is illegal to burn anything within 150 feet of any woodland or brushland between the daylight hours of 6 a.m. and 6 p.m. The law is intended to prevent forest fires by allowing outdoor burning only after 6 p.m. when conditions are less likely to cause a wildfire to spread. Many counties have local burning bans in place making it illegal to burn outdoors at any-time while the ban is in place. Report suspicious acts of arson to the nearest Kentucky State Police post or call the Target Arson Hotline at 1.800.27.ARSON. For more information about how you can prevent wildfires, contact the Kentucky Division of Forestry at 1.800.866.0555 or visit the division’s website at <http://forestry.ky.gov/>.



Photo courtesy: Kentucky Division of Forestry

Upcoming Dates To Remember:

Date:	Event:	Location:	Contact:
November 16	Selling Timber Webinar	County Extension Offices	www.ukforestry.org
November 30	Wood Identification Webinar	County Extension Offices	www.ukforestry.org
December 8-9	Kentucky Emerald Ash Borer Urban Preparedness Conference	Embassy Suites, Lexington, KY	859.257.7597 www.EABinKY.com
March 26, 2011	Ohio River Valley Woodland and Wildlife Workshop	General Butler State Park	859.257.7597 www.ukforestry.org
May 3-5, 2011	Joint Meeting of the 2 nd Kentucky Invasive Species Conference and the 13 th Annual Southeast EPPC Conference	Lexington, KY	http://invasives2011.org

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

NEWS TO USE

Kentucky Emerald Ash Borer Urban Preparedness Conference -- December 8-9, 2010

This conference will provide important information to those dealing with emerald ash borer impacts in urban situations. The target audience for this conference includes urban planners, arborists, parks and recreation personnel, landscape architects, extension agents, community leaders, community tree board members, and other decision makers and support positions involved in urban emerald ash borer (EAB) management. Continuing Education Credits: ISA Certified Arborist, Certified Forester, Pesticide Applicator License, and In-Service for County Extension Agents. The conference registration fee is \$35 and online

registration is available at www.EABinKY.org or by calling 859.257.7597. A limited number of rooms are available at the Embassy Suites for \$75; reserve rooms directly with the Embassy Suites by calling 859.455.5000. To obtain the discounted room rate mention the "Emerald Ash Borer Conference".



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

Ohio River Valley Woodland and Wildlife Workshop -- March 26, 2011



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

Joint Meeting of the 2nd Kentucky Invasive Species Conference and the 13th Annual Southeast EPPC Conference -- May 3-5, 2011

The joint meeting of the 2nd Kentucky Invasive Species Conference and the 13th Annual Southeast Exotic Pest Plant Council conference will encompass topics related to the research, management, outreach, education, and policy of invasive species in the eastern and central regions of the United States. To find out more about this opportunity visit <http://invasives2011.org>

Test Your Knowledge Answers from KWM Vol. 5 Issue 1

1. b) Stay out of caves.
2. d) All of the above.
3. d) All of the above.
4. c) Use tweezers to grab it close to the skin.
5. d) 1.25 acres
6. b) Kill the root system.

Congratulations to Joseph S. of Bullitt Co. He was randomly chosen from the entries with all the correct responses from the quiz in the last issue.

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



UNIVERSITY OF KENTUCKY
Forestry Extension Office
Department of Forestry
University of Kentucky
216 Thomas Poe Cooper Bldg.
Lexington, KY 40546-0073

PRSR STD
U.S. POSTAGE
PAID
Lexington, KY
PERMIT NO. 51



In this issue...

**Monitoring Your Woodlands
Forest Health: Emerging Threats
KY's Statewide Forest Resources**

***On-line version at
www.ukforestry.org***