



Kentucky Woodlands Magazine

Volume 5 Issue 1
April 2010

Backyard Bats
Silviculture for Small Woodlands
Oak Promiscuity: The Dark Side of Oaks
Tick-ed Off? Tips for Dealing With Them

Kentucky Woodlands

Volume 5 Issue 1 Magazine

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

In this Issue...

Silviculture for Small Woodlands	1
Determining Timber Casualty Loss: Examples	5
Kentucky Tree Farm Committee Newsletter	7
Tick-ed Off? Tips for Dealing with Them	8
Oak Promiscuity: The Dark Side of Oaks	12
Backyard Bats	16

Departments:

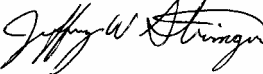
KWOA	6
Forest Health: Japanese Knotweed	10
Forestry 101: Woodland Terms Part 2	14
Non-Timber Forest Products:	
Gleaning Your Forest	18
Test Your Knowledge	20
Kentucky Champion Tree Program	21
Certification Corner	23
Kentucky Woodland News To Use	24


From the Editors of the Kentucky Woodlands Magazine:

The start of 2010 is certainly looking better than 2009. No ice storms, a slow but recovering timber market that bottomed out and is now on the rise and pulpwood markets continue to stabilize. The regular legislative session is over with nothing of note regarding forestry. Unfortunately this includes NOT passing the Forest Health Task Force bill, a bill that everyone in the forestry community strongly supported. Over winter, the emerald ash borer was found in another county that was already in the quarantine area. Get up to speed on these issues and more by reading the Kentucky Woodland News To Use section and don't miss the announcement of the 2010 Woodland Owners Short Course.

Woodland owners with small acreage often feel that they are unable to conduct forestry operations like those with larger holdings. This is simply not the case, especially with the composition of Kentucky's woodlands. This issue provides a summary of silvicultural practices that are ready made for small holdings. Tax information is still a hot commodity and in this issue Dr. Andrew Stainback has provided examples of how to calculate casualty loss. Interest in woodlands certification is increasing among forest industry and landowners as well. In this issue we again provide the Certification Corner that is aimed at providing basic information on two different certification systems that could be a good fit for Kentucky woodland owners.

We also have articles on a wide variety of subjects of interest to woodland owners including bats, oak hybridization, non-timber forest products, invasive species, and Kentucky's big trees. We hope that you enjoy this issue and please take the time to provide feedback using the reader response card or go online at www.ukforestry.org


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About the Cover:

The cover photo of the Green River at Mammoth Cave National Park was contributed by Tom Barnes, Ph.D., UK Extension Wildlife professor. This section of the river below the dam for a stretch of 100 miles is considered one of the top five freshwater streams remaining in North America and is the most diverse tributary of the Ohio River because it has tremendous biodiversity associated with it as more than 150 species of fish and 70 species of mussels have been found in the river. The river connects to the cave system at Mammoth Cave which is the longest cave system in the world. Because of the karst topography in the region, maintaining water quality is critical to continued functioning of the Green River ecosystem. To learn which watershed you are in and how to care for it visit www.watersheds.ky.gov

*These mushrooms were found on deadwood at Natural Bridge State Park and are believed to be pear-shaped puffball (*Lycoperdon pyriforme*).*



Photo courtesy: Renee Williams

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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.

Many woodland owners have relatively small holdings—many less than 50 acres. While these woodlands are small, a number of forestry practices can be used to improve their health and value. The branch of forestry that deals with practices to help trees and properly regenerate woodlands is called silviculture. It literally means culturing forest trees. Silvicultural practices can be used on any size of woodland and can improve the health and vigor of individual trees as well as the woodlands as a whole. These practices can be used to increase aesthetic

Adequate Growing Space – Each tree needs enough room to spread its crown, allowing it to grow in size and vigor. Trees that are restricted can become weakened and grow slowly in diameter, ultimately leading to mortality. Managing growing space for individual trees is generally focused on the trees in the main canopy.

Proper Regeneration – It is critical to provide for the development of new seedlings of important species so that they can be maintained over the long run.

Silviculture for Small Woodlands



Individual tree release can be used in all sizes of stands from saplings (left) to sawtimber sized stands (right). In sawtimber sized stands the treatment can be applied using a logging operation. Photos courtesy: Gary Miller, US Forest Service

and recreational value, improve wildlife habitat, increase timber value, and improve the overall usability of the woods. Often one practice can be used to achieve several objectives. However, it is helpful to know what your objective or objectives are in order to effectively select and use silvicultural practices. Understanding these practices and the silvicultural principles that they are built on will help woodland owners enhance the enjoyment, value, and use of their woodlands.

Principles of Silviculture

There are several key principles that, if followed, will ensure that individual trees and the woods they compose are being taken care of properly. These principles include:

Species Diversity – Ensure that a range of tree species are maintained in woodlands. This will help when insects or diseases attack a particular species, and will improve wildlife habitats and food sources and can help you capitalize on the changes in timber markets. Hardwood plantations can also benefit from following this principle and since pine plantings are often of a single species, creating diversity in these plantings can also help wildlife.

Protection from Invasive Species – It is critical to ensure that invasive species do not establish a foothold in the woodlands and eventually take over. This invasion could be from exotic (non-native) species or native species of grasses, weeds, shrubs, vines, or trees.

These four principles should be adhered to when working in woods and forests of all sizes. Foresters have developed hundreds of silvicultural practices to ensure that these principles are upheld.

Silviculture Practices for Small Woodlands

There are a number of simple silvicultural practices that can be used in small woodlands. In many cases, these practices can be undertaken by woodland owners themselves. At other times, carefully selected loggers and other contractors should be used. These practices are common, and your forester can direct you in their use. Information follows on three practices that are well adapted for use in small woodlands and embody the principles discussed above.

Individual Tree Release

This practice is technically termed crop tree release, but don't let the name mislead you. While this practice can be

used to help crop trees, often thought of as timber trees, it was actually developed to be used to help improve the growth and vigor of individual trees, regardless of what's done with the woods. This practice can easily be implemented by many woodland owners themselves.

Steps for Using Release

1. Select individual trees that fit your use of the woods and target those trees that you want to see healthy and growing well. This practice is designed to work with main canopy trees—those trees that are receiving direct sunlight on the top of their crowns. It cannot easily be used on understory trees. The type of tree and species you select is based on your objectives. If wildlife is important, you should select trees that can produce high-quality hard mast such as acorns (white oaks, preferably) and trees that produce soft or fleshy fruit. If timber is your objective, select trees that are historically important commercial species and are straight, solid, and have few blemishes or deformities on the bark. If aesthetics is important, choose trees that provide colorful leaves in the fall, such as blackgum, ashes, and maples. Showy spring and summer flowers are also important; however there are few canopy trees that have visible flowers, with the exception of black locust, buckeye, and possibly sourwood. Understory trees such as dogwood, serviceberry, and redbud, as well as native wildflowers have to be relied upon to provide this amenity. It is normal to need some help from a forester or wildlife biologist to determine what your options are. They can assist you with this process and help define and mark the crop trees.

2. Release the trees using a crown-touching release. This is done by killing (either by cutting or injecting with herbicide) the trees with crowns that are directly touching the upper portions of the crop tree crowns, thus impeding the horizontal expansion of those crowns. Trees growing below and touching only the bottom of the crown of your crop trees do not need to be killed—that they do is a common misconception of many woodland owners. Think of the crop tree crown as having four sides or quadrants. You will want to release the crown on at least three or four sides to ensure good release. If the trees you are removing are of commercial size, you may be able to implement this practice with a logging operation. If the trees are too

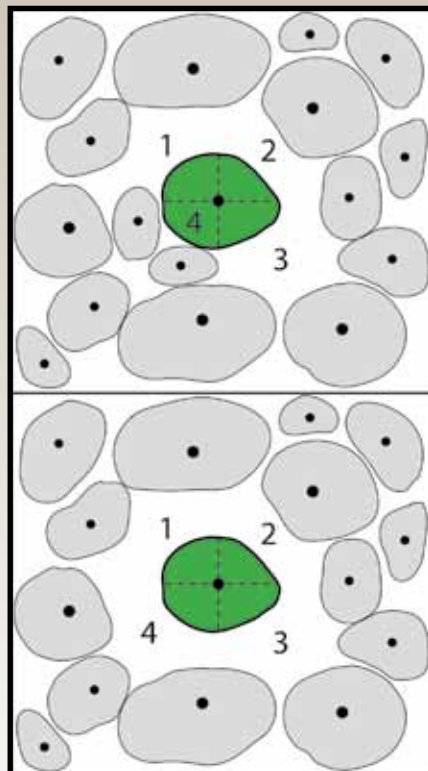
small, limited in number, or you do not want a logging operation on your property, you must invest some time and money in getting the trees killed.

3. The number of crop trees is highly variable. It can range from one tree per acre up to 100 trees per acre in stands that range from 2 to 6 inches in average diameter to 30 to 50 trees in stands where trees are larger than 6 inches in diameter. The exact number is not critical; just release the trees that need help.

Your forester can help you not only in determining which trees are crop trees, but also in marking or providing examples of trees to be removed and in how to remove them. Also, you can receive Farm Bill payments for most crop tree release work, and your forester can help get this process started.

Group Openings

The reproduction of many species is positively benefited by developing small openings in the woods. These openings promote rapid establishment of species that are very intolerant or moderately intolerant of shade, including: yellow- (tulip) poplar, black walnut, black cherry, oaks, ashes, and a host of other species. Without openings of some type, these species generally do not regenerate to the degree wanted and over long periods of time can be lost. Species that are tolerant of shade, such as maples, beech, and hemlock, can be regenerated without providing openings. While group openings are used to start a new age class of trees, they also make excellent wildlife openings that provides significant amounts of browse for the first few years as well as habitat for species that like to live in younger forests.



Diagrams depict a crown touching release of a tree on 3 and 4 sides.

Drawings courtesy: Jeff Stringer



A horizontal view of a crown touching release of a crop tree (green). Note that only the trees that are restricting its horizontal crown expansion (gray) were removed. All other trees remain.

Steps for Developing Group Openings

1. With the assistance of a forester, find areas that are appropriate for developing openings. Group openings can be initiated any where there is evidence that the species you want to grow can regenerate. Oftentimes landowners use a logger to develop these openings, so areas that have older, commercially viable trees can be selected. Areas where the standing overstory trees have been degraded can also be selected. The degraded trees can be replaced with newly regenerating trees that have better potential for growth and development.
2. Mark the boundary of the group or the trees that must be cut to provide the opening. The shape of the opening can vary but generally should be oval. Provide an opening 150 feet across (150 feet in diameter if it is a circle, approximately 0.5 acres) to ensure that a wide

- no more than five or six trees in a 250-foot opening. Cut all remaining trees.
4. Site preparation treatments are sometimes advantageous. A forester might recommend a herbicide treatment to reduce the sprouting of some trees that were cut, especially if there is a significant number of one species or a number of unimportant or interfering species that would regenerate in numbers that would suppress the regeneration of other important species. Foresters can help with this assessment. When openings are made it is important to scout for invasive plants that might move into the openings, tree-of-heaven is a good example. You should plan to check on the openings the first year or two after creating them and follow the information below to help deal with any occurrences.

Invasive Control

This practice involves killing unwanted invasive trees, shrubs, vines, herbs, and grasses in and around woodlands. Foresters and wildlife biologists can assist and set up practices that can be partially paid for through Farm Bill programs.

Steps for Invasive Control

1. Scout woodlands for the presence of invasive species. While they can occur anywhere, they tend to occur around old house sites, roads and trails, edges of fields, and areas next to streams and wetlands. There are a number of publications and information on the Internet on invasive species; however, it is probably best to get help from a forester or wildlife biologist.
2. Prioritize where the work is most needed. Focus control efforts on the most invasive species.
3. Remove existing invasive species from the woodlands. While this can be done by hand pulling and other mechanical treatments, generally it is best to use herbicides so that a thorough kill is achieved. Non-herbicide treatments can leave root systems in the ground and viable seed on the site. Again, a forester can assist with prioritization and offer solutions on how to kill the species you have.
4. Scout newly established roads and areas of disturbance, including logging areas. Loose, bare soil can provide an entry point where some invasive species can establish. Two years after a disturbance should be enough time to see the invasives and control them before they get out of hand and start to produce significant amounts of seed.
5. Plan to scout and control invasives in areas where you are considering logging or creating open areas. Adequately revegetate logging decks, roads, and skid trails, including loose or disturbed soil directly adjacent to these areas.



An overview of a stand where multiple group openings were used to regenerate a wide range of species.

Photos courtesy: James Kochenderfer, US Forest Service



range of species can regenerate. This size opening is large enough to provide direct sunlight in the middle for shade intolerant species such as yellow-poplar and moderate shade around the edge for species like the oaks. When openings get smaller, you start to lose the direct sunlight in the middle. If you want to maximize the volume and value growth of the trees in the opening and still provide for species diversity, target about 1.25 acres (if a circle, it would be approximately 250 feet in diameter).

3. Typically, group openings are made by cutting timber. For some species, the leaf litter layer that is ruffled up during a logging operation can enhance the seeding in of some species such as yellow-poplar. Discuss these aspects of group openings with your forester. Regardless, openings are made by cutting down the majority of trees in the opening. Do not leave more than two or three overstory trees in a 150-foot-diameter opening and

As a woodland owner you can generally do most of the invasive species control yourself. However, getting assistance from a forester or wildlife biologist cannot be emphasized enough.

The practices discussed on the preceding pages are only a few of many that can be used in small woodlands. Understanding these practices and the principals they uphold will make discussions with foresters and wildlife biologists and your work in the woods more productive.

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.

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Determining Timber Casualty Loss: Examples

Editors Note: (ex. The following examples are intended to help readers further understand the issues associated with claiming a timber casualty loss. These examples address the National Disaster Relief Act of 2008 and the impact it has for claiming a casualty loss in a federally declared disaster area. For more information on determining timber casualty loss please see the revised version of last issue's article entitled "Determining Timber Casualty Loss", it can be found at www.ca.uky.edu/KYWoodlandsmagazine/Vol4_No_3/Timbercasualtylosspg14-15c.pdf. IRS publication 547 contains information on casualty deductions and addresses disasters in 2008 and 2009.

By **Andrew Stainback, Ph.D.**, who is an assistant forestry policy professor at the University of Kentucky Department of Forestry.
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A Timber Example

A woodland owner has experienced damage to his woodlands during a recent ice storm and needs to decide if and how to file for a timber casualty loss on their tax return. In order to make the decision, the woodland owner MUST have established a timber basis (a tax concept to determine the cost of owning a capital asset) and know the value of the loss. The IRS allows you to claim the smaller value. Example one addresses a casualty loss in a non-federally declared disaster area, while the second example addresses a casualty loss in a federally declared disaster area. While individual tax and casualty loss figures vary by individual, the examples provided assume the following financial conditions:

- **Adjusted Timber Basis (ATB) : \$20,000**
- **Fair Market Value (FMV) Loss: \$28,000**
- **Woodland Owners Adjusted Gross Income: \$45,000**

While these figures represent one possible condition, please consult your tax advisor for your individual circumstance.

Example 1:

Non-Federally Declared Disaster

When a catastrophic loss occurs in a non-federally declared disaster area, deductions are based solely on whether the timber is held as investment/business or if it is held as personal property. Please review the following example on determining the timber casualty loss for personal property **not** covered in a federally declared disaster.

Example 1. Non-Federally Declared Disaster	
Timber held as Investment or a Business	ATB (\$20,000) is less than the FMV (\$28,000) so the deduction is \$20,000
Timber held as Personal Property	Non-Federal Disaster
ATB (\$20,000) is less than the FMV (\$28,000) so the deduction is the ATB	\$20,000
Fixed Reduction	\$100 (\$500 if in 2009)
10% of adjusted gross income	\$4,500
Total Deduction	\$15,400 (\$15,000 if in 2009)

Example 2:

Federally Declared Disaster

When a federally declared disaster is declared the U.S. Congress will often pass a law that addresses how deductions are handled in a federally declared disaster area such as Hurricane

Example 2. Federally Declared Disaster		
Timber held as Investment or a Business	ATB (\$20,000) is less than the FMV (\$28,000) so the deduction is \$20,000	
Timber held as Personal Property	Tax Year	
	2008	2009
ATB (\$20,000) is less than the FMV (\$28,000) so the deduction is the ATB	\$20,000	\$20,000
Fixed Reduction	\$100	\$500
10% of adjusted gross income	N/A	N/A
Total Deduction	\$19,900	\$19,500



This map shows the Kentucky counties that were federally declared disaster areas associated with the 2009 ice storm. For more information and a complete listing of the counties covered visit www.fema.gov/news/event_fema?id=11088

Katrina or the ice storm much of Kentucky experienced in January 2009. **Therefore, it is important to consult a tax expert when federal disasters occur.** For example, the U.S. Congress passed the National Disaster Relief Act of 2008 which increased the potential amount of deductions for timber held as personal property in the wake of a bad hurricane season. Example 2 shows how deductions were calculated for federally declared disasters that occurred in 2008 or 2009 (including Kentucky's ice storm of January 2009, see map showing the counties covered under the National Disaster Relief Act of 2008). If necessary an amended tax return can be filed; April 15, 2010 was the deadline for claiming a loss in 2008.



Kentucky Woodland Owners Association Membership: An Opportunity to Learn and Connect

www.kwoa.net



We all have differing visions and goals for our woodlands, but share one common goal—we want to see the Commonwealth of Kentucky preserve healthy and sustainable forests. The primary goal of the Kentucky Woodland Owners Association (KWOA) is to help Kentucky woodland owners attain the best long-range dollar return from their forestry operations while maintaining healthy, beautiful forests. These goals are achieved by:

- Promoting economically and environmentally sound forest management
- Advancing the skills of Kentucky woodland owners
- Serving as an advocate for Kentucky woodland owners in legislative activities
- Keeping the public (and lawmakers) informed about the importance of woodland management and the contributions that woodlands make to Kentucky

Throughout the year, our membership is kept up to date on forestry issues in Kentucky via our newsletter, our Web site (www.kwoa.net), and Internet mailings. Every spring KWOA hosts an annual meeting. The annual meeting provides members with educational opportunities to improve their knowledge and skills in order to better manage their particular “patch of heaven.” It also provides a time of fellowship with fellow woodland owners and a chance to find out how other people are working their lands.



During the outdoor/field day portion of our recent annual meeting, personnel from the Kentucky Division of Forestry (KDF) Central, Green River, and Frankfort offices were on hand to guide a walk through the woods. Members were instructed in timber measurements, how to decide which trees need to be harvested and/or thinned for optimal growth and future forest composition, and identification of local exotic invasives. Woodstock Mills of Scottsville, Kentucky, provided logs that Bob Bauer, Kentucky Forest Industries Association (KFIA) executive director and KWOA board member, used to show how logs are graded by mills. Felix Taylor, KWOA board member, brought his portable WoodMizer sawmill for a demonstration.



At our banquet we honored James Morris, service forester from the Green River district, with the KWOA Service Forester award (top image). Leah MacSwords, director of KDF, was our keynote speaker. She presented an update of the Kentucky Forest Assessment project. Doug McLaren, KWOA board member and part of UK Forestry Extension, ended the banquet with his ever-popular “Forestry Bowl” game.

Our annual meeting ended with a morning of updates and information. Pam Snyder from KDF and the Kentucky Tree Farm Committee presented the latest Standards of Sustainability for Forest Certification from the American Forest Foundation. Billy Thomas, UK Forestry Extension, provided information concerning results of the local forestry organization survey. Andrew Stainback, Ph.D., with the UK Department of Forestry, discussed the Woodlands Tax Project. John Obrycki, Ph.D., UK Department of Entomology and state entomologist, provided an update on the status of the emerald ash borer in Kentucky. Jerry Adams with the USDA Natural Resources Conservation Service provided information on the USDA 2008 Farm Bill programs that are available for forest owners. Bob Bauer and Ken Negray with KFIA provided an update on the 2010 legislative session and forest certification options in Kentucky. An opportunity was provided at the end of the presentations for attendees to ask questions. We would like to thank J. Henry Duncan, KWOA vice-president, for organizing and conducting another successful and informative annual meeting.



We invite everyone with an interest in Kentucky’s woodlands to join KWOA. Together we can make a difference!

Images from the 2010 KWOA Annual Meeting

Photos courtesy: Greg Kuhns, (top); Stewart West (2nd and 4th); and Henry Duncan, (3rd image).



Kentucky Tree Farm Committee Newsletter

New Standards of Sustainability

Hopefully, everyone now realizes that the American Tree Farm System (ATFS) is internationally recognized as an accredited forest certification system. The American Forest Foundation (ATFS' sponsoring organization) developed the new "Standards of Sustainability for Forest Certification" to promote the vitality of renewable forest resources while protecting environmental, economic and social benefits.

The Kentucky Tree Farm Committee wants to ensure current and future Tree Farmers know what the new standards mean. The new Standards were officially released January 1, 2010, and Tree Farmers will have one year to ensure their management plans and management activities meet the Standards. To read the complete Standards and download a management plan addendum, visit www.treefarmssystem.org/cms/pages/26_130.html

Top five things to know about the new Standards:

- 1) The Standards were developed specifically for small woodland owners to ensure the requirements were appropriate for the scale of management practiced on family woodlands across the U.S.
- 2) The management plan requirements under the new Standards correlate with the Forest Stewardship program streamlining the process for Tree Farm owners to participate in USDA conservation incentive programs. Tree Farm management plans will address the following elements as appropriate: landowner objectives, forest condition/health, management activities/prescriptions, tract map, soils/water resources, wood/fiber production, threatened/endangered species, high conservation value forests/other special sites, and invasive species/integrated pest management.
- 3) The Standards require maintenance of special cultural and environmental sites.
- 4) Periodic monitoring has been added to encourage landowners to monitor their woodlands for changes that could interfere with their management objectives.
- 5) Tree Farmers are encouraged to make practical efforts to prevent, eradicate or otherwise control invasive species using a range of integrated pest management methods.

Contact Information

You can learn more about the Tree Farm program in Kentucky by visiting www.kytreefarm.org or calling 502.695.3979.

Webinars on New Standards

ATFS is offering webinars that feature additional information for landowners, volunteers, and forestry consultants. The one-hour webinars will cover how the new Standards will impact current forest management practices.

- Tuesday, September 14, from 1 - 2 p.m.
- Tuesday, October 12, from 1 - 2 p.m.
- Tuesday, November 9, from 1 - 2 p.m.

Visit www.treefarmssystem.org/cms/pages/26_130.html to register.

Kentucky Tree Farm Committee Announces 2009 Award Winners

One of the most enjoyable but challenging jobs the Kentucky Tree Farm Committee (KTFC) undertakes each year is the selection of Kentucky Tree Farmer of the Year, Kentucky Logger of the Year, and Kentucky Tree Farm Inspector of the Year. We congratulate all the nominees, finalists, and winners.

And the winners are...

Felix Taylor from Annville, Kentucky was recently honored as the **2009 Kentucky Tree Farmer of the Year**.

Standing with the Taylors is Michael Froelich, forester with the Kentucky Division of Forestry Southeastern District, who nominated Mr. Taylor and Robert Volk (left), outgoing chair of the KTFC.



KTFC outgoing chair Robert Volk presented **Michael Froelich**, Kentucky Division of Forestry, with the **2009 Kentucky Tree Farm Inspector of the Year** award.

Jim Spangler (left), Bryan Equipment Company and Cary Perkins (right), KTFC incoming chair, presented a Still 044 chainsaw and plaque to **Ohio River Veneer, LLC** of Carrollton, KY. The firm was honored as the **2009 Kentucky Logger of the Year**.





Tick-ed Off?

Tips for dealing with them

by Lee Townsend

Hundreds waited motionless in the scrub growth at the edge of the path, just as they had every day for the last two weeks. Once or twice they sensed vibration; something moved nearby but never came close enough. Fortunately, the vegetation provided some shade. They could move down to the ground if it got too hot. It was humid, too but that was just what they needed. There was no rush; they could wait—for weeks if necessary...

Poor vision only allowed them to make out a dark form, but stronger vibrations traveled through the ground as something approached, slowly but steadily. They became excited, and each of them climbed whatever was nearby—a grass blade, anything that would get them up off the ground and give them a better chance to be picked up. The movement stopped; now they were in a shadow. The air became a little warmer. Carbon dioxide from exhaled breath caused them to stretch out their front legs as far as they could. Small claws on those legs contacted something coarse, hooking to it. They released their back pairs of legs and began to crawl upward. First, there were just a few of them, but the target remained still, so many more moved steadily toward the stimulus and started to climb up. A meal had finally arrived!

The story above is repeated hundreds of times each year in Kentucky. More than a hundred six-legged lone star tick larvae (seed ticks) had found a blood meal. During the next few hours they will crawl over their host in search of some skin. Then, they will settle and start a blood meal that could last for a day or more. A few more steps follow in the process. The right skin chemicals will let them know if the host is acceptable. If all goes well, they will remain attached until engorged with blood; then each will detach from the host and fall to the ground. The next few weeks will be spent digesting the blood meal and molting to the eight-legged nymphal stage. If they drop off at a good site, another suitable animal will eventually come by and the process will be repeated.

The lone star tick uses three different host animals (Figure 1) during its development and may take 1-2 years depending on whether or not the tick can find

a suitable host between life stages. All stages of the tick will feed on small and large animals, including humans. The American dog tick, the other common species, is also a three-host tick, but the adults only feed on large mammals, including humans.

Ticks usually crawl on an animal or human for some time before feeding, attaching at the groin, waist, under arms, or

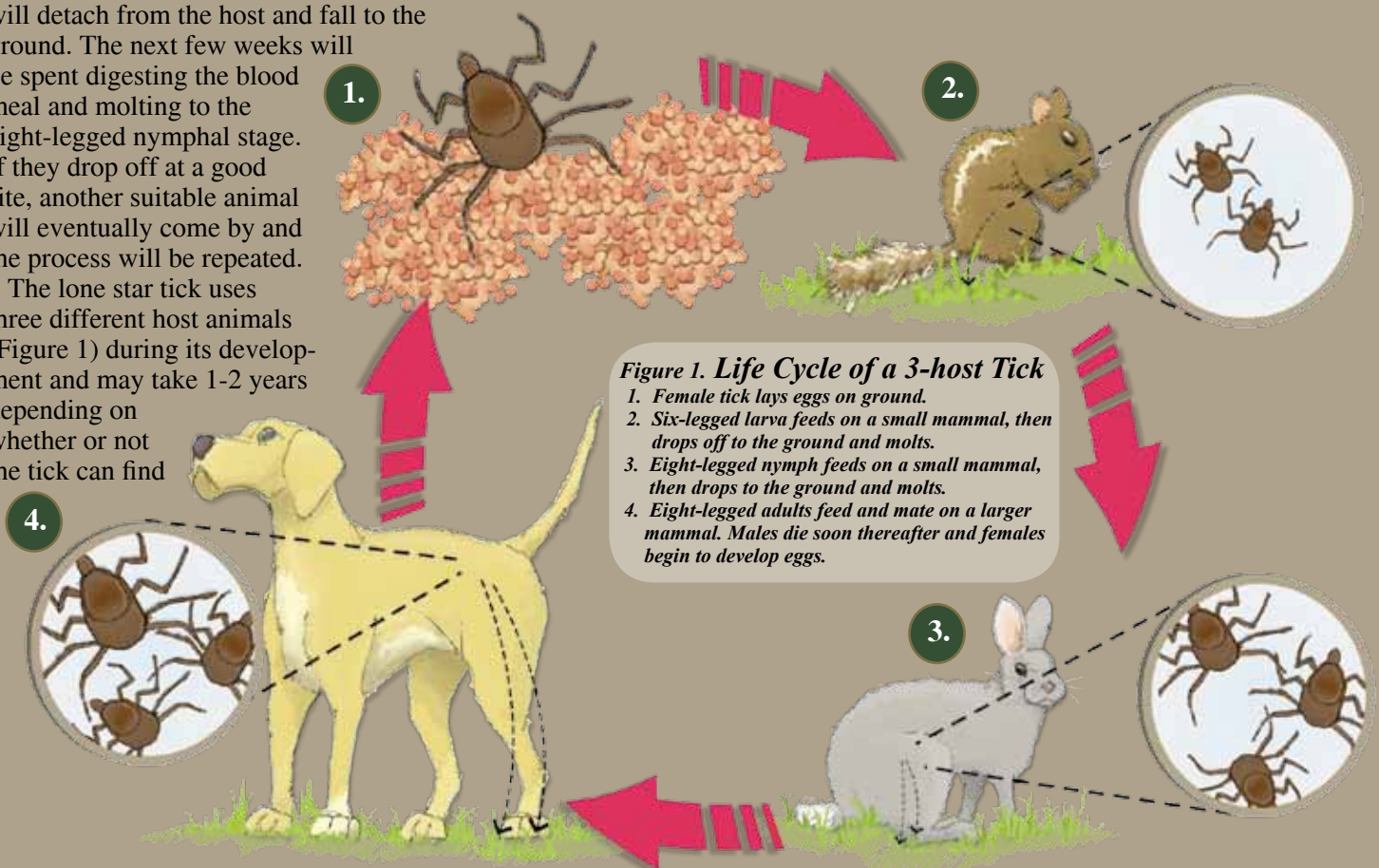
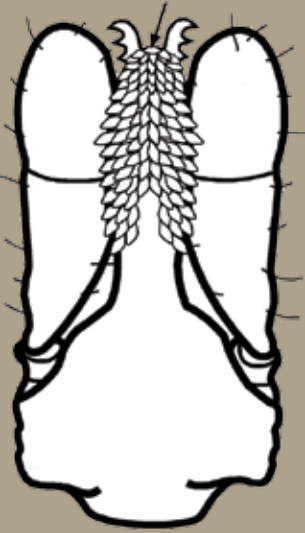


Figure 1. Life Cycle of a 3-host Tick

1. Female tick lays eggs on ground.
2. Six-legged larva feeds on a small mammal, then drops off to the ground and molts.
3. Eight-legged nymph feeds on a small mammal, then drops to the ground and molts.
4. Eight-legged adults feed and mate on a larger mammal. Males die soon thereafter and females begin to develop eggs.

Hypostome



Drawing modified from a Purdue University drawing.

on the neck. They slice the skin and insert a barbed feeding tube. Finally, they cement themselves securely to the skin for up to two weeks, which makes them very difficult to remove.

Remove ticks as soon as you see them. Use fine-tipped tweezers to grasp the tick very close to your skin. Pull with gradual, steady pressure. Avoid crushing the tick's body. Clean your skin with soap and warm water or alcohol. Use of petroleum jelly, a hot match, or nail polish is not effective; ticks cannot just "let go." In fact, use of such methods may irritate the tick and stimulate it to release additional saliva into the bite.

Elongate mouthparts of the lone star tick. The barbed hypostome goes into the skin while the tick feeds and 'cement' is secreted to hold the tick firmly in place.

Tick Bites and Tick-borne Diseases

Ticks inject several substances as they feed, including anticoagulants. These substances can cause mild to moderate skin reactions that can last for several days. Some people have a severe allergic reaction.

The lone star tick and American dog tick can carry some diseases, but neither vectors Lyme disease. Fortunately, the percentage of ticks carrying diseases is very low. Also, they must feed for several hours before transmission occurs. Use

of repellents and frequent body inspections are effective ways of reducing risks.

Web pages provided by the Centers for Disease Control and Prevention are good sources of information about diseases transmitted by ticks. The lone star tick can transmit Southern Tick Associated Rash Illness (STARI) (go to www.cdc.gov/ncidod/dvbid/stari/) and human ehrlichiosis (see www.cdc.gov/ticks/diseases/ehrlichiosis/). The American dog tick can carry Rocky Mountain spotted fever (information at www.cdc.gov/ticks/diseases/rocky_mountain_spotted_fever/faq.html).



Bites of lone star tick larvae (seed ticks). The ticks attached where a sock held them against the skin. Redness and itching are from an allergic reaction to substances injected as the ticks feed.

Protection from ticks

Limiting exposure to ticks reduces chances for unpleasant bites and possible disease infection. It is impossible to completely avoid tick exposure in and around wooded areas. However, there are ways to protect yourself:

- Light-colored clothing lets you see ticks crawling on your clothing.
- Tucking your pants legs into your socks will help prevent ticks crawling inside them.

- Repellents will discourage tick attachment. Clothing treatments containing permethrin will last for several days. Repellents containing products such as DEET (n, n-diethyl-m-toluamide) can be applied to the skin, but re-application is necessary.
- A body check should be conducted upon return from potentially tick-infested areas. Use a handheld or full-length mirror to view all parts of your body. Remove any tick you find and take a hot, soapy shower.



Photo courtesy: Lee Townsend

An adult American dog tick crawling up the neck. Ticks wander for an hour or more before attaching to feed. Frequent "tick checks" will allow you to remove them before that happens.

When returning from potentially tick-infested areas, check children for ticks, especially in the hairline at the neck. Ticks may also be carried into the household on clothing. Put clothing through a dryer cycle; the hot air should kill them.

Tick Management

Ticks are most common in overgrown brushy areas along the margins of forest and woodland clearings and paths. In addition, they will be found near potential blood meals: mammals of different sizes, including humans. While it is impossible to eliminate ticks and their hosts, you can make an area less suitable for them. Mowing and removal of vegetation—habitat modification—will make areas less suitable for ticks and their hosts and is one of the most effective, long-term means of reducing tick numbers.



Tick infestations on wildlife add to stresses and can impact animal health and survival.

Photo courtesy: T. Kiper

More information on tick management is available in the Tick Management Handbook available at www.cdc.gov/ncidod/dvbid/lyme/resources/handbook.pdf.

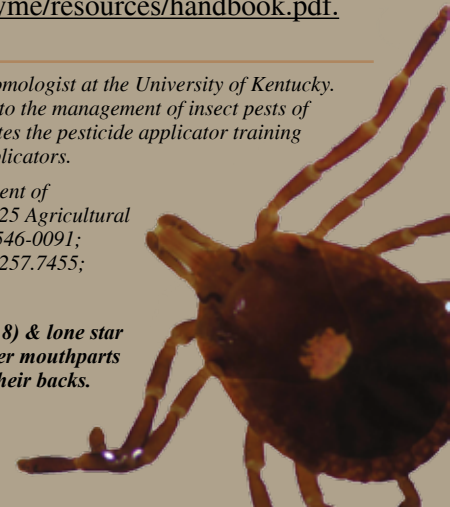
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Adult American dog tick (corner page 8) & lone star tick (right). Lone Star ticks have longer mouthparts and females have a white spot on their backs.

Photo courtesy: Lee Townsend



Forest Health

Invasive Plant Hit List: Japanese Knotweed

by Jody Thompson



Introduction

Japanese knotweed is a non-native invasive shrub that is native to several countries in eastern Asia. Also known as Japanese bamboo, Mexican bamboo, and fleecflower, it can form very dense stands that shade out, out-compete, and prevent the germination of native plants. This invasiveness results in a loss of biodiversity and can lead to the degradation of wildlife habitat and food sources. Japanese knotweed is gradually taking hold in Kentucky, where it can be found, among other places, along roadsides and in moist areas near streams. Japanese knotweed is on the list of 100 of the world's worst invasive alien species, published in 2000 by the Invasive Species Specialist Group, which is the global organization that promotes and facilitates the exchange of invasive species information and knowledge across the globe.

Japanese knotweed spreads primarily by rhizomes (underground stems) and also by seeds. It tolerates a wide range of growing conditions and has the potential to become a much worse problem in Kentucky than is currently seen. In other countries such as Great Britain, the level of Japanese knotweed infestation is such that it causes structural damage to homes and other buildings. It is found in most U.S. states and occurs in at least 31 Kentucky counties. However, there



Japanese knotweed is an exotic plant brought to the U.S. as an ornamental that is extremely invasive once established.

Photo courtesy: Jan Samanek, State Phytosanitary Administration, www.forestryimages.org

have been no focused surveys in Kentucky, and Japanese knotweed likely infests other areas.

Japanese knotweed was introduced to the eastern United States in the late 1800s as an ornamental. Even then, the difficulty of controlling this plant was recognized, although not well stressed. In its native habitat, Japanese knotweed is naturally controlled by numerous organisms. Unfortunately, those organisms aren't found outside eastern Asia, and Japanese knotweed has few herbivores that keep it under control in other environments.

Japanese knotweed is often referred to by two different scientific names, *Fallopia japonica* and *Polygonum cuspidatum*. Although, this isn't important to many people, it may result in the unintentional sale and purchase of Japanese knotweed as an ornamental plant because of confusion in the marketplace. The sale and use of Japanese knotweed is banned in some U.S. states and cities, although in many areas, it is still promoted as an ornamental plant.

Identification

Japanese knotweed is a shrub that can grow 3 to 10 feet tall. The branches are usually hollow, which explains one of its other common names, bamboo. Its branches are long and canelike with a zigzag appearance, and a single leaf arises from the angle of each zigzag. The leaves are heart-shaped to oval. Their size can vary, but they are usually around 6 inches long and 3 to 4 inches wide. White flowers, which appear in late summer, form long, narrow clusters that often



Like the branches of Japanese knotweed the leaves are alternate ("zigzag") on the plant and 6 inches long when fully developed.

Photo courtesy: Steve Manning, Invasive Plant Control, www.forestryimages.org



Japanese knotweed has invaded this Martin County, Ky. roadside.

Photo courtesy: Chris Evans, River to River CWMA, www.forestryimages.org



New shoots forming at the base of the plant. The root system of Japanese knotweed must be killed to control the plant.

Photo courtesy: Philip Rusted, Thurlow Countryside Management (r&d), www.forestryimages.org

point upwards and arise from the stem at the leaf base. Japanese knotweed shows new shoot growth in early spring and can sometimes put on more than 3 inches of growth a day. In many areas, aboveground growth dies back every winter, but it can reach its full height again by summer.

Removal

Japanese knotweed has proven to be very difficult to control. Its vigorous growth in addition to its large root system and ability to grow in a wide range of conditions makes it a plant of great concern. New Japanese knotweed plants will develop from rhizomes, and any part left in the ground will begin producing a new plant almost immediately. When removing a Japanese knotweed plant, remember that an entire stand can be essentially one big plant. The key to controlling Japanese knotweed is killing the root system. The most common methods of control are mechanical removal, herbicide application, and a combination of mechanical and herbicide methods.

Table 1. Control methods for Japanese knotweed (*Fallopia japonica* and/or *Polygonum cuspidatum*).

Method	Timing	Details and Cautions	Herbicides ¹
mechanical (mowing and hand pulling)	anytime	Best for small infestations and small plants only. Cut down or pull up the plants, and be sure to pull up the entire root system or continually cut it to drain its energy stores. Rhizomes left in the ground will produce a new plant.	N/A
cut-stump	late summer to early fall	Cut stems back to a few inches above the ground and treat immediately with herbicide. If the stump is hollow, apply herbicide to the portion of the stump that is available. When new sprouts arise, they can be hand pulled, treated with a foliar spray after new leaves form, or cut back just before new leaf buds open.	Glyphosate based herbicide 50 -100% concentrate in water. Garlon 3a or 4 at 50%. Arsenal AC at 5% in water.
foliar spray	midsummer to early fall	Best used when foliage is not over your head. Thoroughly wet the leaf surfaces until just before runoff with herbicide. Re-treatment may be necessary at the end of the season.	Glyphosate based herbicide (2-5%) or Garlon 3a at 5% solution.
cut and spray	June	Cut stems in June, wait 8 weeks then foliar spray the sprouts just before runoff with herbicide. Waiting before applying herbicide will enable the plant to produce new growth that will more effectively take the herbicide into the roots. This combined treatment approach provides multiple pressures on the root system.	Glyphosate based herbicide (2-5%) or Garlon 3a at 2% solution.

¹ The use of brand names does not imply endorsement and are used based on published recommendations (National Park Service and others) and common availability. Read and follow all directions on label for personnel protective equipment (clothing, eye, skin protection). Follow label directions and precautions in all cases including where and how the herbicide can be used. Label information supersedes any published reports or recommendations contained in this publication.

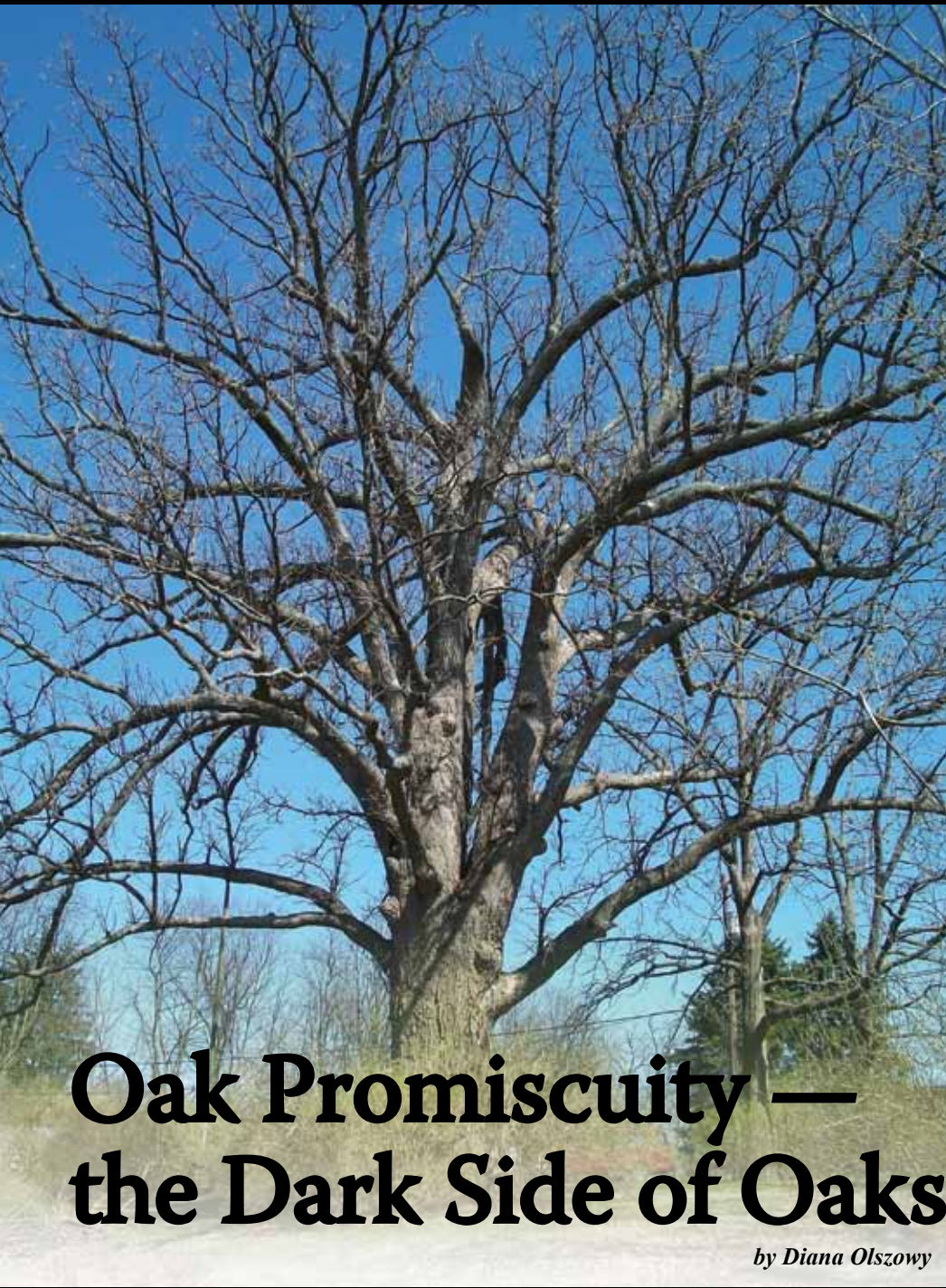
Illustration courtesy: USDA PLANTS Database, USDA NRCS PLANTS Database, www.forestryimages.org

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www.KyForestHealth.org



This is a image of a Bebb oak which is a hybrid of a white oak and bur oak.

Photo courtesy: Diana Olszowy

Oak Promiscuity — the Dark Side of Oaks

by Diana Olszowy

grow out 90 degrees, perpendicularly to the trunk; elm branches expand in the shape of a vase, etc.). When you become proficient in identifying your trees by these characteristics, you begin to notice other, more subtle, characteristics that will assist you in narrowing down your “oak” tree into a “bur oak” tree.

Identifying oaks is especially a challenge, since approximately 20 different native species grow in Kentucky. Though they can easily be broken into “red” and “white” oak groups through the standard identification characteristics, narrowing down to the specific tree may require you to focus on other features, such as the size and shape of the acorn and its cap; hairiness (called pubescence) on the buds and leaves or lack thereof (called glabrousness); or the shape and size of the sinuses of the leaves (which is the space or indentation between the lobes). Learning to recognize these characteristics will enable you to successfully determine the species composition in your woodland—or will it?

Just when you feel confident in your dendrology skills, good ole Mother Nature pulls a fast one. Oaks can be very promiscuous, meaning that they naturally hybridize with each other, but only between their own groups. The “white” oaks only hybridize with members of the white oak group (bur, chestnut, chinkapin, overcup, post, swamp chestnut, swamp white, and white oaks). The “red” oaks only hybridize with members

Dendrology may not be a term you are familiar with, but it is a science that is practiced every day and in every woodland across the state. More commonly referred to as tree or shrub identification, dendrology is officially defined as the taxonomy of woody plants, including trees, shrubs and vines, and their growth habits and ranges.

When learning to identify your trees, most people initially rely on the leaves. However, this method can be a challenge in a woodland situation where the nearest leaf could be 50 feet up in the canopy. And, since Kentucky’s forests are predominately hardwoods, leaves are usually available only during the growing season. Identifying trees by bud or twig characteristics is an excellent method, but like leaves, buds and twigs must be available for inspection. Most professional foresters rely on identification using a combination of characteristics. Often they use bark characteristics for initial identification and back up their conclusions by examining the site (aspect, soils, etc.); associated species (other trees/shrubs that are found in the same site); and overall tree growth habit (form). Many tree species have a specific growth habit that aids in identification (e.g., blackgum branches



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

What's a hybrid?



A hybrid occurs when two closely-related species (e.g. white oak and bur oak, etc.) cross-pollinate with each other creating an offspring which contains genetic characteristics of both parents. The hybrid offspring will not necessarily have a 50-50 split of the genetic characteristics from each parent (e.g. trunk and leaves may resemble white oak, but the acorns are large, round and with a frilled cap like a bur oak). And, it is not uncommon for other closely-related hybrids to cross-pollinate with each other resulting in even more genetic anomalies.

The center image is a hybrid cross between a bur oak (left image) and a chinkapin oak (right image); this hybrid is sometimes referred to as "Quercus x hillii" or "Quercus x fallax"; the "x" indicates that the plant is a hybrid.



Photo courtesy: Keith Kanoti, Maine Forest Service, www.forestryimages.org

Photo courtesy: Paul Wray, Iowa State University, www.forestryimages.org

of the red oak group (black, blackjack, cherrybark, northern red, pin, scarlet, shingle, Shumard, southern red, water, and willow oaks). If you have identified multiple oaks of the same group on your property, chances are that they may have already been naughty. Many oaks are unable to discriminate against pollination by other species in the same group. That is because they are wind pollinated, and ecological stresses, especially near habitat margins, can cause a breakdown of mate recognition as well as a reduction in pollen quantity and quality in one parent species. These factors basically mean that when the oak is pollinating, any port in a storm will work.

Some of the more common hybrids include:

- Bartram oak – willow oak x northern red oak
- Bebb oak – white oak x bur oak
- Bender oak – northern red oak x scarlet oak
- Deam oak – chinkapin oak x white oak
- Leana oak – shingle oak x black oak
- Saul oak – chestnut oak x white oak
- Schociana oak – willow oak x pin oak
- Schuette oak – bur oak x swamp white oak



Photo courtesy: Kentucky Division of Forestry

Learning to identify these hybrids can definitely pose a challenge. Don't assume that the parent's genetic traits will be split evenly 50-50 in the offspring. The offspring could exhibit any or all of the parents' genetic traits (e.g., a Bebb oak can have the leaves, bark and growth form of a bur oak and just

the acorns of a white oak, etc.). The hybridization of oaks is not a new occurrence, and to further complicate the matter, many of these oak hybrids have been cross-pollinating with other oak hybrids (which is called introgression).

Don't think that oaks have the hybridization and introgression market cornered. Maples, hickories, elms, and even pines cross-pollinate with each other. But like the oaks, these trees, too, are selective—hard maples (sugar, black, etc.) only cross with other hard maples, and soft maples (red, silver, and boxelder) only cross with soft maples. Hickories cross with pecans (same family—Juglandaceae) and produce Hicanuts (pronounced "he-can").

Now for the \$25,000 question: could Kentucky's 20 native oak species, mentioned earlier in this article, actually be only five or 10 individual species and all the others hybrids from the originals? This question is perhaps impossible to answer, but definitely an intriguing mystery to consider.



Photo courtesy: Kentucky Division of Forestry

The acorns on the right came from a cross between a bur oak and chinkapin oak (left image). These acorns have characteristics of both parents.

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FORESTRY 101

Woodland Terms: Part 2

Timber Measurements, Products, Harvesting, and Sales

by Doug McLaren

Kentucky woodlands provide many values to owners and the state. The economic value of the trees in your woodland will largely be determined by the products they can produce. Every tree is not equal in the eyes of a professional forester who is evaluating them from a timber perspective. Imagine yourself as a forester walking through your woods evaluating the individual trees. Below are a few of the terms that a forester will share with you when considering the timber management options for your woodlands—look for and understand the terms in bold to improve your forestry knowledge.

Timber Measurements

The tree scale stick, or **Biltmore stick**, is a tool that a forester will often carry into the woods to make tree and log measurements. The Biltmore stick can be used to quickly measure tree height and tree and log diameter. Woodland owners will often hear the term “board feet” when trees or logs are measured. A **board foot** is a unit of wood that measures 12 inches by 12 inches by 1 inch, or equivalent volume. The board foot is the unit of measure used when discussing the volume of trees, logs, and boards.

Various **log rules** have been developed over the years to attempt to accurately determine the number of board feet that can be derived from a log. Each log rule has limitations and advantages, but in Kentucky two log rules dominate, **Doyle** and **International ¼-inch**. The International ¼-inch is used primarily for national forest sales, while most private sales utilize Doyle. When making a timber sale, volume is an important factor in the negotiations, along with species,

quality, and the current market situation.

Foresters evaluate the exterior of a standing tree to estimate its quality, looking for visible defects that could reduce the overall tree grade. A **tree grade** is based upon diameter, height, and blemishes and gives some indication of the potential merchantable volume of the tree. Once the tree has been cut down and into merchantable lengths, it becomes a **log**. When the log is on the ground, the end defects can be observed to help in determination of the **log grade**. Tree and log grades are used to predict the amount of high-quality lumber that will be produced and the potential end uses. The higher the tree and log grades, the more potential products and higher dollar value.

Timber Products

Numerous timber products are derived from Kentucky’s trees. Three common timber products are sawtimber, pulpwood, and staves. **Sawtimber** includes trees that are generally a minimum of 12 inches in diameter at 4.5 ft. above the ground and are converted to lumber. **Pulpwood** trees have a smaller diameter and are converted to pulp for the production of paper. **Stave timber** is white oak trees that have a high log grade and larger minimum diameter than sawtimber. The end product will be barrel staves. White oak is used because its wood will prevent liquids from leaking out – an important attribute of barrels. Trees that have a high tree and log value can also be utilized in the veneer industry. Trees that qualify as **veneer** are typically of the highest quality and will be sliced thinly and adhered to a lower quality board to improve the end product’s value.



Photo courtesy: Billy Thomas

A board foot is the standard unit of measure when dealing with timber and lumber. It measures 12 inches by 12 inches by 1 inch thick or equivalent volume.

Photo courtesy: Steve Patton

Timber Harvesting

Woodland owners working with a professional forester may be advised as to when a timber harvest or thinning should be made to maintain a healthy and vigorous stand. There are a variety of harvesting alternatives, and the alternative chosen should be based upon the needs of both the woodland owner and the present and postharvesting needs of the woodland. The following alternatives are only a few of the options that landowners and foresters can discuss when planning for a harvest. A woodland owner with a well-designed Forest Stewardship plan will have these discussions before harvesting begins.

Many woodland owners may prefer a **selective harvest**, in which not all the trees are harvested. This type of harvest removes individual trees or small groupings of trees and perpetuates a stand of trees of uneven ages. Landowners utilizing a selective harvest may be able to make more frequent harvests; however, this approach can also result in more damage to the remaining trees and the loss of some species requiring more light. Also, woodland owners should use caution so that a selective harvest does not end up being a high-grade or diameter limit; either can degrade woodlands over the long-term. A **high-grading** harvest simply removes the most valuable trees, and a **diameter-limit** harvest is based solely on a minimum diameter. Neither of these types of harvests considers woodland management concerns. **Clear-cutting** is a harvesting method in which nearly all the stems are removed, regardless of the size or species. A clear-cut may be prescribed by a forester when the existing stand is of low quality and there is a need to start the stand over with more valuable regeneration.

Improper timber harvesting can impact water quality, but that impact can be minimized through the use of **Best Management Practices (BMPs)**.

BMPs are practices that minimize sediment movement on the site due to road construction and the movement of equipment and trees. The majority of water quality issues on a timber harvesting operation arise because of poorly designed roads.

Photo courtesy: Jeff Stringer



Use a professional forester to mark a selective harvest so that the remaining trees and stand are protected.



Photo courtesy: Daniel Bowker
Best Management Practices (BMPs) such as the water bars shown in this image are designed to protect water quality during timber harvesting operations. BMPs significantly reduce the main water quality issue (sedimentation) associated with timber harvesting.

Timber Sales

A desire to harvest by the woodland owner and the forester is only the beginning of a long list of considerations required to facilitate a successful harvest.

Proper planning will ensure the timber sale meets the need of the owner and the woodlands. All timber sales should be covered by a **written contract** that lays out the issues involved in the actual harvesting of the timber and postharvesting concerns for the residual stand. The contract should specify the method of payment in order to protect the woodland owner and the logger (or timber buyer). In general, tax laws allow the woodland owner to claim the sale of timber as capital gains instead of ordinary income if the timber is held for 12 months prior to the sale and the woodland owner receives a **lump sum payment**, with all the money paid before the harvest. Some contractors suggest a payment referred to as **payment on the shares**, in which the owner and logger share checks from the sawmill based on a predetermined split. Foresters may not suggest share payments because it can lead to confusion on the part of a client who is unfamiliar with issues about the quality, quantity, and species of timber that could be delivered to several different mills.

Foresters will also advise woodland owners on the issues of timber trespass and theft. See UK Forestry's Timber Theft and Trespass webpage www.ca.uky.edu/forestryextension/timbertrespass.php for a thorough discussion of **timber trespass and theft**.

The management of woodlands can be fun and profitable. Work with a professional forester to design and implement a Forest Stewardship plan for your woodlands. It is never too late to begin!

For additional Woodland Terms see Kentucky Woodlands Magazine Volume 4 Issue 3 or visit online at [www.ca.uky.edu/KYWoodlandsmagazine/Vol4 No 3/FOR101pg16-17.pdf](http://www.ca.uky.edu/KYWoodlandsmagazine/Vol4_No_3/FOR101pg16-17.pdf)

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Woodland Terms:

- Board Foot
- Tree grade
- High-grading
- Clear cutting
- Selective harvest



Visit www.ca.uky.edu/forestryextension/Publicationsfor109.pdf to view this publication.

Backyard Bats

by Tom Barnes

Bats often get a bad rap. They have been considered the bad boys of the natural world for centuries because of myths, misinformation, and misconceptions. In reality, bats are essential animals that provide important functions in the environment such as eating agricultural and home insect pests, pollinating important crops, and dispersing seeds that help regenerate forests.

For example, the red bat roosts in the foliage of deciduous trees and eat moths, beetles, plant hoppers, spittlebugs, and leaf hoppers that can damage agricultural crops and home gardens. This species can hibernate in the leaf litter and grass clumps on the forest floor. Another common species, the little brown bat, can eat about 1,000 mosquito-sized insects in a single hour. Of course bats can carry rabies, but the chances of contracting the disease from a bat are rare—over 99% of all rabies cases involving humans are related to contact with infected dogs. In Kentucky, rabies is more common in skunks than any other species. Common sense should tell you to avoid contact with an infected animal. While 90 to 95% of sick bats do not carry rabies, you should still never pick up a bat.

Bats are called a keystone species because they are important to proper functioning of the ecosystem and bat populations are declining. Most recently, an outbreak of the disease white-nose syndrome has decimated populations of cave-dwelling bats in the northeastern United States. This disease has been found as close to Kentucky as West Virginia, Virginia, and Tennessee. It has been a mere four years since the discovery of this disease, and more than a million bats of six different species have died. The death toll in caves where the disease hits is almost 100%.

What can you as a private landowner do to help ensure the survival of these important animals? The first thing is to take an inventory of potential bat habitat on your property. In this inventory, focus on roosting, foraging (feeding), and drinking habitat.

One of the first things to look for on your property would be a cave (or even a hole in the rock that might be a cave entrance), a cliffline, or a rock shelter (house). If you discover any of these features, you should have a biologist with the Kentucky Department of Fish and Wildlife Resources visit the property to make a proper assessment of these habitats for bat use. If any of these areas on your property are found to harbor bats, the biologist can advise you if visitation could be allowed or if the area should be gated, fenced, or protected.

Next, look at your forest stands, including the types of stands and their condition. Bats need roosting sites—typically dead or dying trees. Roosting sites are perhaps the most important aspect of providing habitat for bats when managing a forest. Bats use multiple roosts over time. From a habitat perspective, it's most important to provide as many natural snags, wolf trees, or den trees in various states of decay, as possible, because bats use multiple roosts over time. It doesn't appear that tree species is important, rather size. In particular, large-diameter snags that still have bark on the tree are the most important ones to salvage.

All photos courtesy, expect white-nose bat: Tom Barnes

Bats, like the red bat on the left, have a bad reputation but they play important ecological roles such as eating nuisance insects, pollinating plants, and dispersing seeds.

This little brown bat may look “scary” but in reality is an important part of our ecosystem.

All things being equal, you should provide snags in an earlier stage of decay, larger and taller trees, and trees that retain bark longer.

The final component of bat habitat is forest age. Older forests provide more habitat than younger forests because very old trees that occur on ridgetops, such as chestnut oak, have been found to be good roosting sites. Furthermore, older age forests typically provide more of the snags and cull trees that are useful roosting sites.

The next important feature to look for is water, because water is critical to most species of bats. For example, gray, little brown, and eastern pipistrelle bats prefer to feed over lakes, ponds, and rivers. Eastern red, big brown, hoary, and Indiana bats use waterways for both travel and feeding. Beaver ponds are among one of the best habitats for bats, as they provide water and potential roosting areas with numerous dead or dying trees in or around the pond. If you are planning a timber harvest, it is critical that you follow best management practices to allow for a continuous tree cover over the stream channel, because these waterways are essential as travel corridors. Remember that forest best management practices are designed to protect water quality. If wildlife is your prime concern, you might want to consider widening your buffer to provide more habitat for bats.

Research in Kentucky has shown that small woodland ponds provide excellent feeding habitat for bats. Think about creating a small pond in an opening (it doesn't have to be large—even 10 feet by 10 feet will do), or place an earthen dam to catch runoff from a spring. You also could simply deepen a woodland road rut pond to retain water all year long. There are numerous methods of creating water in openings for bats.

One other management activity you might consider is an artificial roost. In some cases where natural roosts have been eliminated, bats will use human-made structures like abandoned buildings, cisterns, road bridges, and culverts as roosting sites—especially old buildings: more than 20 different species have been documented as using them. Such structures should be protected if they do not pose a safety hazard. You can also make an artificial roost, or bat house. As more research goes into developing artificial roosts,



their occupancy rates are starting to rise. If you are considering putting up a bat house, Bat Conservation International has excellent information on its Web site (www.batcon.org) on how to build and place bat houses to maximize the chance that the bats will use them.

Bats are often unseen and forgotten wildlife resources when it comes to forest management.

However, we should consider their needs because they are so important in maintaining ecosystem functions. While Kentucky has 14 species of bats, about half of them are now rare and in desperate need of help. If white-nose syndrome makes it to Kentucky, our cave bats would surely be threatened. Perhaps you can do your part and help manage your forest for this forgotten resource.



White-nose syndrome has killed more than a million cave-dwelling bats in the northeastern United States since it was discovered four years ago. People should avoid caves because movement of people and other animals between caves could inadvertently spread white nose syndrome.

Photo courtesy: Marvin Moriarty, USFWS

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Bat houses can be constructed relatively easily and can help provide additional habitat.



There's an old saying about not being able to see the forest for the trees, and to some extent that is true of how people generally view forested land. People may see the timber value of trees, but they may not be able to see the possible economic value of the shrubs and ground-dwelling plants in the forest.

Non-Timber Forest Products

Gleaning the Forest

by Deborah Hill

Gleaning is an old term for gathering grain left after harvesting or finding pieces of information, but today is more generally used for finding and collecting something of potential economic value which is not already being used. If your eyes are open, there are lots of items that can be gleaned from the forest. Many of these may be craft items, and can be used to create value-added crafts by the person who collects them or can be sold as raw materials to other people who do make crafts. Central Kentucky (especially the Kentucky Artisan Center at Berea off Interstate-75) is well-known for its wood crafts locally, regionally, nationally, and internationally.

So what's out there? Starting at the ground level, there are three groups to look for. Before the trees leaf out, there are the spring flowers that carpet the forest floor. Many of them reproduce by runners under the soil, by layering (where a leafed tip of a branch lays on the forest floor and then puts out new roots), or by dividing bulbs or other large roots to form new plants. Select a small percentage (less than 25%) of mayapple (*Podophyllum peltatum*), dog-tooth violet (*Erythronium americanum*), Johnny jump-ups (*Viola bicolor*), and many others. Make sure you identify the plants accurately and determine that they are not federally listed as threatened or endangered, or listed as rare by the Kentucky State Nature Preserves Commission (www.naturepreserves.org).



Mayapples are one of the spring flowers that can be found on the forest floor.

Photo courtesy: David Stephens,
www.forestryimages.org

[ky.gov](http://www.ky.gov)). Remember that abuses occur when it comes to collecting wildflowers including trespassing and collecting rare or threatened or endangered species. Even when done within the law, collecting rare species or over collecting on your own property could have a damaging effect on wildflower populations. This is especially true for particularly beautiful and uncommon flowers such as trilliums and lady slipper orchids. Good identification is critical to making good decisions about what to glean and a good identification book will also give information on how the plant reproduces itself. A good resource for both medicinal and attractive botanical plants is The Medicinal Botanicals Program at Mountain State University in Beckley, WV (www.mountainstate.edu/usda). Also do your homework and determine if the species you have will respond favorably to transplant. Some do not. You do not want to waste, time, money and effort on plants that cannot be transplanted successfully. Once decisions have been made about the species that are appropriate to transplant, dig up some of these plants and re-establish them in a shady spot near home, then pot them up for sale in the spring months just as they are about to bloom. Always leave a few of the "spreading" plants in your transplant bed so that they will continue to reproduce there and provide a new supply for potting each year. Garden clubs or other local horticulture groups hold plant sales in the spring where it may be possible to market these plants.

Also at the ground level are the medicinal plants, including goldenseal (*Hydrastis canadensis*), ginseng (*Panax quinquefolius*), bloodroot (*Sanguinaria canadensis*), black cohosh (*Cimicifuga racemosa*), blue cohosh (*Caulophyllum thalictroides*), wild ginger (*Asarum canadense*), Solomon's seal (*Polygonatum biflorum*), and others. Note that the same cautionary statements regarding rare wildflower collection also pertains to medicinal plants. These plants can also be encouraged to spread. Ginseng needs many years to grow marketable roots, and goldenseal needs three or four years. The others generally

can reach maturity in one year. Mints (*Mentha* spp.) and berry bushes (*Rubus* spp.) produce leaves that are good for teas (as well as berries in the latter case), as are the roots of sassafras (*Sassafras albidum*).

Kentucky's woods have native mushrooms that can be harvested in season. Morels (*Morchella* spp.) in the spring and chanterelles (*Cantharellus cibarius*) in the fall are pretty easy to identify (morels are cream-colored or black, and their conical caps look like sponges; chanterelles are bright yellow and have a vase or fluted shape) and hard to confuse with other—possibly poisonous—mushrooms. Both species grow on the forest floor (not on trees or downed wood) and may be found in the same locations year after year. Another edible species of mushroom (when fresh and bright creamy white) that grows on the forest floor is a puffball (*Calvatia cyathiformis*), both normal- (golf ball) sized and giant. Hen-of-the-woods (*Grifola frondosa*) grows in flat, rosette-like clusters, often at the base of oak trees or on oak logs in late summer or fall. Lion's mane (*Hericiium erinaceum*) grows in a large, whitish mass with downward spikes on wounds of hardwood trees such as beech, oak (*Quercus* spp.), and maple. Since there are many kinds of mushrooms in our forests that are poisonous, use a good mushroom identification book when you go mushrooming. One that is filled with color photographs and detailed descriptions is William C. Roody's *Mushrooms of West Virginia and the Central Appalachians*. All of the above mentioned mushrooms are highly desirable to chefs and can be marketed to restaurants.

Shrubs and trees grow native fruits and nuts. Pawpaw, persimmon (*Diospyrus virginiana*), wild grape (*Vitis* spp.), black raspberries (*Rubus occidentalis*), blackberries (*R.*

fruticosus), blueberries (*Vaccinium corymbosum*), hazelnuts (*Corylus cornuta*), black walnut, white walnut (butternut) (*Juglans cinerea*), beechnuts, and some hickory nuts (*Carya* spp.) are often found in Kentucky woods.

If there is already a good crop of fruits or nuts on these trees or shrubs, you can thin around them to give them more growing space.

Trees can provide saps and syrups. Any species of the maple genus (*Acer* spp.) can produce sap in the late winter/early spring to boil down into maple syrup—sugar maple usually has the highest sugar content in its sap, but the others will work, too. Since the correct boiling equipment for making maple syrup is expensive, it

might be possible to collaborate with neighbors and collect maple sap to send to a central collection point for someone else to make the syrup. Sweet birch and yellow birch (*Betula lenta* and *B. alleghaniensis*) have sap that tastes like winter-green, and their sap can be concentrated into birch beer, root beer, or sarsaparilla.

Remove trees damaged by windstorms or ice storms and cut them up into firewood. As the price of nonrenewable energy sources such as fuel oil, coal, and natural gas continues to climb, more people are heating their homes with wood and want supplies of firewood. If you want to get fancy and split the wood into shrink-wrapped bundles to be sold at gas stations, you can make a good profit on wood that needs to be removed from the forest anyway.

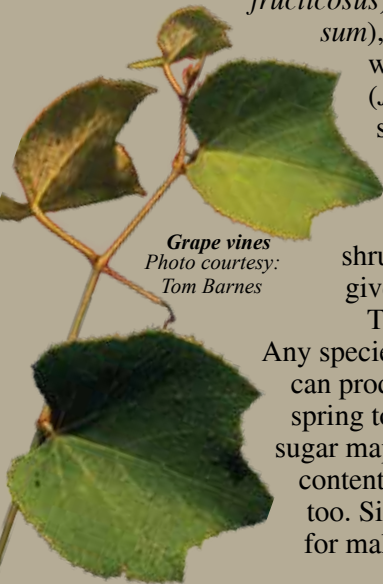
Small diameter (approximately 6 inches) trees of some species—black locust (*Robinia pseudoacacia*), eastern redcedar, Osage-orange (*Maclura pomifera*) and black walnut—are useful as fence posts because they are naturally rot-resistant and last a long time in the fence line. If you are doing some timber stand improvement and clearing out around other, more valuable, trees anyway, these smaller, unmarketable trees can save you the cost of buying fence posts.

Woodcarvers are always looking for unusual wood. That may be in burls or other odd growths on trees, from unusual branching patterns, or from spiral grooves on branches or small trees caused by vines twisting up them. Some species that would not be considered for any timber purpose, such as flowering dogwood and Osage-orange, have beautiful color and figure (patterns of the growth rings) and are very popular in the crafts market. Much of what might be left behind in the woods from a harvesting operation is marketable in small sections (bolts or blocks) for the woodcarving market. So, get some identification books for medicinal plants, woodland flowers, and mushrooms and walk your woods to see what you have. Even if you have just a few acres of woodland, you may find that there are some little gold mines in there for the taking.



Morel mushroom

Photo courtesy: Deborah Hill



Grape vines
Photo courtesy: Tom Barnes



Firewood is one of the most traditional non-timber forest products.

Photo courtesy: Billy Thomas



The raw materials for crafts like these can readily be found in Ky. forests.

Photo courtesy: Doug McLaren

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.

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Test Your Knowledge

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

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



Hint: See article on page 16.

1. The white-nose syndrome is having devastating impacts on bats and has been found in TN and WV. Kentucky residents can help prevent the spread of this disease by...
 - a. Using hand sanitizer before handling bats
 - b. Stay out of caves
 - c. Construct bat houses



Hint: See article on page 21.

3. Kentucky has over 120 different native tree species including nearly 20 different species of oak. What characteristic do foresters use to identify trees?
 - a. Leaves and bark
 - b. Twigs and buds
 - c. Site characteristics, growth habit and associated species
 - d. All of the above



Hint: See article on page 12.

5. Woodland owners wanting to positively influence the reproduction of certain species may consider developing small openings in their woodlands. The size of the opening will have an impact on which species may develop in the opening. To maximize the volume and value growth of the trees in the opening and still provide for species diversity, plan to create an opening of the following size...
 - a. 0.1 acres
 - b. 0.25 acres
 - c. 0.75 acres
 - d. 1.25 acres



Hint: See article on page 1.

2. Suppose you have sumac growing on your property and you know there are different species of sumac. Which sumac characteristics do you need to look for to determine if it is poison sumac?
 - a. Oval-shaped leaves with smooth edges and 7 – 13 leaflets
 - b. Red stems
 - c. Growing in a wet site
 - d. All of the above

4. Ticks are really bothersome and they are difficult to remove! What is the best method for removing a tick that has attached to your skin?
 - a. Cover it with nail polish
 - b. Use a hot match to burn it off
 - c. Use tweezers to grab it close to the skin
 - d. Squeeze or crush the tick between your fingers until it lets go



Hint: See article on page 8.



Hint: See articles on page 10.

6. Japanese knotweed is an aggressive invasive plant that can choke out native plants. The key to controlling Japanese knotweed is to...
 - a. Mow the plant before the seed matures
 - b. Kill the root system
 - c. Use prescribed fire

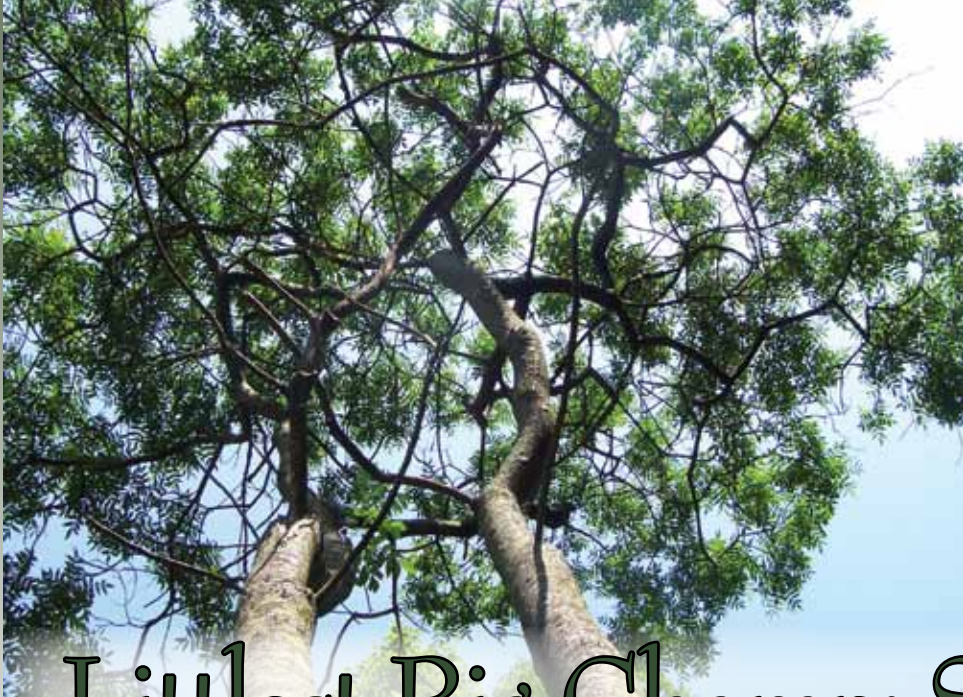


Photo courtesy: Steve Gray, Kentucky Division of Forestry

Kentucky Champion Tree Program

by Diana Olszowy

Littlest Big Champ: Shining Sumac

When most folks hear that a tree is a national champion, they envision a magnificent, monstrous oak or towering yellow-poplar. Kentucky currently has 11 national champs and the smallest, but largest, champ is located in Bullitt County. Smallest but largest—what does that mean? Shining sumac (also called winged sumac), is closely related to staghorn sumac, smooth sumac and poison sumac and is in the same family (Anacardiaceae) as poison ivy. Shining sumac is normally considered a shrubby species, averaging 5 to 7 feet in height, and is often multi-stemmed. It is a fast growing but short-lived species. Often found growing in thickets along roadways, fencerows, and along the edge of woodlands, sumacs rarely have the opportunity to develop into a tree. But that is exactly what this 35-foot-tall, 29-inches-in-circumference shining sumac did.

Shining sumac is labeled as a “pioneer species,” which means that it is often one of the first species to colonize an area. Preferring sites with full sunlight, shining sumac can often out-compete young pine and hardwoods by its ability to sprout from its roots and root crowns. Shining sumac is easily identifiable by its hairy, winged stems and long, paired leaflets. It is an attractive plant with glossy dark green leaves that turn scarlet red in the fall. Shining sumac tolerates compacted soils, drought, and pollution, which makes it an excellent selection for urban landscapes.

Shining sumac is nonpoisonous to humans and the fresh fruits can be used to make a lemon-tasting beverage. It was also used by Native Americans to treat dysentery and mouth sores. Dense thickets serve as cover for birds and mammals. The seeds are eaten by a variety of birds, and the flowers attract butterflies. Deer and rabbits commonly browse the twigs in winter, and rabbits also eat the bark. Though the seeds, bark, and leaves are low in nutritional value, they have high tannin content and have been used by the leather industry. Because of its ability to sprout from roots coupled with its

rapid growth rate, shining sumac is a good species to plant for erosion control.

Though this sumac is the smallest of Kentucky’s national champs, it is definitely a monstrous specimen in the world of sumac. How many times have you stood in the shade of a sumac? Probably not too often.

Photos courtesy: Shining sumac leaf: Chris Evans, River to River CFMA, Bugwood.org; Poison sumac leaf: Troy Evans, Eastern Kentucky University, Bugwood.org

Shining Sumac



Leaves & Stems	<ul style="list-style-type: none"> • slender/lance shape • serrated edges • 13+ leaflets • winged stems
Fruits & Seed	<ul style="list-style-type: none"> • red fruits • terminal seed head
Preferred Sites	<ul style="list-style-type: none"> • dry soils • uplands

Poison Sumac



<ul style="list-style-type: none"> • oval shaped • smooth edges • 7 - 13 leaflets • stems always red
<ul style="list-style-type: none"> • grayish-white berries • clustered on small branches
<ul style="list-style-type: none"> • wet soil conditions • swamps, river/pond edges

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



CERTIFICATION CORNER

Certification for Kentucky's Woodland Owners

by Jeff Stringer

Forest (woodlands) certification is one of the hottest topics in forestry, and there are numerous reasons why woodland owners should stay abreast of this issue. Mills that produce certified lumber or wood products must get their logs from certified woodlands. To participate in the carbon market, your woods have to be certified. Ongoing policy decisions regarding biomass and ecosystem services (other than carbon) involve discussions on certification. All of these reasons point to the importance of certification. The following information outlines two of the woodland owner certification systems that are getting the most attention and potentially have the most value for woodland owners in Kentucky.

American Tree Farm

Membership in the American Tree Farm (ATF) System is the easiest way for woodland owners to become certified. There are approximately 800 American Tree Farms in Kentucky. Membership in the ATF system requires that you have and adhere to a written management plan consistent with ATF standards. This requirement is easy, especially if you have a Stewardship Plan from the Kentucky Division of Forestry (KDF). The ATF System is very familiar to foresters in Kentucky, and you can contact your local forester for advice. Currently there is no cost for woodland owners in Kentucky to become ATF certified. KDF, the Kentucky Forest Industries Association (KFIA) members, and the Kentucky Tree Farm Committee are providing inspection services and managing the program free of charge.

Becoming a Kentucky member of the ATF System means

your woods are automatically certified. Having ATF certification indicates that you are managing sustainably. Once you have that certification, you are eligible to sell carbon credits through the Managed Forest Offsets Carbon Program of the Mountain Association for Community Economic Development (MACED). Also, if sawmills or other forest industries eventually develop a market for certified wood endorsed by the Programme for the Endorsement of Forest Certification (PEFC) to sell in Europe, they will prefer ATF wood. Also, forest industries that are part of the Sustainable Forestry Initiative use logs, pulpwood, and chips from American Tree Farms to meet their certification requirements. Maintaining ATF certification puts you in a position to take advantage of these opportunities and others that arise.

Forest Stewardship Council

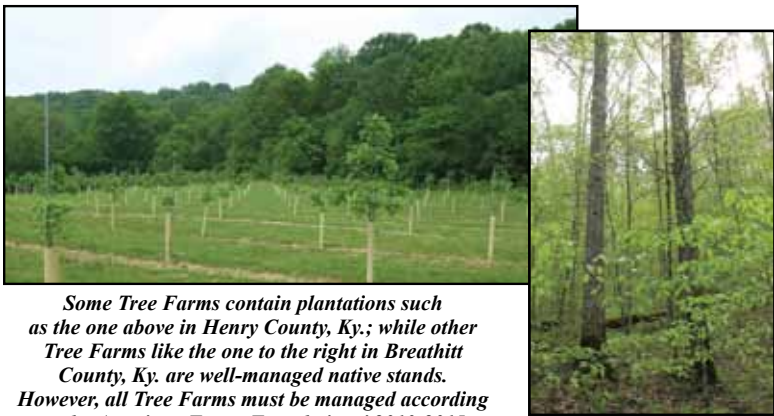
The Forest Stewardship Council (FSC) is the largest globally-recognized green certification system. FSC certification is more involved than ATF certification. Also, unlike ATF, FSC certification costs money. Currently no family-owned woodlands in Kentucky are FSC certified. However, there are efforts under way in Kentucky to streamline, simplify, and reduce costs for FSC certification for small woodland owners. The primary reason for these efforts is because several sawmills and wood industries in Kentucky have recently obtained FSC chain-of-custody certification and are in need of FSC-certified logs and pulpwood. As is the case with ATF, FSC certification makes you eligible to sell carbon.

Certification will continue to gain momentum in Kentucky. Being aware of certification and positioning yourself to take advantage of the opportunities that certification can and will provide may be in your best interest. For ATF information, go to www.treefarmssystem.org and click on Certification, then AFF 2010-2015 Standards of Sustainability for Forest Certification, and for FSC information, go to www.fscus.org. Stay tuned for more information on woodland certification in upcoming issues of the Kentucky Woodlands Magazine.

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.

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Some Tree Farms contain plantations such as the one above in Henry County, Ky.; while other Tree Farms like the one to the right in Breathitt County, Ky. are well-managed native stands.

However, all Tree Farms must be managed according to the American Forest Foundations' 2010-2015 Standards of Sustainability.

Photos courtesy: Billy Thomas

Kentucky Woodland

EAB Updates: Found in Another County; Don't Move Firewood; Trapping

The emerald ash borer (EAB) has recently been located in Gallatin County which was already in the quarantine area. The EAB has been found in these counties: Campbell, Fayette, Franklin, Gallatin, Greenup, Henry, Jefferson, Jessamine, Kenton, Oldham, Owen, and Shelby.

As the summer camping season is approaching all campers are strongly encouraged to not move firewood. The Kentucky Department of Parks has implemented an all inclusive ban on the import of firewood into state parks unless it is bundled and stamped USDA certified clean wood. State park campgrounds will continue selling firewood, but will not sell wood that comes from the 20 county quarantined area (unless the state park is within that quarantined area).

Once again trapping for the EAB will be occurring this summer. About 6,000 purple prism traps are being placed at least 10 feet above the ground in ash trees, when

possible, in a grid pattern about 1.5 to 2 miles apart along the leading edge of the quarantine area established after the insect was discovered in the state in 2009. Additional, traps will be at rest areas, campgrounds, state parks, and other

tourist attractions across the Commonwealth. They will remain in place through the borer's flight period, which ends in August, and collected for examination. The traps are about 2-feet-long and baited with an attractant to lure the borers if they are present in the area. Traps will not cause any harm to humans, animals or trees. They do not contain toxins and will not cause infestations to develop.

To keep up with the latest EAB news visit <http://pest.ca.uky.edu/ext/eab/welcome.html> or www.ca.uky.edu/forestryextension/EAB.php

Report suspected infestations to the USDA APHIS Emerald Ash Borer Hotline 866.322.4512 or to the Office of the State Entomologist - 859.257.5838.



Photo courtesy: Joe Collins

EAB trap

Kentucky's Forestland Assessment/Strategy Plan – nearing completion

Kentucky is required by the 2008 Farm Bill to prepare a statewide assessment of forest resources and strategy plan by June 18, 2010 or the Division of Forestry will lose federal funding. The Plan includes information on:

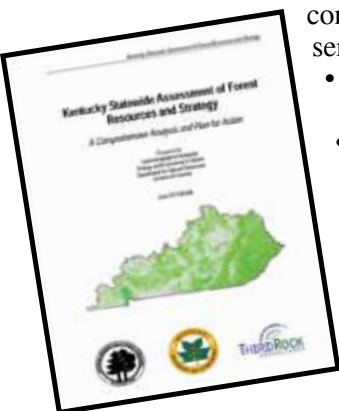
- Conditions and trends of our forest resources.
- Threats to our forest lands and resources in Kentucky consistent with national priorities (conserve, enhance, and protect forests).
- Areas/regions of Kentucky that are a priority.
- Any multi-state areas that are a regional priority.
- Long-term strategies to address threats to our forest resources.
- Description of the resources necessary for the division to address the statewide strategy.

In order to determine the forest issues that were relevant to Kentucky citizens, an online survey was conducted and the comments and suggestions derived from the survey laid the groundwork in determining the important forestry issues in Kentucky.

The top five issues identified by participants included:

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

The Plan is split into three sections – Forestland Assessment, Priority Areas and the Forest Resource Strategy. Each section has been available for review by the public and all can be viewed at www.forestry.ky.gov/programs/stewardship/Forestland+Assessment+Updates+and+Survey+Results.htm



Forest Health Task Force Update: Stalled in Senate Committee

Although many forestry organizations and agencies including the Kentucky Woodland Owners Association, UK Departments of Entomology and Forestry, Kentucky Division of Forestry, and the Kentucky Forest Industries Association strongly supported the official formation of the Forest Health Task Force as a formal board attached to the Kentucky Division of Forestry the bill stalled again in the

Senate and did not pass despite numerous efforts and appearances before the legislature by the supporters.

This was disappointing news for the supporters—the rationale provided by the Senate committee was Kentucky already has too many boards, commissions, and task forces, and no more should be authorized. Supporters are considering future options on how to proceed.

News To Use

2010 Woodland Owners Short Course

The 2010 Woodland Owners Short Course (WOSC) is coming to a region near you! The WOSC is an excellent opportunity for you and your family to learn how to enhance your woodland ownership experience. Are you fully aware of all the organizations and programs available to help you care for your woodlands? Do you know how to attract more wildlife on your property? Do you know how to sell your timber and receive a fair price? Do you have other questions related to forestry, natural resources, and wildlife? You can get answers to these questions and more at the 2010 Woodland Owners Short Course!

Join fellow woodland owners and forestry/natural resource professionals from across the state for an educational experience that will help you enjoy



and manage your woodlands. Come with questions and leave with answers!



Dates and locations for the 2010 WOSC:

- **August 21; Breathitt County** (UK Robinson Forest)
- **August 28; Caldwell County** (UK Princeton Research and Education Center)
- **September 11; Casey County** (Casey County Cooperative Extension Office)

Would you like to introduce your children to forestry, natural resources, and wildlife information? Make it a family experience! Children ages 6 – 13 can join our environmental educators for a day of fun, hands-on activities. Each youth participant will receive a goodie bag full of forestry fun.

To register or for more information about the WOSC visit www.ca.uky.edu/forestryextension/WOSC.php. You can also use the registration card provided in this issue; if you have any questions call 859.257.7597.

Looking for the Answers to Test Your Knowledge?

Visit www.ukforestry.org to submit your answers 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.

Kentucky Wood Expo - September 17 & 18 - Hopkins Co. Fairground



Don't miss out on the 2010 Kentucky Wood Expo where you can experience the latest technology in sawmills, logging, live demonstrations of machinery and equipment, lumberjack contests, chain saw carving, and more. Tickets for adults are \$3 (\$5 at the gate). Kids \$3; under six are free.

Contact the Kentucky Forest Industries Association at 502.695.3979 for more information.



Photo courtesy: Kentucky Forest Industries Association

Upcoming Dates To Remember:

Date:	Event:	Location:	Contact:
June 16	Crop Tree Release Webinar by Jeff Stringer, Ph.D.	www.forestrywebinars.net	859.257.7597
August 21 or 28 or September 11	Woodland Owners Short Course	Breathitt, Caldwell, Casey counties	859.257.7597 or www.ukforestry.org
September 17 & 18	Kentucky Wood Expo	Hopkins County Fairground	502.695.3979

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



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See inside for details.*

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