Kentucky Woodlands Magazine

Volume 9 Issue 1

Storm-Damaged Timber Issue

Long-term Storm Damage

Endangered Species Act Basics

Advice on Storm-Damaged Woodlands

Kentucky Woodlands Magazine

Volume 9 Issue 1
Spring 2014

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

In this Issue...

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

From the Editors of the Kentucky Woodlands Magazine:

This issue focuses on storm damage to our woodlands, not immediately after the storm, but down the road years after the event. While the immediate effects of a storm are often quite obvious the long-term effects may not be. This information is important to ensure good management and we hope this issue helps those of you that have been unfortunate enough to be in the path of a bad storm.

Also included in this issue is an article on threatened and endangered species which has become a huge issue in Kentucky. It is hoped that the article on federally threatened and endangered species sheds light on the process of how species are listed and the potential impacts this has on management. This issue also contains our normal departments such as Test Your Knowledge, Kentucky's Champion Trees, Certification Corner, News to Use, and our research update focusing on elk research. Have a great summer and as always, we welcome your suggestions for future articles and we'll see you next issue.

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About the Cover:
The cover photo was contributed by Diana Olszowy, Kentucky Division of Forestry Stewardship Branch Manager and one of the editors of Kentucky Woodlands Magazine. The image was taken in Hopkins County shortly after the ice storm in 2009. This issue of Kentucky Woodlands Magazine is loaded with information to assist woodland owners in addressing storm damaged woodlands.

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.

Long-term Storm Damage

by Jeff Stringer

The initial damage to trees and their value caused by ice and wind storms is obvious and can be significant. However, these storms can also lead to long-term continued reduction in the health and value of trees that survive—loss that may go unnoticed for many years. Understanding how this loss of value occurs is important to those woodland owners who own storm-damaged timber.

Storms, particularly ice or wind storms, can cause significant damage to the tops of trees resulting in two outcomes–either the trees will die immediately or within a period of several years or they will persist to reasonable life spans. However, the trees that live can face a wide range of declines in value based on the type and severity of the injury.

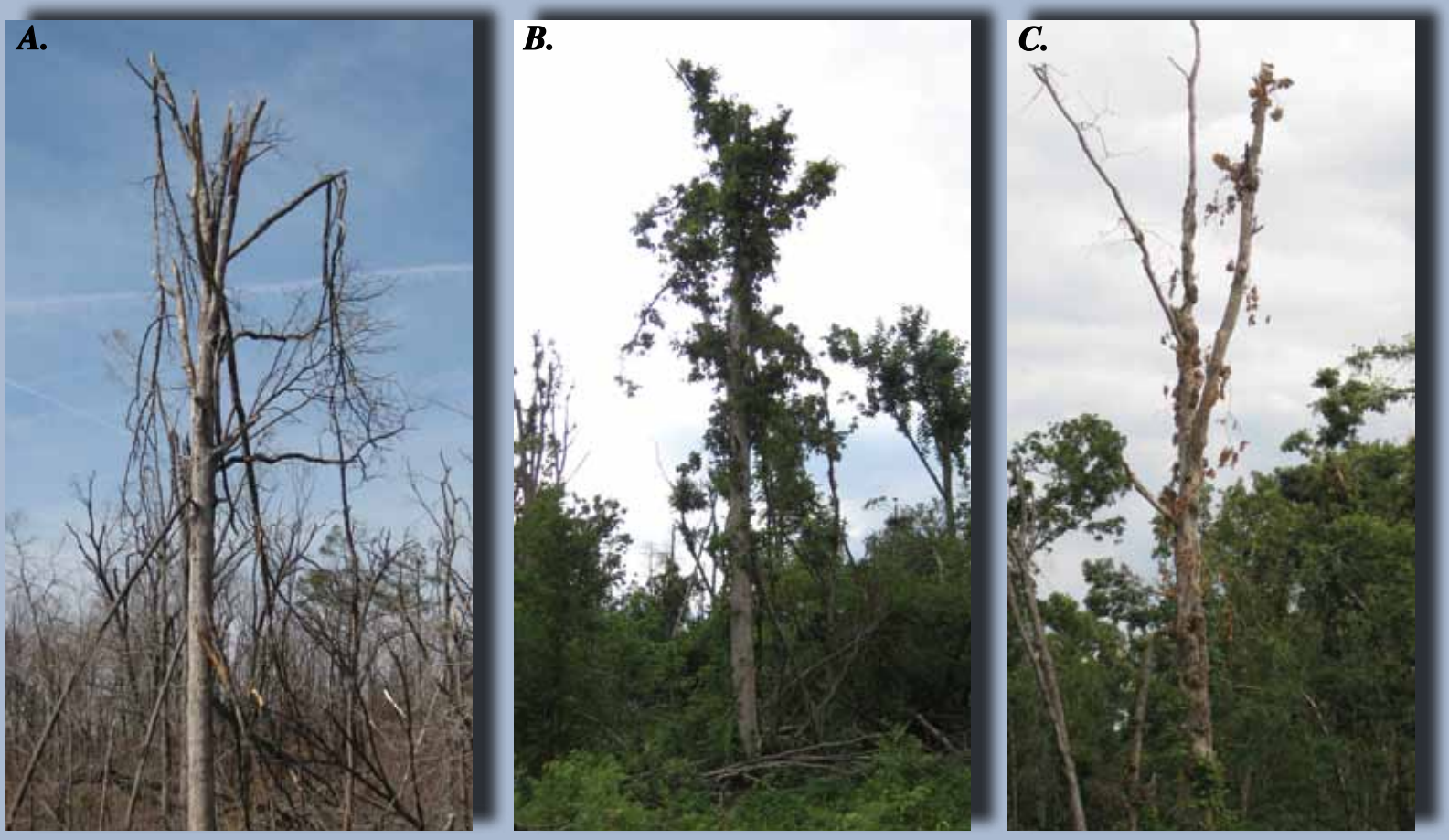
Immediate and Delayed Mortality

Ice and wind can cause trees to be uprooted, broken off, or severely bent. The death of these trees and the loss of value are readily apparent. However, sometimes the damage does not kill the tree immediately but does so over several years. This type of loss typically happens when a significant amount of the crown is lost.

Ice and wind storms create a wide degree of crown loss from almost nothing to 80 or 90 percent of the crown being destroyed. If enough of the top is destroyed, generally more than 50 percent, it may kill the tree over a period of years. This loss of crown can occur from either large branches being torn from the main stem or small and medium-sized branches being lost. The former is the most significant. The exact mortality rate is based upon species, the harshness of the soil it is living in, and weather. In some instances this mortality can occur the first year after the storm, but in many instances it takes a number of years before the tree dies. Some trees species can recover from significant major branch loss while others struggle to do so. Yellow-poplar, for example, is a quick-growing species and maintains its branch growth throughout the summer. This species and others that have a similar growth pattern succumb less. In contrast, oaks grow slower and their branches grow for a few weeks and the buds set, limiting branch growth in a given year. These types of species have a harder time re-establishing their crowns and their mortality rate is higher.

Figure 1 on the next page shows the progression of damage to trees were greater than 50 percent of the crown was damaged during an ice storm. In this case large branches were torn from oak trees leaving little potential for crown regrowth that eventually led to their demise.

Photo courtesy: Jeff Stringer



Photos courtesy: Jeff Stringer

Figure 1. Trees with severe loss of greater than 50 percent of their live crown, (A) directly after damage, (B) during the first growing season, (C) trees dying in that stand two years later.

Rot and Decline

Often, damage is not significant enough to result in mortality, but can lead to long-term timber-value loss. This type of loss is most noticeable when ice and wind storms result in main branches being torn from the tree (Figure 2). If this damage results in less than 50 percent of the crown being lost, the tree may live. Unfortunately, this initial and obvious damage is not the end of the story. The exposed wood, resulting from the loss of the large branches, allows heart-rot fungi to invade the tree. "Heart rot" is a term used to describe the internal rotting of wood from fungi that destroy the heartwood or inner portion of the stem and branches of a tree. Heart-rot fungi are a part of nature and are everywhere, and once a tree is damaged and wood is exposed, little can be done to stop the fungi entering the tree. These large openings in the bark, particularly where a large branch has been torn away, can result in the exposure of heartwood. Heartwood, in many species, is the inner darker wood core that is surrounded by a ring of lighter-colored sapwood (Figure 3 see page 4). Sapwood (an outer layer of wood directly under the bark), contains living cells that can help thwart or compartmentalize heart-rot fungi. However the heartwood is dead, meaning no living wood cells are present in the heartwood. When a branch is large enough, it contains heartwood, and when it tears from the main stem, it leaves heartwood exposed to infection by heart-rot fungi. Fungi can easily gain a foothold in the mainstem in this exposed heartwood where the branch was attached.

Once established, the heart-rot fungi can continue to grow and spread, rotting the internal heartwood, resulting in soft and/or hollow trees and branches. This damage physically weakens trees and results in loss of their merchantable value. When damage occurs to the base of a tree, for example as a result of poor logging technique or from wildfire, the damage is easily visible and the rotting of the wood visible as well. The rot starts at the open wound or damage and progresses up the stem, rotting the heartwood. However, when the damage

Photo courtesy: Jeff Stringer

Figure 2. Large branch torn from main stem by ice.

From the Woods...

Kentucky Woodlands Magazine interviewed Lyndle Barnes to learn about his experiences with storm damage on his Tree Farm.

KWM: Tell us about your Tree Farm and how you are managing it?
Lyndle Barnes: Our family Tree Farm is managed with long-term forest health in mind. The farm has been in our family since the late 1800s, except for about 25 years in the 1930s-1950s. The farm consists of about 410 acres, with 325 acres in forest. In the early 1950s, when the farm was out of the family, there was an extreme timber harvest. We have been working with that the last 60 years, and the forest is looking very good. We have been working with the Kentucky Division of Forestry since 1966. That is the earliest report I can find. As we talk about the damage, you will see I refer back to what they reported to me and it matches what happens. So I requested a stewardship plan update. It was completed in 2011, and we have been using that as reference for our projects.

Lyndle Barnes, Caldwell County woodland owner and KWOA Board member.

KWM: To what extent did storm damage impact your woodlands?
Lyndle Barnes: The ice storm of 2009 did a lot of damage to our woodlands. All 325 acres of woodland had some damage. There were two areas—one of 20 acres and the other of about 10—that had a poor stand of trees. These are on north-facing slopes with no protection from the north and in a valley preventing the sun from reaching it long term. These areas were devastated. Crowns stripped on most trees and many were down or leaning. There were not enough viable trees to reforest. This area we are clear cutting and will work with the appropriate agency to reforest 20 acres and convert 10 acres to native grasses for the best long-term use.

KWM: What have you done to address the storm damage, and how has it altered the management of your Tree Farm?
Lyndle Barnes: Overall, we are addressing the storm damage by reforesting the 20 acres we talked about. We had 10 acres of white pines planted in the 1960s on a field that was highly erodible. These pines had damage and were in need of harvest, so we are clear cutting them and replacing them with native grasses, which is the best use of this field. I remember as a kid in the 1960s—before we planted trees disking that field—I called it the rock field. The disk clanged all the time as it hit the rocks in the thin soil. We hope to provide habitat for birds, rabbits, and other wildlife as well as a good value hay product. The ice storm forced me into changing the plan and doing these projects about 10 years early. We had a limited tree harvest in 1987 and are looking at another harvest, according to our long-term plan, in the 2020s.

KWM: What advice do you have for woodland owners who have experienced storm damage?
Lyndle Barnes: Get in your forest, I know with the canopy opened you have lots of briers, I do, but that's the only way to know what's going on in your forest. It has been five years, and in my better areas the canopy is closing again. The trees look better. I know where my problem areas are, and we are working on correcting and improving those areas. Open your trails and fire roads. I still have standing dead trees and some hangers. They can be dangerous on windy days. Be watchful as you enjoy your woodlands.

occurs far off the ground, it is not easily visible and the rot resulting from the injury cannot be readily seen from the ground. In this instance, the rot progresses downward in the tree and results in a decrease in the merchantable height of the main stem and ultimately the value of the tree. This loss is typically not witnessed until the tree is felled and bucked (sawed) into logs or pulpwood sticks. If it is significant enough, resulting in more than 50 percent wood loss, the tree can become unmerchantable. The magnitude of long-term damage from this type of injury is species-dependent. Some tree species are not effective in staving off the impacts of heart-rot fungi, while others have the ability to compartmentalize the fungi and limit its spread. However, even these trees have difficulty in stopping the downward progression of heart rot from a large opening on the main stem, caused by the tearing away of a large branch. Figure 4 shows the immediate aftermath of an ice storm where tops of yellow-poplar trees were broken, exposing heartwood. The exposed heartwood allowed heart-rot fungi to enter and rot started moving down the stem. The resulting rot reduced the merchantability of the upper stem by 6 to 10 feet over the next five years. Figure 5 shows the downward progression of rot over five years, resulting in a decrease in merchantable height and, thus, value.

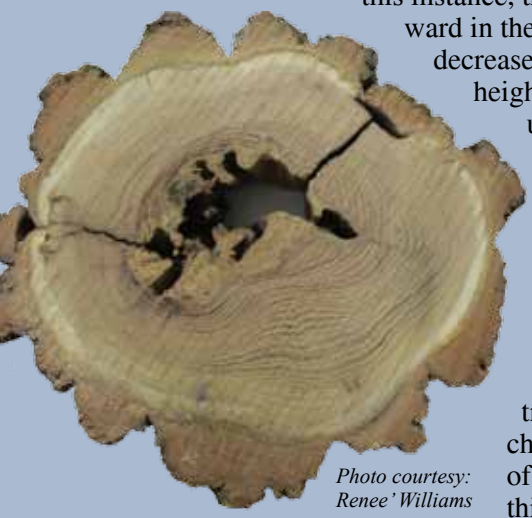


Photo courtesy: Renee' Williams

Figure 3. Cross-section of tree showing narrow band of white sapwood outside of darker heartwood with heart rot present.

Figure 5. Downward progression of rot over four years, decreasing the merchantable height from its original height (yellow marks) to its current height (red marks). This loss of merchantable height represents a loss of volume and value in the tree.

Photo courtesy: Jeff Stringer

Figure 4. Yellow-poplar trees with major branch breakage allowing rot to eventually enter merchantable portion of tree.

About the Author:

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Photo courtesy: John MacGregor

Endangered Species Act Basics – with a Focus on Kentucky

The endangered Virginia big-eared bat roosts in caves or cliff line habitiats year round.

by Michael A. Floyd

On December 28, 1973, President Richard M. Nixon signed the Endangered Species Act (ESA). Preceded by passage of less comprehensive laws — the Endangered Species Preservation Act in 1966 and the Endangered Species Conservation Act in 1969 — the ESA represented a much stronger attempt at conservation of threatened and endangered wildlife and plants, making endangered species protection one of the highest priorities of the government.

Upon signing the ESA, President Nixon remarked, "Nothing is more priceless and more worthy of preservation than the rich array of animal life with which our country has been blessed. It is a many-faceted treasure, of value to scholars, scientists, and nature lovers alike, and it forms a vital part of the heritage we all share as Americans." He went on to add, "I congratulate the 93rd Congress for taking this important step toward protecting a heritage which we hold in trust to countless future generations of our fellow citizens. Their lives will be richer, and America will be more beautiful in the years ahead, thanks to the measure that I have the pleasure of signing into law today."

Photo courtesy: U.S. Government Archives

President Richard Nixon signing the Endangered Species Act into law in 1973.

The purpose of the ESA is to protect and recover imperiled species and the ecosystems upon which they depend. It is administered by the Interior Department's U.S. Fish and Wildlife Service (FWS) and the Commerce Department's National Marine Fisheries Service (NMFS). The FWS has primary responsibility for terrestrial and freshwater organisms, while the responsibilities of NMFS are mainly marine wildlife such as whales and anadromous fish (salmon). In Kentucky, the ESA is administered by the Kentucky Ecological Services Field Office in Frankfort, one of 13 field offices in the FWS's Southeast Region (Region 4).

The Listing Process: Endangered Versus Threatened

Under the ESA, species may be listed as either endangered or threatened. "Endangered" means a species is in danger of extinction throughout all or a significant portion of its range. "Threatened" means a species is likely to become endangered within the foreseeable future. To help conserve genetic diversity, the ESA defines "species" broadly to include subspecies and distinct populations. All species of plants and animals, except pest insects, are eligible for listing as endangered or threatened.

As of March 2014, the FWS and NMFS have listed 2,142 species worldwide as endangered or threatened, including more than 1,500 species in the United States. Kentucky supports populations of 41

Photo courtesy: Tom Ferrari

The endangered American burying beetle has not been seen in Kentucky for more than 40 years. The FWS's Kentucky Field Office is working with federal and state partners on a reintroduction plan.

endangered and threatened species, of which 31 are animals and 10 are plants. Unfortunately, 13 endangered and threatened species have been extirpated from Kentucky. Species such as the gray wolf, red cockaded woodpecker, American burying beetle, and white catspaw no longer live in the Commonwealth.

Species are listed as endangered or threatened based on evaluations of their biological status (i.e. are they declining?) and threats to their continued existence. When evaluating a species for listing, the FWS considers five threat categories or factors:

Photo courtesy: Michael Floyd

The white catspaw mussel once occurred in KY but is now considered to be extinct.

1. Damage to, or destruction of, a species' habitat
2. Overutilization of the species for commercial, recreational, scientific, or educational purposes
3. Disease or predation
4. Inadequacy of existing regulatory mechanisms
5. Other natural or manmade factors that affect the species' continued existence

When one or more of these factors jeopardizes a species' survival, the FWS takes action to protect it. Some species are evaluated and listed through the FWS' own initiative, while others are listed in response to a formal petition made by an outside party. The FWS publishes its listing proposals in the Federal Register. Once the proposed listing rule is published in the Federal Register, the species is considered to be a "proposed" species. Currently, Kentucky supports populations of two proposed species: northern long-eared bat and Short's bladderpod.

Photo courtesy: Joe Settles

Kentucky glade cress, a Kentucky endemic plant, was proposed for federal listing in 2013. It is now a threatened species.

Critical Habitat

When species are listed as endangered or threatened under the ESA, the FWS is required to consider whether there are geographic areas that are essential to the conservation of the species. If so, the FWS may propose to designate these areas as "critical habitat." These are specific areas within the geographic area occupied by the species at the time it was listed that contain the physical or biological features that are essential to the conservation of the species and that may need special management or protection. Unoccupied critical habitat may also be designated if the FWS considers it to be essential to the conservation of the species. One important fact to remember is that critical habitat designations affect only federal agency actions or federally funded or permitted activities. Critical habitat designations do not affect activities by private landowners. Within Kentucky, the FWS has designated critical habitat for the Indiana bat, two fishes (Cumberland darter and diamond darter), Kentucky cave shrimp, four mussels (Cumberland elktoe, Cumberlandian combshell, fluted kidneyshell, and oyster mussel and two plants (Braun's rockcress and Kentucky glade cress).

Photo by: John MacGregor

The endangered Kentucky cave shrimp is restricted to nine groundwater basins in the Mammoth Cave region of south-central Kentucky.

Photo courtesy: Chad Lewis

The Green River supports populations of several endangered and threatened mussel species. It has been designated as critical habitat for the diamond darter and proposed as a critical habitat for the rabbitsfoot mussel.

Candidate Species Conservation

When the majority of species are evaluated for listing, they are not immediately added to the federal list of endangered and threatened species. Instead, they are maintained on a list of "candidate" species. Candidates are species that are warranted for listing under the ESA (they meet the definition of either endangered or threatened), but listing is precluded by higher listing priorities. As higher prior-

ity listing actions are initiated, the FWS works with other federal agencies, states, conservation organizations, and private landowners to conserve these species. In some cases, these conservation efforts significantly reduce threats and prevent further species declines, eliminating the need for federal listing.

Photo courtesy: Michael Floyd

Photo courtesy: Matt Thomas

The Kentucky Department of Fish and Wildlife Resources has begun a reintroduction program for the Kentucky arrow darter, a federal candidate species and headwater stream resident of the upper Kentucky River basin in Eastern Kentucky. The species is scheduled for listing in 2016.

Kentucky supports populations of eight candidate species: Cumberland arrow darter, Kentucky arrow darter, Clifton Cave beetle, Icebox Cave beetle, Louisville Cave beetle, Tatum Cave beetle, Rattlesnake-master borer moth, and white fringeless orchid. All eight species are scheduled to be listed by 2017.

Federal Protections under the ESA

The ESA protects endangered and threatened species and their habitats by prohibiting "take" of listed animals and the interstate or international trade in listed plants and animals, including their parts and products – except under Federal permit. Take is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct." Through regulation, the term "harm" was later defined as "an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering." Listed plants are not protected from take, but it is illegal to collect or maliciously harm them on federal land.

Endangered and threatened species are afforded additional protection through Section 7 of the ESA. This section requires federal agencies to use their legal authorities to conserve listed species and consult with the FWS to ensure that effects of actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of listed species. Any action that involves a federal permit, is funded by federal dollars, or takes place on federal land is subject to Section 7. Some examples of these actions include issuance of a Section 404 permit from the U.S. Army Corps of Engineers, construction of a highway using federal funds, or a prescribed burn on a national park.

Kentucky has no equivalent state law to the ESA. The Kentucky State Nature Preserves Commission (KSNPC) monitors the state's biodiversity and maintains a list of state endangered, threatened, and special concern species, but these designations convey no legal protection.

Species Recovery

As mentioned earlier, the ultimate goal of the ESA is to recover species so that they no longer need protection under the ESA. For each species that is listed as endangered or threatened, the FWS prepares a Recovery Plan that outlines a recovery strategy that must be followed, recovery criteria that must be met, and recovery actions that must be completed before a species can be removed from the list of endangered and threatened species. The FWS prepares these plans with the help of species experts; other federal, state, and local agencies; Tribes; nongovernmental organizations; academia; and private citizens. Since 1973, a total of 28 species have been removed from the list of endangered and threatened species due to recovery actions and successes. Recovered species include: the American alligator, bald eagle, Eggert's sunflower, and peregrine falcon. In 2015, the FWS expects to delist white-haired goldenrod, a rare plant found only in the Red River Gorge region of Eastern Kentucky.

Photo by John MacGregor

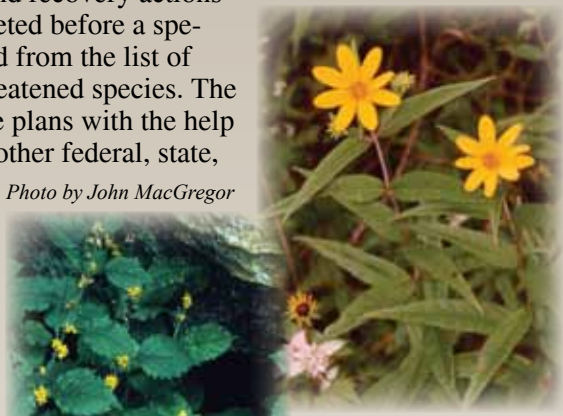

Photo courtesy: Michael Floyd

Eggert's sunflower was removed from the Federal list of endangered and threatened species in 2006.

White-haired goldenrod, a Kentucky endemic that occurs only within rock shelters of the Red River Gorge, may soon be removed from the federal list of endangered and threatened species.

Working with Private Landowners

About 94 percent of Kentucky land is privately owned, so the voluntary cooperation of landowners is essential to our efforts to recover endangered and threatened species and their habitats. The FWS's Partners for Fish and Wildlife Program is a voluntary cost-share program that builds on the strengths and interests of committed individuals and organizations to accomplish shared conservation goals. It provides landowners with the technical and financial assistance necessary to implement conservation actions for endangered and threatened species and to restore habitats on their property. The program leverages funds and resources through more efficient state, federal, and

Through the Partners for Fish and Wildlife Program, a perched culvert on Mill Branch (Knox Co., Ky.) was replaced and an approximate 2,300-foot section of the stream was reconfigured to benefit the threatened blackside dace.

Photos courtesy: top and bottom: Brent Harrel
Blackside dace: Matt Thomas

The Partners for Fish and Wildlife Program works with landowners to implement voluntary conservation actions, such as livestock exclusion, that benefit endangered and threatened species.

Photos courtesy: Michael Floyd

private partnerships. In Kentucky, the Partners program has benefited endangered and threatened species through a variety of projects: stream bank and channel restoration, livestock exclusion from streams or other sensitive habitats, prairie restoration, native grass and forest establishment, and cave gating.

The Benefits of Conserving Endangered and Threatened Species

One may ask, "Why should we try to save endangered species?" Well, Congress addressed this question in its preamble to the ESA, recognizing that endangered and threatened species of wildlife and plants "are of aesthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people." Congress also stated its intent that the ESA should conserve the ecosystems upon which endangered and threatened species depend.

To answer this basic question, the FWS has prepared a brochure, Why Save Endangered Species?, which is available at http://www.fws.gov/endangered/species/why-save-species.html. In the brochure, the FWS provides seven reasons why species and their habitats should be conserved:

- Benefits of natural diversity – all species serve a role in the ecosystem
- Contributions to medicine – potential for new medicines
- Biodiversity and agriculture – biological controls, pollinators, edible plants
- Environmental monitors – indicators of environmental quality
- Ecosystem services – clean air and water, soil fertility
- Other economic values – outdoor recreation, bird watching
- Intangible values – aesthetics, natural heritage importance

Kentucky's Endangered and Threatened Species

As mentioned earlier, Kentucky is home to 41 endangered and threatened species. These include three bat species, one bird, six fishes, one crustacean (Kentucky cave shrimp), 20 mussels (clams), and nine plants. These species occur in a wide variety of habitats scattered across the Commonwealth. A list of Kentucky's endangered and threatened species is available at http://www.fws.gov/frankfort/Endangered-Species.html.

Kentucky's three species of endangered bats (gray bat, Indiana bat, and Virginia big-eared bat) hibernate in caves during the winter. During the summer months, gray bats and Virginia big-eared bats (see photo on page 5) use caves or cliff line habitats as roosts, while Indiana bats roost and rear their young under the peeling bark of live, dead, or dying trees. At night these species become active, feeding on flying insects along rivers or lakes and in uplands. They play a significant role in insect control by eating up to half their body weight in insects each night. Unfortunately, all three species are under threat due to a mysterious illness, white-nose syndrome (WNS), which has killed over a million bats since 2006. The fungus which causes WNS has now been documented from 65 separates sites (caves) in 21 Kentucky counties. The FWS is uncertain about the impact to Kentucky's Indiana bat population, but so far Kentucky's gray bat and Virginia big-eared bat colonies appear to be unaffected by WNS.

Photo courtesy: John MacGregor

An endangered Indiana bat beneath exfoliating bark. Notice the left forearm band and transmitter wire.

Each year, Kentucky is visited by several species of endangered or threatened migrating birds (e.g., whooping crane) but only one federally listed species, the endangered interior least tern, nests within Kentucky. It spends the summer months in Western Kentucky, where it nests along the Mississippi and lower Ohio rivers. Kentucky continues to support nesting populations of the bald eagle and peregrine falcon, which were delisted in 2007 and 1999, respectively. Both species continue to be protected through the Migratory Bird Treaty Act.

Photo courtesy: Michael Floyd

Interior least tern chick.

Kentucky's endangered and threatened fishes tend to be small (generally less than 4 inches), but one exception is the endangered pallid sturgeon, which reaches lengths of up to 6 feet and weights of up to 80 pounds. Within Kentucky, it is found only in the Mississippi River. Kentucky's other listed fishes include the relict darter

(restricted to the Bayou du Chien watershed in Western Kentucky), duskytail darter (known only from the Big South Fork of the Cumberland River), Cumberland darter (restricted to 13 streams in the upper Cumberland River basin), palezone shiner (restricted to the Little South Fork of the Cumberland River), and blackside dace (known from multiple headwater systems in the upper Cumberland River basin).

Photo courtesy: Matt Thomas

The endangered duskytail darter is found only within the Big South Fork Cumberland River.

The endangered Kentucky cave shrimp is a blind, 1-inch, colorless crustacean that is restricted to nine groundwater basins in the Mammoth Cave region of south-central Kentucky. It is rarely seen by the public and spends its entire life in the cave. Much of its known range occurs in Mammoth Cave National Park.

Kentucky's largest group of endangered and threatened species is freshwater mussels. This highly imperiled group has suffered significant population declines in Kentucky and the rest of North America due to reservoir construction, water pollution, sedimentation, and competition from exotic species. Of Kentucky's 103 native species, 20 species have disappeared from the state, 20 are federally listed as endangered or threatened, and another 16 are considered to be rare or declining. Mussels spend their entire life partially buried in the substrate, where they filter the water column for bacteria and plankton. By doing so, individual mussels have the potential to filter several gallons of water each day, thereby improving water quality within the stream and benefiting the entire ecosystem. Mussels also function as environmental indicators due to their sensitivity to toxic chemicals.

Freshwater mussels collected during a multi-agency sampling effort on the Green River (Hart Co., Ky.) in 2005.

Photos courtesy: top: Michael Floyd; mussels: Monte McGregor

Kentucky's nine species of endangered and threatened plants include Braun's rockcress, American chaffseed, Cumberland rosemary, Cumberland sandwort, Kentucky glade cress, Price's potato-bean, running buffalo clover, Short's goldenrod, white-haired goldenrod, and Virginia spiraea. Most of these species have restricted distributions in Kentucky, and white-haired goldenrod is notable in that it is the only Kentucky endemic.

The ESA has provided protection and conservation of imperiled species for over 40 years. Because of it, multiple species have been saved from extinction, and our national symbol, the bald eagle, has fully recovered and been removed from the endangered species list. Going forward, it will be the FWS' continued responsibility to administer the ESA responsibly and work with its many conservation partners to meet its mission of conserving, protecting, and enhancing fish, wildlife, plants and their habitats for the continuing benefit of the American people. For more information on the ESA or Kentucky's endangered and threatened species, visit the FWS' national website, www.fws.gov/endangered, or contact the Kentucky Field Office at 502.695.0468 (www.fws.gov/frankfort).

Can You Explain That?

Endangered Species Act (ESA) - a federal law that was passed in 1973 and was designed to protect critically imperiled species from extinction. It is administered by the U.S. Fish and Wildlife Service and the National Marine Fisheries Service.

Endangered - a species that is in danger of extinction throughout all or a significant portion of its range.

Threatened - a species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

Proposed – a species for which a proposed listing rule has been published in the Federal Register.

Candidate – a species for which listing is warranted under the ESA (it meets the definition of either endangered or threatened), but listing is precluded by higher listing priorities.

Critical Habitat - the specific areas within the geographic area occupied by an endangered or threatened species at the time it was listed that contain the physical or biological features that are essential to the conservation of the species and that may need special management or protection.

Take - to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect an endangered or threatened species or attempt to engage in any such conduct.

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10,000 or Bust: Elk Research in Kentucky

All photos courtesy: John Cox

The velvet still remains on the antlers of this male elk in eastern Kentucky. There are twice as many elk in Kentucky as compared to Yellowstone National Park.

by John Cox

The moist chill of an early October morning envelops our half awake, fully caffeinated bodies packed like loose jigsaw puzzle pieces into our worn out field truck. The mud-caked four-wheel drive loudly protests as we slowly and ungracefully ascend the rutted dirt road for the umpteenth time this year. Pulling to our overlook, we climb out to meet a thick morning fog that envelopes all but the distant green mountaintops of the southeastern Kentucky landscape. To our south the fog largely obscures the denatured old surface coal mine that extends its rolling, alien panorama for miles. It is this interplay between mountain and mine land that harbors the subject of our now decades-long research study, and our motivation for rising early on a less than forgiving morning. With our eyes rendered useless, we pause to listen. Minutes slowly tick by, then there it is, unmistakable; the mating bugle of the undisputed mountain monarch of the east, the elk (*Cervus canadensis*), only recently restored to its place in our rich ecological community.

Paleontologists tell us that elk have been well established in central North America for at least 50,000 years having moved south from the Beringia land bridge that once spanned Asia and North America. Unlike its smaller, more forest-dwelling cousin, the white-tailed deer (*Odocoileus virginianus*), the elk is a herd-forming animal primarily adapted for the open plains; it has large wide-spreading antlers, a high-pitched voice to carry long distances, a larger ruminant stomach better adapted for grazing, and a lighter colored rump patch used for social communication among herd members. The elk is also supremely adapted for speed and endurance to elude open plains predators such as wolves, long absent from Kentucky.

For millennia, Native Americans hunted the elk, not only for its meat and hide, but for antlers, teeth, and other body parts used to decorate clothing, mark trails, and for ceremonial purposes. The Shawnee tribe of the Ohio Valley referred to the elk as "wapiti" or "white rump" in reference to its light-colored and conspicuous rump area. Although we don't know how many elk roamed the Commonwealth at the time of European settlement in the mid-1700s, early settler accounts suggest that the majority of the population occupied the more open landscapes found in the central Bluegrass Region and the Barrens of Western Kentucky. Because smallpox decimated Native American populations after 1500, it's also likely that the reported large game numbers in the "paradise" of Kentucky reported by pioneers Daniel Boone, Simon Kenton, and others were the result of a century or more of relaxed human hunting pressure. By the Civil War, the elk was hunted to extinction statewide, and a few years later, it vanished from the eastern United States.

The popularity of elk as a game species led to reintroduction attempts in many eastern U.S. states in the early 1900s; Pennsylvania and Michigan were the first to establish small herds during this period. It would be nearly a century later before Kentucky would decide to embark on its own elk restoration program. From 1997-2002, more than 1,500 elk from six Western states were released in southeastern Kentucky. The objective has been to grow the population to 10,000 elk within a 16-county zone. And grow they have in the absence of harsh winters and large predators. An estimated 10,000-12,000 elk now roam this area, a number ten times the size of other eastern elk populations, and more than twice that in Yellowstone National Park.

By wildlife restoration standards, it would be hard to deny the resounding success of the Kentucky elk restoration program. A long lost ecological component has been returned, and for the past decade, hunters have eagerly anticipated having their name drawn for an elk tag, which now number nearly 1,000 per year. Local outfitters have sprung up to guide elk hunters and watchers, which in turn have injected much needed seasonal revenue into the local economy.

But not everyone is happy about the growing

Browse damage from elk can make reforestation efforts challenging.

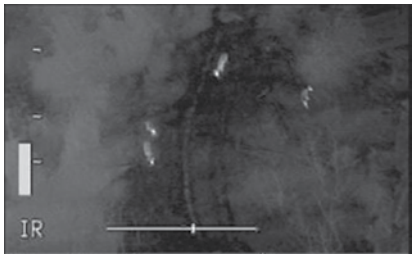
number of elk and the damage they sometimes cause. Typically weighing 500-700 lbs., elk are the second largest member of the deer family and eat six or seven times more than a typical white-tail. A small herd of elk can quickly overgraze a pasture or hayfield, strip fruit trees of their buds and bark, overbrowse tree seedlings used for reforestation reclamation, wreak havoc on a golf course, and be extreme road hazards for unsuspecting motorists.

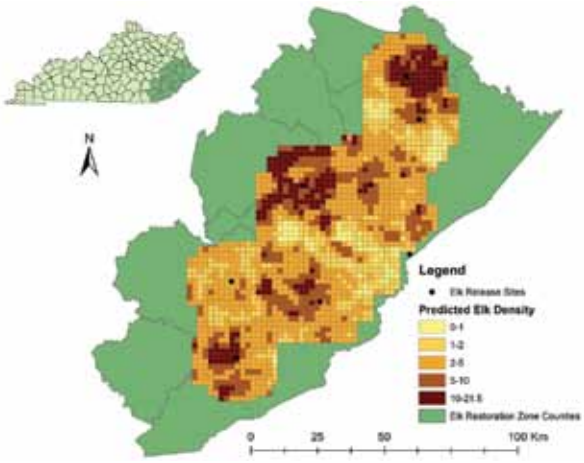
Managing the population size of elk within the social carrying capacity of the public and the local environment is challenging. Despite their large size, it is notoriously difficult to estimate the population size of elk scattered across large areas, because of their tendency to seek shelter during the day and their cryptic body colors blending in well with the landscape. In addition, elk are herd animals that can be surprisingly hard to locate from the air or ground because of their clustered distribution; it can sometimes take hours of expensive flight time to find the larger herds which may make up the bulk of the population—not-so gentle reminders that hunted animals don't want to be found.

My research lab has employed two primary technologies to better understand elk ecology and help state wildlife managers estimate elk numbers. The older radio-telemetry involves the capture and radio-collaring of individual elk that we can subsequently locate from an airplane or the ground. A newer and more expensive radio-telemetry technology involves the use of Global Positioning System (GPS) collars on elk, some of which transmit the location of an elk to us within 15 minutes using a cell phone text messaging service. Radio-telemetry allows us to use marked individual elk to estimate population size in what is known as a mark-recapture survey.

Graduate students from the University of Kentucky Department of Forestry have played a major role in research associated with the restoration of elk in Kentucky.

Another sophisticated technology we have employed to estimate elk-population size is the use of an aircraft equipped with a forward-looking infrared (FLIR) camera that essentially detects the thermal radiation (body heat) from animals. These cameras are advantageous because they can be used at night to see the heat signature of animals in a way similar to that used by the military and law enforcement. Because the cameras can detect as little as 1°(F) difference in temperature of objects, large bodied elk viewed at night stand out against a backdrop of cooler vegetation. When coupled with video and GPS mapping technologies, aircraft-based FLIR surveys allow large swaths of the landscape to be surveyed at night when elk are out feeding, thus providing researchers with a powerful tool to count and estimate elk numbers and densities that can in turn inform management of the species.





A variety of tracking techniques have allowed researchers in Dr. John Cox's lab to gather significant data on elk in Kentucky. The forward-looking infrared camera (above) allows researchers to spot elk at night. The map shows the predicted elk density in the 16-county elk reintroduction zone in southeastern Kentucky.

As the fog begins to slowly vaporize, the telemetry signal of Bull No. 66 betrays his close proximity. Only briefly does his wide-antlered silhouette appear before it fades back into the haze that shrouds his surroundings. Over the years, he has told us much about this population, his species, and ourselves. We are thankful.

About the Author:
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Kentucky Tree Farm Committee Newsletter

Kentucky Tree Farm Committee Annual Awards Announced

The Kentucky Tree Farm Committee solicits and receives nominations for Tree Farmer of the Year, Logger of the Year, and Tree Farm Inspector of the Year annually. We would like to congratulate all the winners and finalists and thank all those who took the time to assemble the nomination packets. The award winners were announced in April at the Kentucky Forest Industries Association 49th Annual Meeting in Louisville.

Tree Farmer of the Year

Harry and Karen Pelle of Bradfordsville, Ky., were selected as the 2013 Kentucky Tree Farmer of the Year. James McDaniel, a forester with the Kentucky Division of Forestry, nominated the Pelles for the award. The Pelles' 1,330-acre Tree Farm is managed for a wide range of benefits, including timber production, wildlife, and recreation. They consistently have improved the woodland through a number of active management practices, including harvesting dead and damaged trees for firewood and thinning more than 300 acres of forestland to allow room for the best trees to grow. The Tree Farm is also used for numerous family outings and for educational purposes for Boy Scouts and adult programs designed to teach leadership skills through interaction with the outdoors. The Pelles are also active in a number of organizations, including the Kentucky Woodland Owners Association, American Chestnut Foundation, and the Quality Deer Management Association. They take an active role in all forest management on the property and have encouraged others to practice good forest management and stewardship.

James McDaniel nominated (L) Harry & Karen Pelle (4th & 5th from Left) for the Kentucky Tree Farmer of the Year award along with their son-in-law Shane Dozier (2nd from Left). Jim Spangler (3rd from Left) and Kentucky Tree Farm Chairman Lloyd Foe (R) presented the award.

Logger of the Year

Allen's Logging LLC of Shepherdsville, Ky., owned by Gussy Allen, was selected as the 2013 Kentucky Logger of the Year. Mark Spalding, with the Kentucky Division of Forestry Central Region office, nominated Allen for the award. Allen operates with a four-person crew, with two of them trained as Kentucky Master Loggers.

Allen's operation is family owned—son Josh is a part of his crew—and has an excellent professional relationship with landowners and the forest industry. He is committed to serving the landowner and often increases property value by seeding and improving access roads after logging. Allen and his crew take tremendous pride in protecting the trees that they leave after the harvest for regeneration and making sure that water quality is protected on the harvest site. They take every opportunity to promote the importance of the logging industry and sell logs to a wide range of markets to maximize financial returns to the landowner while serving industry demands.

Gussy and Josh Allen along with family and crew were presented the Logger of the Year award by Jim Spangler (L), Bryan Equipment Sales, and Kentucky Tree Farm Committee Chair Lloyd Foe (3rd from Left).

Tree Farm Inspector of the Year

Connie Woodcock, a service forester working out of the Central Region office of the Kentucky Division of Forestry, was honored as the 2013 Kentucky Tree Farm Inspector of the Year. Woodcock has helped to promote the Tree Farm Program by developing forest-management plans for woodland owners. In addition to completing inspections and bringing new Tree Farms into the program, Woodcock also has been involved with a wide range of activities to promote the benefits of Tree Farms and sustainable forestry to private landowners. She was selected from a large number of foresters who are employed by the Division of Forestry, wood industry, and consulting foresters throughout the state, and it is her third time winning the prestigious award.

Connie Woodcock, Kentucky Division of Forestry, was presented the Inspector of the Year award by Kentucky Tree Farm Committee Chair Lloyd Foe.

Kentucky Woodland Owners Association

Greg Kuhns: Private landowners key to stronger forest industry

www.kwoa.net

This article was first published in the December 28, 2013, Lexington Herald-Leader. Re-printed with permission.

Are wood products and forests Eastern Kentucky's economic salvation? The answer is both yes and no. As a forest landowner and former resident of Harlan County, I would love to say that forests are the magic bullet.

As our country slowly recovers from its recent economic tragedy, we should appreciate the role that sustainable forests and the wood industry already play in Kentucky's economy and job growth. According to a University of Kentucky study, the total economic impact of the forest industry in 2012 was $9.92 billion, with direct revenue from the forestry sector of $6.37 billion. This sector was responsible for total employment of 51,928 or 2.7 percent of Kentucky's jobs and $1.25 billion in earned income. This is during a soft economic recovery with slow housing starts. Kentucky is blessed with abundant hardwood forests and ranks as the leading producer of hardwoods in the South. About 75 percent of these forests are owned by private landowners. About half of Kentucky's forests lie in Eastern Kentucky. However, as is typical throughout Kentucky, management of these forest lands is woefully short of producing desirable, high-value hardwood. To produce high-quality lumber, veneer, and staves for the cooperage industry, forests need to be managed or tended like a garden. While the growth and number of trees in Kentucky have increased, the quality of timber has decreased. Many forests have been "high graded" — that is logging in the past has taken the biggest and best and left the rest. This has resulted in low-quality forests with damaged, deformed, or less valuable trees. High-quality trees are important to develop and attract a forest industry and make it profitable. How can Kentucky, especially the mountains, attract, support and sustain a viable forest industry? It begins with the private landowner growing quality trees and practicing economically sustainable forestry.

Out of 168,000 landowners in Kentucky, a small number have developed management plans that will sustain their woodlands and increase their economic benefit. These plans include best practices that address tree planting, repressing destructive invasive species, fire trails, sustainable and eco-sensitive harvesting, water quality enhancement and protection, wildlife habitat improvement, and opportunities for recreation. Money is available on a cost-share basis through the local USDA Natural Resources Conservation Service to implement some of these practices.

The Kentucky Woodland Owners Association (www.kwoa.net) is another valuable resource for landowners as is the Kentucky Division of Forestry which continues to suffer severe personnel impacts because of state budget cuts. These incredibly valuable experts are critical to enhance and foster viable sustainable forests, forest management, and the forest industry. A ray of sunshine, despite the economic stress, the state is restoring the tornado-devastated tree-seedling nursery in West Liberty.

Dr. Greg Kuhns is a pathologist who also helped manage a family farm in Bullitt County that won awards for forest management and wildlife conservation.

Can economical sustainable forestry and forestry practices significantly impact Eastern Kentucky's economy?

An unqualified yes.

-- Greg Kuhns

KWOA is dedicated to promoting economically and environmentally sound forest management.

Visit our Web site... www.kwoa.net to learn more.

For more information log on to www.kwoa.net

Photo courtesy Diana Olszowy

Advice for Woodland Owners of Storm Damaged Woodlands

by Billy Thomas, Steve Gray, Michael Ladd, Kraig Moore, Ron Taylor, Chris Will, and Paul Yielding

Kentucky's woodlands and their owners have experienced many storm events and will face more in the future. While storms typically do not last long, the damage they can cause often leaves woodland owners searching for answers on how to deal with them. Kentucky Woodlands Magazine interviewed a number of professional members of the Kentucky Association of Consulting Foresters, who are on the front lines (along with service foresters from the Kentucky Division of Forestry) in helping woodland owners address storm-damaged woodlands. Most of the consulting foresters interviewed in this article perform the majority of their work in Western and Central Kentucky, where many of the storm events have been concentrated over the last five or so years.

What types of woodland damage are consulting foresters seeing in the woods?

The responses below indicate that the amount of damage can vary in intensity and that not all woodland damage is solely attributable to storms. Another reoccurring theme is that some trees, especially white oaks, are subject to losses in value due to newly developing sprouts (also called epicormic sprouting/branching) on the main trunks of the trees.

Mike Ladd (Ladd Forestry Consulting): The damage to timber from the 2009 ice storm caused a loss of vigor to most of the trees. Losing fifty percent of the tree crowns was devastating to the long-term health. Although most of the trees continued to live, I am beginning to see mortality, especially in the white oaks. Although white oaks are considered to be resilient, the multiple stressors of the last 20 years seem to be too much for white oaks in some regions. I am seeing yellow-poplars with severe dieback in the crowns, which is also a little surprising. Generally, yellow-poplars are good at repairing their crowns. So far, loss to the main stems has been minimal, but of more concern is the increased level of epicormic sprouting on the oaks due to loss of crowns and increased sunlight reaching the main stems.

Steve Gray (Steve Gray Consulting Forester, LLC): There is quite a bit of top and limb breakage, reducing vigor and exposing the heartwood to decay, as well as numerous sprouts on the main stems reducing timber grade. Many trees are still dying as a result of the 2009 ice storm. Every marking job I've done in the Elizabethtown area has trees that died in the last year and others that look like they will die within the next year. Stands vary greatly in the amount of damage they sustained, depending on the temperature during that storm. Some slopes had little damage while an adjoining hillside had lots of damage.

Kraig Moore (Land & Timber Realty, LLC): The counties around the Bowling Green area received some damage from

the ice storm several years ago, but it was relatively light and confined to higher elevation areas. People also forget that in the spring of 2007 we had a very warm March that caused the trees to leaf out earlier than normal. The first week of April saw several days in the low 20s that completely killed the foliage. This caused the trees to spend extra energy to refoliate. Lastly, I have noticed a higher incidence of wind damage, specifically trees completely uprooted. This is more prevalent in the mature stands I see.

Ron Taylor (RL Taylor Forestry Consultant): In addition to wind and ice damage, I see many signs of past logging damage, insect, disease, and fire-damaged timber.

Chris Will (Central Kentucky Forest Management, Inc.): Often the problems I see in the forest are the result of more than one type of damaging agent. For example, old fire damage may be present in mature or over-mature trees, then the forest stand is hit by high winds. As a result, trees uproot or snap off above ground. Often old fire wounds and cubical rot are revealed in these broken stems. Over recent years we have had some extensive damage caused by freezing rain or glazed tree crowns that break under the weight of the accumulating ice. Site aspect and topography usually play a role in the severity of the damage. However, trees with large grapevines growing in them can sustain more damage to the tree's crown as a result of the additional weight of the vine.

Trees that are already damaged are much more susceptible to failure during storm events. To minimize storm damage to your woodlands strive to keep them healthy.

Photos courtesy: Chris Will

Paul Yielding (Cumberland Valley Forestry, LLC): I see lots of trees that have damaged crowns. Most have put out brushy epicormic branches where larger limbs have broken off. Rot will likely move down from the broken stubs. Also, I have seen trees that I thought had recovered die in the last couple of years. More sunlight on the forest floor from broken crowns has created a dense understory jungle of briars (mostly blackberries), pilewort/fireweed, ragweed, etc. in some stands.

How did you assist your clients with timber casualty loss claims?

Consulting foresters are uniquely positioned to assist woodland owners when it comes to dealing with timber casualty loss claims. For more information on this somewhat complex subject, visit www.timbertax.org/getstarted/casualty/timbercasualty/.

Photo courtesy: Susan Fox

Foresters can help you to evaluate the extent of damage to your trees and woodlands and advise you on appropriate steps to take.

Mike Ladd: Following the 2009 ice storm, I completed several ice damage casualty loss appraisals. After watching the results in the woods for the last five years it seems to me that most of the claimed "loss" still has not occurred as the merchantable portion of many trees still retain most of their value. In the meantime, the market has improved remarkably. So, the non-growing 16-inch diameter sweetgum with only a few little limbs remaining has increased from $14 to $19. Was there a casualty loss?

Kraig Moore: I had several calls about casualty loss, but did not end up doing any significant reports for landowners. The laws for casualty loss indicate that in order to claim a casualty loss the landowner must first make every effort to harvest and salvage the trees. Most landowners in my area did not have significant enough loss to have a harvest.

Chris Will: Casualty losses caused by storm damage may allow a landowner to claim a deduction on their federal income tax return, but the specific situation of that landowner must be weighed against the cost of an appraisal of the affected forest. It is important to have a basis in the timber to determine what was lost in the damaging storm.

What is timber basis and why is it important?

Few woodland owners have a good understanding of the "basis" concept and why it is important. In addition to the excellent responses below, you can learn more about this concept by visiting www.timbertax.org/getstarted/basis/.

Mike Ladd: Many of my clients are beginning to see the value of determining a cost-basis on their timber. If I buy one stock of "Big Company" for $20, and three years later, sell it for $30, my profit is only $10. The "cost-basis" of the stock was $20. It is similar with timber. If a client buys timber that is valued at $500 per acre and sells selected timber five years later for $600 per acre, the profit is $100 per acre. This is a simple explanation, and tax experts should be consulted for assistance. Basically, establishing a cost-basis can help most people with long-term tax savings. The cost per acre for a consulting forester to establish the basis may range from $5 to $10, depending on the conditions involved with a person's particular woodland.

Kraig Moore: Basis is the book value of the timber at time of purchase. It is important because it will help in offsetting capital gains taxes when a timber sale is conducted. Also, do it right away. I get calls to do it 10 years after purchase and a lot of assumptions have to be made to determine value.

Chris Will: Most forest landowners own their woodlands as an investment and therefore, the cost of the land and timber is considered basis. The timber basis is reduced either voluntarily through a timber harvest or involuntarily through storm damage or other sudden loss. An involuntary reduction in timber basis may result in a tax break for the landowner. However, salvage values, if a salvage sale is possible, must be considered in the loss calculation.

What general advice do you have for woodland owners when it comes to dealing with storm-damaged woodlands?

Mike Ladd: Initially, my advice to landowners experiencing storm damage is to avoid panicking. Wildlife has tended to appreciate the changes following the 2009 ice storm. In fact, I have noticed a remarkable increase in oak regeneration in many areas. Timber values will wait for good decisions. Even following a tornado, downed trees often retain value for several months. Acquiring information on timber markets and seeking professional help in selling damaged timber is advantageous in most circumstances. Sometimes it is necessary to mix some of the severe damage with less-damaged timber to give the potential timber buyer some margin for profit, even if the tornado damaged timber is badly damaged. Full disclosure during the marketing is important. In all cases, it is critically important to allow the logger to only cut timber they believe is safe to cut. Safety is the highest priority.

Photo courtesy: Ray Campbell

The ice storm of 2009 had widespread impacts on Kentucky's woodlands and we are still dealing with the aftermath.

Steve Gray: In stands with significant damage I see no way that those stands will recover. The good thing is that the top breakage let in enough sunlight to allow excellent oak and yellow poplar regeneration. Waist high to head high oak saplings are now the norm in most of the damaged stands. I'm recommending regeneration harvests in heavily damaged stands, particularly now that the low-grade market has improved.

Kraig Moore: Watch your woodland closely, as allowing your timber to become over-mature increases the likelihood of big losses. My experience selling tornado-damaged timber is it brings about 25 percent less. If you find you have bad storm-damaged timber, get someone out quickly to commit to cutting the trees. Once buyers cut a few storm-damaged tracts, they don't want to fool with them.

Photo courtesy: Jeff Stringer

Storm damaged woodlands often create hazardous situations in woodlands including broken branches that can unexpectedly fall.

Ron Taylor: Uprooted or broken trees are high risk because of unseen or difficult to see damage, such as windshake (partial to complete separation of the annual growth rings in a tree), which can significantly degrade a tree's value. Harvest cost and harvest time can skyrocket, especially on steep slopes because the area is difficult to access. The stumps, when cut from the bole, can stand up, bust loose, and roll downhill or flip over on the logger, especially on steep slopes. The danger and safety risks increase because of the inability to move around, bent trees or limbs, tangled piles of trees (often with high tension), overhead loose limbs ready to fall, etc. Because of these risks, scale sales—or selling on the shares—is often the only way purchasers will buy large areas of damaged trees. Also, local markets can get flooded, with large-storm or timber-damage events resulting in very poor markets, so those who act fast may get a better price.

Chris Will: Severe weather and storms are normal and regular occurrences in Kentucky. The best strategy is to keep management plans up to date and identify and address potential problems in advance. Reread your management plan and discuss with your forester his or her recommendations for improving the health and vigor of your woodlands. A healthy forest is more resistant to storm damage.

Paul Yielding: Don't panic or despair. Even though we will see effects of the ice storm for years to come, our woods will recover. Call a Kentucky Division of Forestry service forester or consulting forester if you have concerns, and get their advice.

We appreciate these professional members of the Kentucky Association of Consulting Foresters for sharing their insights regarding the types of storm-related damage they have seen in Kentucky's woodlands and the advice they have for woodland owners who are forced to deal with storm-damaged woodlands. Remember that well-managed, healthy woodlands are your best defense against storm damage, and foresters across the state are available to work with you. Consulting foresters with the Kentucky Association of Consulting Foresters can be found at www.kacf.org and service foresters with the Kentucky Division of Forestry can be found at http://forestry.ky.gov/regionaloffices/.

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Steve Gray, Michael Ladd, Kraig Moore, Ron Taylor, Chris Will, and Paul Yielding. *Consulting foresters with the Kentucky Chapter of the Association of Consulting Foresters. For more information visit www.kacf.org*

Storm-Damaged Timber Resources

The past several years have been hard on our woodlands. Whether an ice or wind storm, or tornado our woodlands have suffered some losses. What about your woodlands? Would you know where to get help when or if you needed it? Below are some resources to help you with your timber damage issues. We encourage you to utilize these resources whenever you experience storm damage to your timber. Visit **www.kytimberdamage.net** for the following resources:

Photo Guide: The photo guide contains images of a variety of storm damage on common Kentucky trees. Estimates are provided for each photo regarding the loss of timber value, if timber should be salvaged and when, and an evaluation of the trees potential for long-term management.

Webinars: Dr. Jeff Stringer recorded a webinar on ice damage. He addresses safety in your woods, how to deal with damaged timber, and long-term woodland health.

Publications:

Storm Damage-Timber Salvage Decisions - helps you make decisions regarding timber losses associated with storm damage. If timber value loss is significant, a salvage operation may be warranted as well as claiming a tax loss.

Storm Damage - Safety in the Woods - gives you tips on keeping yourself safe in woods that have been damaged due to storms while clearing tree debris from roads, trails, and fences.

Ice Damage - Managing Woodland Damage and Health - gives you information on overall woodland health and the effects of ice damage on long-term woodland health and management.

Kentucky Woodlands Magazine:

Articles range from a photographic guide that can help you assess tree damage to determining timber casualty loss can be found in the Kentucky Woodlands Magazine. These articles are also on the kytimberdamage.net website. For other articles pertaining to woodlands in general visit kentuckywoodlandsmagazine.org

What Other Resources Are Available to You?

Kentucky Division of Forestry (KDF)
Contact the Kentucky Division of Forestry for assessment of woodland timber damage. Service foresters can assess damage and develop a Stewardship Plan to help manage short and long-term forest health. Visit http://forestry.ky.gov/ for more information.

Kentucky Association of Consulting Foresters
Consulting foresters can provide assistance with salvage harvesting and casualty loss deductions.Visit www.kacf.org for more information.

County Cooperative Extension Offices
If you need publications or assistance contacting a KDF or consulting forester, go to your county Cooperative Extension Office for assistance. Visit www2.ca.uky.edu/county for more information.

For more information, call UK Department of Forestry Extension at 859.257.7597 or visit www.ukforestry.org

www.kytimberdamage.net

Understanding the Certified Supply Chain

by Jeff Stringer

Editor's Note: Part one of a series focusing on how woodland owners can benefit from certification.

Part 1:Understanding the Certified Supply Chain

Forest certification can lead to increased assistance for woodland owners and potentially improve management and financial benefits. Regardless of the woodland owner's motivations and interests, the costs and financial benefits of certification often plays an important role in either pursuing or maintaining certification. While woodland owners can benefit financially from certification in several ways, the most common is through premiums paid for certified wood (veneer logs, saw logs, pulpwood, etc.). The amount of the premium is based on the local demand for certified wood and is ultimately driven by the sale of products that carry a certified label. Understanding the flow of certified wood into the manufacturing of certified products and what drives local demand for certified wood can assist woodland owners in making wise decisions about certification.

Forest Management Certification – the start of the supply chain

The flow of wood from the forest to the finished product is often described as a supply chain. The first requirement of a certified supply chain is a certified forest. In the United States, the majority of certified forests (woodlands) are certified through the American Tree Farm System (ATFS), developed primarily for family owned forests in the United States, the Sustainable Forestry Initiative (SFI), primarily (although not exclusively) for industry lands in North America, and the Forest Stewardship Council (FSC) a global forest certification program. Forest certification is termed "forest management" or "FM" certification.

More than one FM certification program exists because forest certification is not mandatory or government run; it is functionally a market-driven system. As a result, several organizations have responded with their own FM certification programs and standards. All programs were developed to ensure sustainable use of the forest. However, different components of sustainability are emphasized in the programs. What certification program a forest owner chooses will most likely be based upon two factors: what program best fits their management objectives and, most importantly for the majority of family forest owners, the local demand for either ATFS or FSC wood. Before discussing this demand, it is important to understand how wood produced in a certified forest flows into the supply chain that is ultimately used to make a certified wood product.

The Certified Supply Chain – the importance of chain of custody

Regardless of whether the forest is ATFS, SFI, or FSC certified, when the wood is cut and hauled, it becomes part of the supply chain of certified wood that ultimately can wind up in a certified product. For the supply chain to work, every entity that owns and possesses wood in the supply chain must be certified. This type of certification is called chain of custody (CoC) certification. If a logger buys and cuts certified timber, the logging firm must have a CoC certificate. If the timber is delivered to and purchased by a mill, then the mill must have a CoC certificate. The mill will produce a certified product that will then move down the supply chain. For example, paper can go to a printer, lumber may go to a secondary manufacturer such as a flooring plant or cabinet shop, or chips from a sawmill may go to a paper mill. The industries that buy

Diagram shows movement of wood from FM certified forests through appropriate CoC certified industries to final product. [Logo's and labels are unofficial and used for diagrammatical and educational purposes only.]

these certified products also will have to possess a CoC certificate. As indicated above, every industry that owns and takes possession of the wood (either in the form of a log or a wood product) must have a CoC certificate[1]. If even one entity that owns and possesses the wood from the stump to the final product is uncertified, then the chain of custody is broken and the final product cannot be designated or labelled as certified. This intact chain of custody is important, because it is proof that the amount of finished certified wood product matches the amount of wood harvested from certified forests. Ultimately, the combination of FM and CoC certification with intact chain of custody validates the claim that certified wood products are special, coming from wood that was produced responsibly with the use of scientifically based management that protects the environment and ultimately society.

Chain of Custody Certificates and Industry Demand

Both SFI and FSC offer CoC certificates. A third program, operating internationally, called the Programme for the Endorsement of Forest Certification (PEFC), also offers CoC certification. Mills that have an SFI or PEFC CoC certificate must use wood grown in an SFI or ATFS certified woodland. These mills will produce a product that will be designated as an SFI or PEFC product. Mills that have an FSC CoC certificate must use wood from an FSC certified forest to produce a certified wood product. In this case, it will carry an FSC designation. It is important to note that both woodland owners and forest industries can hold more than one type of certificate. For example, woodland owners can be dual certified, having a certificate from both ATFS and FSC. Industries can do likewise, having both an FSC and SFI or PEFC CoC certificate.

Whether industries have multiple certificates or what certificates they have depends on their customers' demands. The latter is an extremely important point. If an industry has no orders for certified product and since it costs money and time to maintain CoC certification, the industry may never become certified. If an industry has enough orders for SFI, FSC, and/or PEFC certified product then, the industry may make a decision to obtain certification. If they only get orders for FSC products, they may choose to get an FSC CoC, and likewise, if their customers are only looking for SFI material, they may choose to get an SFI CoC certificate. The same holds for PEFC. They could also obtain more than one certificate and maybe all three. Also the supply of certified wood in their procurement area will factor into their decision. If there is a limited supply of the type of certified wood they need, they may forgo obtaining a CoC certificate. Once they become certified, the amount of certified wood required to fill their orders is balanced against the available supply of certified wood to determine whether they need to pay a premium for purchasing certified timber or pulpwood. If there is a shortage of certified timber and they need it, they may provide a premium. Ultimately, it is a function of supply and demand for certified wood. None of this is widely publicized nor typically can it be found on the Internet or other published sources of information. Currently, the forest industry's interest in certified wood is dynamic and changes from one location to another. The best source of this information is a local forester or logger who has knowledge of local markets and is interested in certified wood.

[1]There are situations where the wood may be owned but not possessed or possessed and not owned. For example, there are brokers who purchase but do not take possession of the wood, and in some programs they may be able to work under another industry's CoC certificate. Truckers, for example, may take possession of, but not own, the wood they haul, as is the case with loggers who are contracted to cut wood. They do not own it and do not need a CoC certificate.

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Kentucky Champion Tree Program

Kentucky's Stately Tree: Yellow-Poplar

by Diana Olszowy

Tree photo left and below courtesy: Diana Olszowy

Photo courtesy: Kentucky Division of Forestry

It is not uncommon for native trees to have aliases that vary from state to state, and even from one end of the state to the other. Kentucky's state tree is referred to as the tuliptree, tulip poplar, whitewood, fiddletree and, to the forestry community, yellow-poplar. All these nicknames can be confusing, as the tree is not a true poplar but part of the magnolia family and one of the most "stately" trees in Kentucky's forests. The yellow-poplar is a tree that, with little effort, grows 70-90 feet high and averages 48-72 inches in circumference. Located on Daniel Boone National Forest property in McCreary County, Kentucky's magnificent champion yellow-poplar measures more than 18 feet in circumference and a whopping 163 feet tall, making it the tallest of Kentucky's champions. Yellow-poplar is native throughout the state, and its natural range extends from Texas to Florida, north to New England, and west to Ontario, Canada.

In Eastern Kentucky, specifically in the Appalachian Mountains, yellow-poplar is one of the dominant species. Its fast, straight growth pattern, often with no limbs until 80-100 feet in height, makes it a valuable timber tree. Yellow-poplar grows best in moist but well-drained soils and is often found in pure stands or will grow with white oak, black walnut, hickory, basswood, and black cherry. Two features of yellow-poplar give it the nickname of "tuliptree," one being the characteristic four-lobed leaf resembling the tulip's silhouette and the other being the large, showy, tulip-shaped flowers. The unusual fruit (cone-like aggregate of samaras), which remains on the tree during the winter, make it an easy tree to identify.

Photo courtesy: Karen A. Rawlins, University of Georgia, Bugwood.org

This champion tree is not the easiest one to take photos of because it is approximately 150 feet down a cliff in a gorge that is surrounded by downed trees and large boulders.

Kentucky's state tree, the yellow-poplar, is readily recognized by its large flowers in the spring and the residual fruit that remains after leaf fall. In addition to being the state tree of Kentucky the yellow-poplar is also the state tree of Indiana and Tennessee.

The wood is used for furniture, plywood, structural framing, interior trim, and in the south, pulpwood. Early settlers used the wood extensively in building and made home remedies from the inner bark of the roots while the Native Americans made their dugout canoes out of the trunks. The flowers provide a significant amount of nectar, making them a popular bee tree. It is commonly recommended as a shade tree; its tall and rapid growth is a function of its shade intolerance. If planted in full sun, the species tends to grow shorter and rounder making it adaptable to landscape planting where it provides good shade and is attractive in all seasons.

Whether you call this species tuliptree, tulip poplar or yellow-poplar, it is still one of Kentucky's most "stately" trees.

Photo courtesy: Frank Bonner, USFS (ret.), Bugwood.org

Kentucky's state champion yellow-poplar is the tallest of all state champion trees at a 163 feet.

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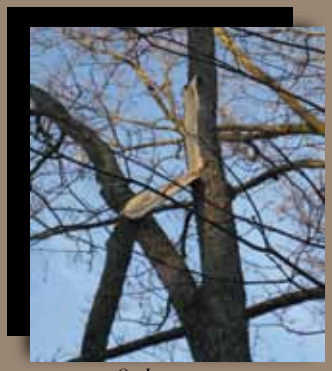
Test Your Knowledge

Submit your answers at www.ukforestry.org The randomly selected entry of those with the most correct answers will receive a free copy of Identifying Kentucky's Forest Trees.

1. Trees have different growth patterns that influence how well they are able to withstand storm damage. Some tree species have fast growth patterns that enable them to recover from significant branch loss while others are unable to respond as well. Which of the following trees are most likely to be able to recover from storm damage?

a) Shagbark hickory
b) White oak
c) Yellow-poplar



Hint: See article on page 1.

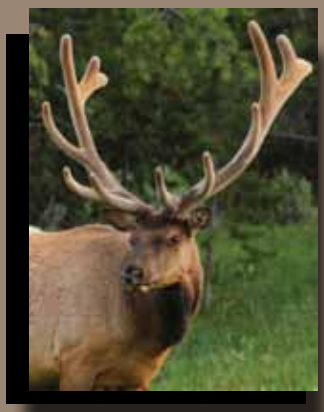
2. Forty-one species of animals and plants have been listed as endangered or threatened in Kentucky. The majority of those species belong to one group. Which group of species below is most endangered or threatened in Kentucky?

a) Darters
b) Mussels
c) Bats
d) Wildflowers

Hint: See article on page 5.

3. Kentucky's elk population is estimated at 10,000 – 12,000. When the elk restoration started in 1997 the objective was to grow the herd to 10,000. Kentucky's current elk population got its start when more than _____ elk were released in southeastern Kentucky from 1997 to 2002.

a) 250
b) 500
c) 1,000
d) 1,500



Hint: See article on page 10.

4. The Kentucky Champion Tree Program article features yellow-poplar in this issue. Yellow-poplar is the state tree of Kentucky and a couple of other states as well which speaks to its abundance throughout its range. (The Kentucky coffeetree is the state heritage tree.) Which state does NOT have yellow-poplar as its state tree?

a) Missouri
b) Tennessee
c) Indiana

Hint: See article on page 22.

CFWC
Center for Forest & Wood Certification

Hint: See article on page 20.

5. Forest certification for family woodland owners can enhance management assistance and potentially increase financial return on the sale of certified timber. The premium that might be available to an individual woodland owner is based largely on what?

a) Global demand for certified wood
b) National demand for certified wood
c) Local demand for certified wood

Scan this code with your smartphone or tablet device to submit your answers.

kentucky WOODLANDS

Emerald Ash Borer Quarantine Extended Across the Commonwealth

As of April 3, quarantine regulations for the emerald ash borer (EAB) changed in Kentucky to include the entire state. This Federal Order directly affects the wood and nursery industries because it regulates the interstate movement of ash nursery stock, green lumber, waste, compost, and chips of ash species, plus firewood of all hardwood species. While it is likely that the insect is present outside the original quarantine counties, the entire state is not infested at this time.

More than 20 states have partial or full quarantines on EAB including Kentucky which now has a statewide EAB quarantine.

You can report suspected infestations to the Office of the State Entomologist or your local Cooperative Extension office for confirmation. New findings will be posted on the Kentucky Emerald Ash Borer page: http://pest.ca.uky.edu/EXT/EAB/welcomeeab.html; you can also find the latest insecticide options for protecting ash trees from the EAB on that page too. Continued watchfulness by all will be necessary to limit the spread of this serious invasive insect.

Getting Financial and Technical Assistance from the Natural Resources Conservation Service

The Kentucky Natural Resources Conservation Service works with the Kentucky Division of Forestry and the Kentucky Department of Fish and Wildlife Resources on a number of programs that help Kentucky woodland owners practice solid conservation and management of their woodland property. A new website has been developed to aid woodland owners in getting assistance in establishing conservation practices on their land. You can learn more about it by visiting www.nrcs.usda.gov/GetStarted or discussing it with your forester or wildlife biologist.

Kentucky Spring Forest Fire Season

Since the first of the year there have been more than 1,206 wildland fires that burned more than 36,000 acres. The majority of the wildland fires have been classified as arson. Unfortunately, forest fires are a continual threat to Kentucky's woodlands and their owners. If you have information or witnessed suspected arson activity please call the nearest Kentucky Division of Forestry office, Kentucky State Police post or the Target Arson Hotline at 1-800-27-ARSON. Outdoor burning can lead to wildfires. Before conducting any outdoor burning, citizens are advised to be familiar with the applicable regulations. Wildfires are less likely during the summer months but can still occur if conditions are dry. For more information about fire hazard seasons, outdoor burning laws and safe burning practices, visit the Division of Forestry's Web site at http://forestry.ky.gov.

Upcoming Dates To Remember:

Date:	Event:	Location:	Contact:
June - Nov., 2014	Kentucky Master Logger 3-Day Program Offerings	Across the state through Nov.	http://dept.ca.uky.edu/masterlogger/3_day_program.php
August 9, 2014	West Region WOSC	Crittenden County	www2.ca.uky.edu/forestryextension/WOSC.php
August 16, 2014	Central Region WOSC	Boone County	www2.ca.uky.edu/forestryextension/WOSC.php
August 23, 2014	East Region WOSC	Knox County	www2.ca.uky.edu/forestryextension/WOSC.php

NEWS TO USE

2014 Kentucky Woodland Owners Short Course – Register Now

Mark your calendars and make plans to attend the 2014 Woodland Owners Short Course (WOSC). The WOSC is returning again this year to help woodland owners learn the fundamentals of woodland management and get them connected to the wide variety of organizations and programs available to help them care for their woodlands.

Two concurrent tracks, Gold and Green, target either the seasoned woodland owner or those who are just beginning. Landowners who might just have acquired woodlands or who are beginning to think about management and wondering what their options are should enroll in the Green Track, while more experienced woodland managers can register in the Gold Track. Past graduates of the short course will also find valuable information by returning to the course through the Gold Track. Depending on the track and the region, sessions will cover such topics as tree identification; woodland management; wildlife management; woodland health threats; forest certification; riparian buffers for water quality; native warm season grasses; and timber sales to name just a few. For more details and to register please visit www2.ca.uky.edu/forestryextension/WOSC.php or call 859.257.7597.

Reneé Williams Honored by KFIA as Communicator of the Year

Reneé Williams, Information Specialist with Forestry Extension at the University of Kentucky Department of Forestry, was recently honored as the 2013 Kentucky Communicator of the Year at the Kentucky Forest Industries Association (KFIA) 49th Annual Meeting. Dr. Jeffrey Stringer with the University of Kentucky Department of Forestry nominated her for the award. She is responsible for layout, design, and distribution of all educational and programming communications including hardcopy, digital, and web based materials for UK Forestry Extension including the design and layout of the award winning Kentucky Woodlands Magazine as well as serving as webmaster for www.ukforestry.org and other University of Kentucky Forestry websites.

Reneé was also a significant contributor to the success of the 2013 Wood Expo held in Lexington, Kentucky. She assisted KFIA staff with publicity for the event and worked tirelessly to develop local news and media interest. This ultimately resulted in spreading the word about the importance of the wood industry to Central Kentucky an important region of the state that does not normally see the presence of the forest industry.

Survey Says...

Thanks to all the 390 individuals that completed the Kentucky Woodlands Magazine survey. Respondents own 55,835 acres of woodlands in 109 of Kentucky's 120 counties. More than 84 percent of the respondents indicated they had used information from the magazine in the care of their woodlands and 80 percent indicated they had shared the magazine or something they had learned in it with others. We also received numerous suggestions for some great topics that we plan to cover in the future. Thanks again to everyone that took the time to complete the survey. If you did not get a chance to share your feedback or suggestions please send them to forestry.extension@uky.edu.

Test Your Knowledge Review

Answers from KWM Vol. 8 Issue 3

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

Congratulations to T. Ratliff of Fleming County who was randomly chosen from the entries from the last quiz. He will receive a free copy of Identifying Kentucky's Forest Trees.

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KWM on-line version at *www.ukforestry.org*

Register now:

Woodland Owners Short Course

August 9 - Crittenden County;
August 16 - Boone County;
August 23 - Knox County

See inside for details.