

# BRANCHING OUT

Maryland's Woodland Stewardship Educator



University of Maryland Extension – Woodland Stewardship Education  
<http://extension.umd.edu/woodland>



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## Helping Young Forest Wildlife

There is a lot of concern about enhancing blocks of unbroken older forest habitat for forest interior birds, but only recently has the plight of the 60-80 species of young forest wildlife been recognized. These are a group of wildlife species that require sapling and seedling habitat found in recent harvest areas or dense thickets. Unfortunately, over 60% of Maryland's woodland are mature, a percentage that continues to increase. This continues to fuel the decline of young forest wildlife, but there are a variety of ways to provide needed habitat.

### American Woodcock

The American woodcock is the poster child for young forest wildlife species as its decline has been well documented. The woodcock feeds primarily on earthworms in moist rich soils and has a unique flap at the end of a long bill to harvest the worms. It requires habitat with dense regenerating vegetation, much of it only 5-10 years old, known as *young forest habitat*. The woodcock is known for its unique courting display of flying and singing. (See [this YouTube video](#) for an example). Singing ground surveys of woodcock in the Eastern U.S. since 1969 have documented reductions of about 2.5% a year, but the downward trend in Maryland has been tempered by the habitat management practices implemented on MD DNR state forest and wildlife management areas. DNR has received a lot of help from non-profit wildlife conservation organizations, such as the American Woodcock Society and Ruffed Grouse Society, in their management practices.



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### Habitat Management at Green Ridge

Habitat management is hard to understand unless you see it. That is exactly what 19 woodland owners and managers did on June 26 during a field tour at Green Ridge State Forest Kirk's Orchard & Anthony's Ridge Wildlife Management areas. Standing before a thinned forest, Mark Beals, Green

Ridge Forest Manager, explained how the management was targeted to improve habitat for the golden-winged warbler, a young forest species of special concern



found at higher elevations in western Maryland. Most of the trees in the young oak forest were removed to a stocking level that opened the canopy to stimulate growth of ground vegetation for habitat, while assuring the canopy would close in 3-5 years and provide quality forest products.

The group also visited an 8-acre harvest area previously covered with a declining white pine plantation, now harvested and planted with spruce saplings to someday provide high quality winter cover close to the ground. In the meantime, the herbaceous and woody vegetation will provide prime habitat for many years for young forest wildlife species such as the American redstart, blue-winged warbler, white-throated sparrow, Appalachian cottontail, Alder flycatcher, wood turtles.

### Tall Fescue is No Friend to Wildlife

Many landowner have old pastures or fields that they think provide good wildlife habitat, but if the main vegetation is tall fescue (K31 is common), they may be surprised to find fescue is not very useful. Much of it is

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infected with a fungus *Acermonium coenophialium*, that causes fescue toxicosis in cattle, horses, and sheep. Wildlife such as deer, rabbits, quail, and some small mammals and songbirds are also known to be

adversely impacted. Past studies have shown that rabbits and quail, feeding solely on infected fescue and its seed, exhibit high mortality rates within two weeks.

Tall fescue is an exotic, cool-season grass that begins growing early in the year, which makes it great for livestock and hay. It forms a dense, low-growing mat, which prevents other seeds from germinating. It also produces compounds that inhibit the growth and germination of surrounding plants. These same characteristics make tall fescue poor wildlife habitat, since the sod-forming grass limits the foraging ability of ground-nesting and ground-feeding wildlife. For example, young turkey poults rely on foraging for protein-rich insects early in the spring, but the mat of fescue make that very difficult. The solid monoculture of fescue reduces that ability of many wildlife species to select a diverse and nutritious diet. And the absence of structural and plant diversity limits its potential to provide quality nesting and foraging habitat. It does hold up well against snow, which limits its ability to provide protective winter cover.

#### *Renovating Old Fescue Fields*

So what is a landowner to do? Young forest management practices at Green Ridge State Forest called for renovating the existing fescue fields by killing the grass using conventional tillage or with a broadleaf herbicide, and then replanting it with a mix of pasture grasses, including warm season grasses.

Warm season grass/forb mixtures are a better option because they have a clumpy structure that allows movement by wildlife in the early spring, followed by vegetation growth in the warmer months. However, that was only the first step for Green Ridge managers. Next, they cut back the trees and shrubs along the field edge about 50 feet to feather it and provide a diversity of vegetation for many years. Unfortunately, some fast growing species like black locust and ailanthus will sprout back very quickly, so it is a good idea to treat the stumps after cutting with a herbicide such as glyphosate to eliminate resprouting and maintain the low growing vegetation for a longer period of time. Over the next few years, the edge become a brushy area where wildlife can find escape cover adjacent to the field that has cover with access to high protein sources found in insects and seeds.

To maintain the field and encourage warm-season grasses the field is burned in the spring every few years to rejuvenate the vegetation. The photo at right shows the fireline installed to contain the fire.



The MD DNR Forest Service has made great strides with the management of young forest habitat at Green Ridge State Forest. Similar efforts are underway at other state forests and DNR Wildlife Management areas as well.

#### *Getting Some Help*

Regardless of whether you are a small acreage owner considering how to convert a field to natural area, or a person with existing woodland, you need to get some professional assistance or obtain some suitable information. If you have a forest stewardship plan prepared by a licensed professional forester, they can provide some recommendations. The resources below provide some places to get more information on habitat practices and possible assistance.

- The Young Forest: [www.youngforest.org](http://www.youngforest.org)
- The Appalachian Mountains Young Forest Initiative: <http://timberdoodle.org/appalachian>
- The Ruffed Grouse Society: [www.rgs.org](http://www.rgs.org)
- Quail Unlimited: <http://www.qu.org>
- Wildlife Management Institute: <http://wildlifemanagementinstitute.org>

The [Woodland Stewardship Education website](http://www.wildlifemanagementinstitute.org) also has some useful resources.

### **First Forestry Friday Well Received**

Field tours and workshops for woodland owners and managers are a unique opportunity to learn and see wildlife and forest management practices. Saturdays are a traditional time to offer programs, but it has become challenging to attract landowners to Saturday events due to higher-priority sports, recreation and other family activities. As an alternative, the University of Maryland Extension offered its first *Forestry Friday* program on June 26 with a field tour of young forest wildlife management at Green Ridge State Park. Surveys indicate that many woodland landowners are willing to take off part of a Friday to attend an educational event, rather than give up a Saturday with family and friends. The attendance at the program was encouraging, so look for some more *Forestry Friday* educational offerings in the Events calendar and on our website.

## Save the Date! Next Forestry Friday Set for August 28

The next *Forestry Friday* workshop will be held August 28 from 1:00 PM to 4:30 PM at the Western Maryland Research and Education Center in Keedysville, Maryland. The topic is "Forest Tree & Shrub Identification."

Identifying trees and shrubs is a real challenge to woodland owners who want to learn more about what is growing on their property, and who want to carry out management activities. To control invasive species, thin the woods, or cut firewood, you want to make sure you are treating the right plant and not harming more desirable ones.

This workshop will provide a tree identification book and easy-to-use key to help you figure out what it what, along with samples and field identification of trees found at the Western Maryland Research & Education Center. Instruction will cover leaves, bark, form, location and other factors that will help you identify trees.

The instructor, Jonathan Kays, Natural Resource Extension Specialist with the University of Maryland Extension, will share some tricks and shortcuts to aid in telling those oaks apart and other common sources of confusion.

The cost of this workshop is \$5 per person. Register through Eventbrite by going to

<https://umeforestryfridaytreeandshrubid.eventbrite.com>

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## WSE Webinar on September 17th

The next offering in the Woodland Stewardship Education Webinar series will be held on Thursday, September 17th at 12 noon. The webinar will feature University of Maryland Extension Forest Stewardship Educator Lyle Almond. His presentation, "Nature-based Forestry: The Pro Silva Movement in Europe" will provide an overview of the movement that is sweeping across the continent. The Pro Silva movement promotes continuous cover forestry, which mimics natural forest stand development for optimizing social, ecological, and economic benefits. The webinar will include Almond's first-hand experience through his work in the nation of Slovenia.

The webinar will be conducted through Adobe Connect and will be free of charge. Additional information and how to register at the Events Calendar on the WSE website at <http://woodlandwebinars-prosilvamovement.eventbrite.com>.

## What a Deal! General Forestry Course Discounted for Fall 2015

The University of Maryland Extension will offer the **General Forestry Course** for the Fall 2015 semester. Both the paper and online versions are available. The course begins September 1 and runs until December 15, 2015.

**Registration opened July 1. To register, go to our website at <http://extension.umd.edu/forestry-course>.**

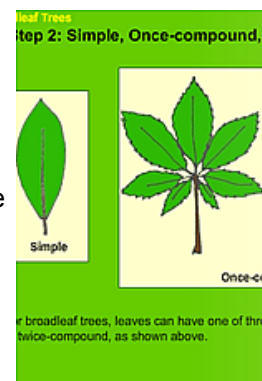
As there are no formal classes, you work from the comfort of your home using your own woodlot, a friends or a public forest. You will learn how to protect your trees from insects, diseases and fire. Step-by-step procedures will walk you through a forest inventory and stand analysis. The course also includes the details of the forestry business, including tax nuances and the sale and harvest of forest products. Ultimately, the course exercises help you develop the framework for a management plan for your forest.

The cost for this forestry course is normally \$300. However, we are offering the course at a \$25 discount during the month of July, so it only costs \$275 through July 31.

The cost goes up to \$300 during the month of August. Late registration (September 2-14) is \$400. Included in the cost are copies of the supplemental readings: *A Sand County Almanac*, *The Woodland Steward*, *American Forests: A History of Resiliency and Recovery*, and a small pamphlet entitled "What Tree Is That?" The paper version text and appendices are in binder form. Online users receive a flash drive of the paper version of the text and appendices. A certificate of completion is awarded when all assignments are completed.

But don't take our word for it. See it for yourself on our website at <http://extension.umd.edu/forestry-course>. There you can read a lesson from the text, view an interactive exercise, read through detailed course information and FAQs.

For more information, contact Nancy Stewart at the University of Maryland Extension, Wye Research and Education Center, P.O. Box 169, Queenstown, MD, 21658; phone 410/827-8056, ext. 107; or email [nstew-ar1@umd.edu](mailto:nstew-ar1@umd.edu). Remember, the discount is offered during *July only*. Check for details on our website today and mark the date for open enrollment on your calendar!



## Do You Have a Fire Safety Plan for Your Woodlands?

George Hurd, Environmental/Resource Development Educator, Penn State Extension

One of a forest landowner's greatest dangers is a wildfire. Is your forested property in a condition that could survive a wildfire? Could firefighters easily get to a wildfire on your property? Do you have a plan that includes maps and details of exact locations for access and water supplies? Regardless of the season, conditions often prevail that allow wildfires to start. Wildfires can occur in any month, at any time of the day, destroying valuable woodlands and wildlife habitat. Droughts and dry conditions at various times of the year increase the risk for wildfires. Careless use of fire in wooded areas can also increase the chance of a wildfire, which can then quickly spread and threaten homes and human lives.



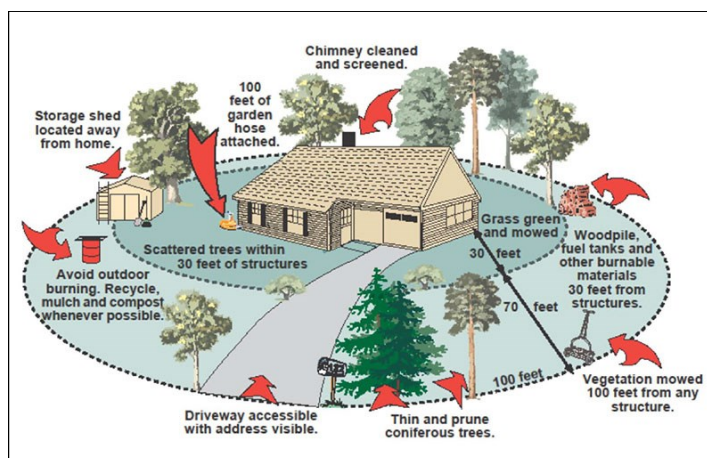
Whether you own a few acres or thousands, there are steps you can take to help reduce the potential for wildfire damage on your property while improving overall forest health and wildlife habitat. You can also help ensure firefighters are able to attack and extinguish any wildfires that do occur.

Roads provide critical access to your property so firefighters can extinguish wildfires while they are still small and do the least damage. According to the Pacific Northwest Extension Publication, "Reducing Fire Risk on Your Forest Property," fire and fuel breaks are more effective if anchored to a good road system. If you live on your forested property, roads also are critical for your escape and for fire-trucks to get to and protect your home. The publication, available on-line, provides proven design criteria for your road system.

The availability of water during fire operations is critical. The location, access points, and availability of all water sources including streams, rivers, ponds, lakes, dry hydrants, water mains, and fire hydrants should be identified and mapped. Water sources are often a long distance from the fire, and it can take a great deal of time and effort to transport water to where it is needed. Additionally, transporting water requires equipment and personnel who could

otherwise be fighting fire. The lack of readily available water can seriously impair the ability of firefighters to do their job in a safe and effective manner.

Many people make their homes in woodland settings or near forests. These rural homeowners enjoy the beauty of the environment but also need to plan to address wildfire. Tips for homeowners in or near woodlands are available at the [FEMA "Wildfires" website](#). For homes in or near woodlands, FEMA recommends homeowners create a safety zone around the home where no flammable materials are kept. Keep this zone clear of dead leaves, branches, and other materials that easily catch fire. Keep the roof and gutters free of flammable debris. Trim branches hanging over the house and trim shrubbery back from around the house. Widen the access road to the home for emergency vehicles in the event a wildfire does begin. Treat any flammable ma-



"Protect Your Home From Wildfire" from *Living with Fire*, [http://www.lcfiresafe.org/docs/Living\\_w\\_Fire2009.pdf](http://www.lcfiresafe.org/docs/Living_w_Fire2009.pdf)

terials used as part of the home or deck with fire retardant chemicals. You should report hazardous conditions that could cause a wildfire. Plan several escape routes away from your home by both car and foot.

Another good information resource for those who own homes in woodlands or are planning to build homes in or near forests is the [Virginia Department of Forestry "FireWise" website](#). This website provides information on landscaping for fire prevention, building a "Firewise" home and even "Firewise" building materials.

To ensure that adequate measures are taken for the prevention and suppression of fire, forest landowners should have a fire safety plan for their woodlands. For more information, visit the Woodland Stewardship Education's "Other Environmental Threats" page [here](#).

# Thousand Cankers Disease Quarantine Area Announced

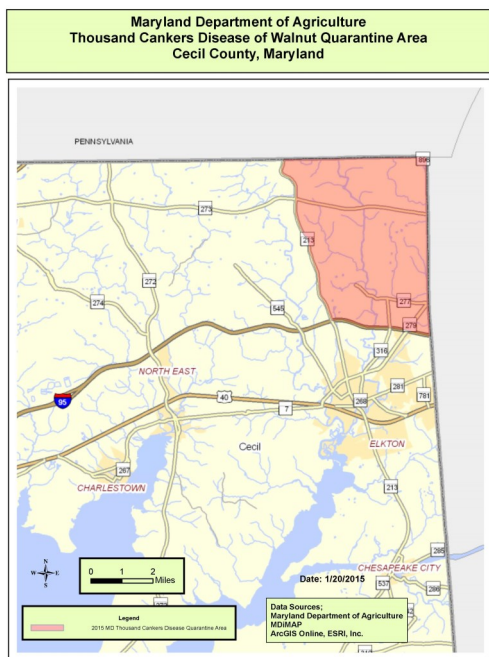
Maryland Dept. of Agriculture

On January 12, 2015, the Maryland Secretary of Agriculture issued a quarantine order making it illegal for anyone to move any walnut material and hardwood firewood out of a 21 square mile area in the northeast corner of Cecil County. The area quarantined is bounded by the Pennsylvania and Delaware state lines, I-95 and MD Route 213. Non-compliance with the quarantine order could result in criminal or civil penalties.

The quarantine is designed to minimize the risk of moving material infested with thousand cankers disease out of the limited action area in Cecil County, and to provide confidence in Maryland walnut products moving into neighboring states from non quarantined areas.

Thousand cankers disease (TCD) is a disease complex native to the western United States that primarily affects black walnut, *Juglans nigra*. This disease is the result of the combined activity of a fungus, *Geosmithia morbida*, and the walnut twig beetle (WTB), *Pityophthorus juglandis*.

The quarantine is designed to prevent the spread of thousand cankers disease, which was discovered in the Fair Hill Natural Resource Management Area where surveillance traps were set to detect the walnut twig beetle. This is the only detection of the disease in the state. The trap site where the beetle was discovered has tested positive for the walnut twig beetle for the past two years. The fungus was detected in 2014 in trap logs set by MDA at the site where the beetles were detected. MDA's Forest Pest Management and Plant Protection sections along with the Maryland Department of Natural Resources and University of Maryland Extension have been working to survey for walnut twig beetles and slow the spread of thousand cankers disease, for which there is no known cure, since 2011.



“MDA believes the Fair Hill site is an isolated infestation,” said Agriculture Secretary Buddy Hance. “The quarantine prohibits the movement of potentially infested material out of the area, and helps to reassure neighboring states that Maryland walnut products do not carry the disease.”

The quarantine restricts the movement out of the quarantined area of all walnut material without a certificate of inspection for this pest, including nursery stock, budwood, scionwood, green lumber and firewood. It also covers other walnut material that is living, dead, cut or fallen, including stumps, roots, branches, mulch and composted and uncomposted chips. Due to the difficulty in distinguishing between species of hardwood firewood, all hardwood firewood is considered quarantined.

Nuts, processed lumber and finished wood products without bark are exempt from the quarantine.

Walnut trees become diseased when walnut twig beetles, which carry the fungus, tunnel beneath the bark of walnut trees, causing small cankers to form. The beetles, dark brown and about the size to a poppy seed, are extremely difficult to detect. As more beetles attack the tree, the cankers increase, slowly starving the tree of nutrients and killing it within 10 years of initial infestation.

Early symptoms of the disease are yellowing of leaves and foliage-thinning of the upper crown of the tree. As the disease progresses, larger limbs die followed by the trunk.

Black walnut trees produce high-valued lumber used in woodworking and furniture-making. The nuts of the trees are consumed by humans and wildlife. Black walnut trees are important in riparian forest buffers which are planted to provide better fish habitat, cleaner streams and a healthier watershed for the Chesapeake Bay.

Since many species of wood-boring insects, including the walnut twig beetle and emerald ash borer, can be spread through transport of infested firewood and logs, campers and homeowners are encouraged to use only locally harvested firewood, burn all of it on-site and not carry it to new locations.

People who suspect they have seen thousand cankers disease or walnut twig beetles should contact their local county extension office or call 410-841-5870 Visit <http://mda.maryland.gov/plants-pests/Pages/tcd.aspx> for more details.

## News and Notes

### USDA Announces Restart of Biomass Crop Assistance Program

On June 1, the USDA announced that incentives for forest owners,



farmers and ranchers interested in growing and harvesting biomass for renewable energy will resume this summer. The incentives are part of the Biomass Crop Assistance Program (BCAP), which was reauthorized in the 2014 Farm Bill. According to the USDA, \$11.5 million will be allocated to support the delivery of biomass through December 2015.

BCAP financial assistance also helps defray costs associated with harvesting and transporting woodland or agricultural residues to BCAP-approved facilities that convert the biomass into energy. Additionally, interested energy facilities can apply for BCAP eligibility.

Interested property owners can submit proposals for BCAP eligibility through the fall of 2015. The USDA will announce the new project areas and enrollments in spring, 2016.

For more information about BCAP, go to <http://www.fsa.usda.gov/programs-and-services/energy-programs/BCAP/index>

### Were on Facebook!



The Woodland Stewardship Education program now has a Facebook page. It's a great place to read about news and notes related to woodland management from across the region and the nation. We'll also share information about upcoming events and articles we think you'd find interesting.

Facebook is free to use, and you don't need to sign up to read the page. However, if you wish to comment or share something on the page, you will need to have a Facebook account.

Find our new page at <https://www.facebook.com/UMDWSE>, or search for "Woodland Stewardship Education program on Facebook.

### Computer Chips Made of Wood?

In a paper published in *Nature Communications* in May, researchers described the construction of computer chips from wood. The team, including electrical engineers from the US and China and the USDA Forest Service's Forest Products Laboratory, wrote about using a thin and flexible wood product called cellulose nanofibril, or CNF.

When a layer of epoxy is applied to CNF, it neither expands nor attracts water as wood normally does. The researchers used CNF as a base layer for electronic circuits in lab tests. They believe that the success of these tests CNF-based chips could lead to biodegradable "green chips" that will reduce the amount of electronic waste that accumulates daily as consumers discard computers, cell phones, and other devices.

Go [here](#) for a summary of the paper by popsci.com.

### Pellet Stove Design Challenge



In 2015 and 2016, the Alliance for Green Heat's Wood Stove Design Challenge will turn its focus to pellet stoves. The competition is tentatively set for the week of April 4, 2016.

According to the Alliance, "In addition to a technology competition, there will be a hands-on workshop for inventors, academics, regulators, industry leaders and non-profits to study and assess innovation in pellet stove design. The selection of the stoves for the competition and the criteria by which to judge them will be set by a panel of experts."

The testing will consist of two rounds. First, the Alliance will follow EPA criteria to test some of the most popular pellet stoves for efficiency and emissions at an EPA-accredited test laboratory. Then the same stoves will be tested at Brookhaven National Lab under conditions that approximate consumer usage. The stoves will also be tested for noise level and ease of cleaning and repair.

For more information, visit the Alliance's website at <http://www.forgreenheat.org>.

## Reintroduction of Bobwhite Quail to New Jersey Habitat

Edward Colimore, Philadelphia Inquirer

Their habitat in the New Jersey Pinelands had been carefully prepared over more than 10 years. Controlled forest fires and tree-thinning opened up the landscape. And tall grasses filled in, providing cover for nests.

Then came the decisive moment on April 1 - the release of 80 northern bobwhite quail, captured in Georgia only about a day earlier.

They took flight from wooden boxes and began exploring an isolated Burlington County woodland that had not heard their distinctive calls for decades. But would they adapt to the new environment? Would they reproduce and begin to restore the quail population in New Jersey? Or would their numbers be thinned by the stress of their 15-hour trip to Chatsworth, disorientation in strange surroundings, and predators such as hawks and weasels?

The answer came in mid-June, as researchers checked on the small chicken-like birds - up close in the wild, and far off through the monitoring of radio-transmitting collars placed on them.

They heard the bobwhite calls again and found at least three nests. One had 14 eggs.

The quail "are calling like crazy," said John Parke, north region stewardship project director for New Jersey Audubon. "I can't express how joyous it is to hear them again in the Pinelands."

At least 45 of the 80 quail had survived the last 2 1/2 months. Most of the losses occurred in the first couple of weeks, when the birds were most vulnerable because of unfamiliarity with the terrain. "It's awesome to know they are in the wild," Parke said. "It's a whole different world."

Fifty years ago, wild bobwhite quail were plentiful across parts of New Jersey. Coveys were common. Hunters flushed them out by the scores while walking through brushy fields.

But the chorus of bobwhite calls began disappearing along with the bird's habitat. Choked forests, paved roads, housing developments, herbicides, and pesticides destroyed the bird's food sources and nesting grounds.

The number of quail fell off so precipitously that - except for small pockets - they are close to extinction in New Jersey and Pennsylvania, and barely holding on in Delaware, wildlife ecologists say.

Only 600 wild quail were estimated to remain in the southern half of New Jersey, according to the last state survey in 2010 - and those numbers have not likely changed much,



John Parke of New Jersey Audubon holds a bobwhite quail on the day they were released. Photo: Judie Luszcz, Philadelphia Inquirer

state officials said.

The April 1 release was part of a three-year collaborative conservation initiative involving cranberry grower Bill Haines of the Pine Island Cranberry Co., who provided his land for the project; certified forester Bob Williams of Pine Creek Forestry, who manages forests on Haines' 14,000-acre property; New Jersey Audubon, which has overseen the quail project; the Tall Timbers Research and Land Conservancy, which collected the birds; the University of Delaware; New Jersey Fish and Wildlife Division officials; and wildlife biologists. Eighty more birds will be released in the spring of 2016 and another 80 in 2017.

"Wild quail had been extirpated from the Pinelands since at least the late 1980s, so knowing that the translocated quail are adapting to the site and are breeding demonstrates that forest stewardship, coupled with translocation, can help restore quail to the New Jersey Pinelands," Parke said.

The discovery of the nests means "the quail are finding the resources they need to mate and that the conditions at the site are good for their biology," said John Cecil, New Jersey Audubon's vice president for stewardship. "They're finding good cover, building nests and mating."

The quail stayed together when they first arrived as a kind of defense mechanism, then broke off from the covey when they felt more comfortable. "We expect to find additional nests," Cecil said. Each female "can produce seven to 28 eggs.

"We're hoping the young birds will remain and breed in the future," he said. "The indicators are positive."

Project researcher and graduate student Will Macaluso of the University of Delaware found nests tucked away in tall grass while radio-tracking the released birds at the study site.

The quail usually incubate their eggs for 23 days, leaving the nest for only brief times to feed. After the eggs hatch,

the female broods the young briefly and then leads them away from the nest to places where they can feed on insects.

“Finding these first nests is exciting, as this confirms that those individuals released are indeed reproducing, giving us great hope going forward,” said project collaborator Theron Terhune of Tall Timbers Research Station and Land Conservancy.

The site was created as a haven for the quail. The goal is “to restore and enhance early successional habitat to provide sufficient habitat to sustain a quail covey for their entire life cycle throughout the year,” said Dave Chanda, director of the New Jersey Division of Fish and Wildlife.

For the Haines family, which owns the land, the return of quail is welcome. “If the quail are nesting, this means we’re taking care of the land exactly the way we’re supposed to,” said Stefanie Haines, a social media coordinator for Pine Island Cranberry Co.

“This is about the ecology of the land,” added forester Bob Williams.

Because of forest management practices, quail feel at home in New Jersey again. “So far, so good,” said Parke.

### This Issue’s Brain Tickler ...

This tree can grow to over 100 feet in height. It is native to swampy areas throughout Maryland. It grows knobby roots called “pneumatophores” that stick up out of the water. What is this tree? (And what anatomical name is more commonly used for pneumatophore?)

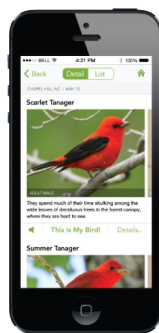


Photo by Dan Murphy— US Fish & Wildlife Service

*Last issue’s Brain Tickler was a photo of the current Maryland Big Tree champion: an American Sycamore. Marcia Monnett of Calvert County was the first to email us with the correct answer. She describes sycamores as one of her “most favorite trees and I have a large and lovely one just outside my back door.”*

## New Program IDs Birds with Just a Photo

Elahe Izadi, The Washington Post



There’s a big world out there and it’s full of birds. But figuring out the names of those birds can be intimidating and difficult work for the novice among us. Enter [Merlin Bird ID](#), a program that lets you upload your bird pictures and then uses computer-vision technology to present possible species. The mobile app asks the user questions about the bird to generate a list of possible species, even accompanied by bird calls.

Researchers from Cornell Tech and the California Institute of Technology teamed up with the Cornell Lab of Ornithology to develop the bird identifier. Jessie Barry of the ornithology lab said the tool is “a pretty big deal” in the world of birding. “Ten years ago, people were thinking, ‘Can you imagine if binoculars could take pictures and identify birds?’” Barry said. “And the fact that we can actually snap an image and have the computer say what it is, that’s something you only would have dreamed of.”

Merlin Bird ID can identify 400 of the most common North American bird species, and there are plans to expand the database to include more birds from other geographic regions.

Serge Belongie, a computer science professor at Cornell Tech, said this kind of technology “is very loosely modeled on human perception -- the way the eye and retina and human visual processing works.” The engineers tapped into a vast network of people associated with the ornithology lab, who volunteered to help develop and constantly refine the data set.

Merlin also utilizes bird sighting information from eBird.org. The more people use Merlin, the more accurate it becomes. “We’re not aspiring to remove the human element and experts from the loop,” Belongie said. “What we want to do is use their time much more efficiently.”

Barry, who began birding as a youth, said many may give up on bird watching prematurely because identifying species can be so difficult at first. “For most people, identifying birds involved picking up a field guide ... and you’re left to kind of your own devices to sort out what might be a good match.” Merlin, she added, makes birding much more accessible. “We believe that birds are often times people’s first and fundamental connection to the natural world. If you look out and can say, “Hey, that’s an American robin and it’s coming to nest in my backyard,” and you start to learn more about its life history, you’re going to be more inspired to help protect its habitat.”



## Pacific Northwest Flies May Combat Hemlock Woolly Adelgid



Hemlock woolly adelgid infestation.  
National Park Service photo.

Hemlock woolly adelgid (HWA) has killed millions of hemlock trees from Georgia to southern Canada. The tiny invasive insect has moved along the spine of the Appalachians, leaving behind acres of gray trunks in seventeen states.

This strain of the invasive adelgid is native to Japan, and was first detected in Virginia in 1951. Hemlocks are a “keystone species” in that they create cool, shaded conditions important for

many understory plant species, trout and other fish, and a host of wildlife. Scientists anticipate that, without a control, the HWA could largely eliminate hemlock trees from eastern forests.

Scientists have attempted a variety of control agents that have failed to stem the pest’s tide. But now, a pair of insects native to the Pacific Northwest may help scientists battle HWA.

A team of researchers, co-led by Kimberly Wallin with the University of Vermont and the US Forest Service and Darrell Ross at Oregon State University, have shown that two species of silver flies will attack and eat adelgids not only on western hemlocks, but on eastern and Carolina hemlocks as well.

An Eastern silver fly species in the East preys on adelgids in pine trees, but apparently are not attracted to hemlocks. “Populations of flies in the West search for hemlock trees, and that’s where they find their hosts,” said Oregon State’s Darrell Ross. “The same species in the East has evolved to look for pine trees. They probably use chemical cues from those trees to find their habitat and their hosts.” It is that theory that has led the team to investigate using the western species in the east. The hope is that they will continue to look for hemlocks in the east and attack HWA thereafter.

Wallin and Ross worked with Forest Service scientist Bud Mayfield in May to release silver flies from Washington State on infested eastern hemlocks in Tennessee. In June, they worked with Mark Whitmore from Cornell University Extension to release flies on infested trees in central New York State.

The releases were done under a permit from the USDA’s Animal Plant Health Inspection Service. To get to this point-

### Hemlock Woolly Adelgid in Maryland

Maryland Dept. of Agriculture

The hemlock woolly adelgid (HWA) spread north from Virginia into Maryland in the 1980s. Landscape hemlocks in the Baltimore – Washington area were infested in the late 1980s and natural stands in the area became infested by 1990. The infestation steadily moved westward through native stands of hemlock in Frederick and Washington counties in the mid-1990s, Allegany County in 1999 and Garrett County in 2001.

Hemlock woolly adelgids are most easily recognized by the white “woolly” wax they produce on young hemlock twigs. The “wool” is present all year, but is most abundant and conspicuous during the spring and fall when egg masses are present. Most other stages in the life cycle are much harder to see. Fully grown adults are only about the size of a period on a printed page.

Heavy infestations of HWA may result in decline of tree health and eventual mortality. The severity of decline and mortality is often hastened by drought, or other pests, such as elongate hemlock scale and hemlock borer. Several stands in Maryland, which have been infested with HWA for more than 10 years, have extensive decline and some mortality.

The Maryland Departments of Agriculture and Natural Resources have developed a Hemlock Woolly Adelgid Management and Suppression Plan. This plan sets forth management options for HWA on public lands across the State. Treatments began in the fall of 2004 and have continued through the present.

For more detail on the biology and identification of HWA, visit <http://mda.maryland.gov/plants-pests/Documents/HemlockWoollyAdelgid.pdf>.

For information about controlling HWA on your landscape trees contact the University of Maryland Home and Garden Information Center at [extension.umd.edu/hgic](http://extension.umd.edu/hgic)

-where the scientists and regulators felt that an experimental release was safe and useful -- took a decade of research by Wallin, Ross, and their colleagues. First they had to identify the flies, then better understand their basic natural history and diet -- and finally see if they would feed on the species of hemlock woolly adelgid found in the East.

“We’ve successfully done all that,” says Wallin, a forest entomologist who holds a joint position in UVM’s Ru-

benstein School of Environment and Natural Resources and the U.S. Forest Service's Northern Research Station. "Now we'll see if they can help the trees."

Most of the flies were released inside what Wallin called "bug dorms"—bags that are secured to infested branches on the trees. Some of the bags received four flies, some ten, and some were left empty as a control. In Tennessee, some flies were also released on infested branches without a bag enclosure.

Wallin noted, "This is the first time this has been done with these flies; it's a brand-new idea." The researchers will monitor the experimental trees for evidence that the silver flies have successfully mated, laid eggs--and preyed on hemlock woolly adelgids. Early results from Tennessee indicate that the flies reproduced inside the bags.

Even if the western silver flies succeed at finding the eastern hemlocks and at establishing a sufficient population

base, Wallin doesn't expect them to eradicate HWA, "but if they could provide a check on the pest's population size and territorial expansion, it could allow some hemlocks to persist and recover."

"That is as good as we could have hoped for at this point," said Ross. "It remains to be seen whether they will survive and if their populations will grow to densities that significantly impact the hemlock woolly adelgid populations and, ultimately, the survival of hemlocks. We probably won't have answers to those questions for a year or two."

Wallin compares the HWA infestation to Dutch elm disease and chestnut blight. "We need to be conservative when it comes to these kinds of releases of novel species," she said, "but the adelgids are killing all the hemlock trees. Once hemlock is removed, the soil type changes, the stream dynamics change, the forest type changes -- and it's hard to recover. We need to try to do something to protect these trees."

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## Conifer Alternatives for Eastern Hemlock

David R. Jackson, Central Pennsylvania Forestry

With the prevalence of hemlock mortality caused by HWA, the question arises concerning what, if anything, to plant in its place. The information below compares several coniferous species as a general guide for supplemental plantings. This list was compiled by Andrea Hille, Forest Silviculturist, on Pennsylvania's Allegheny National Forest. For more information, go [here](#).

### Potential alternatives to Eastern Hemlock:

*Red Spruce* is the best replacement species for northern flying squirrel. It grows well on poor sites with acidic and shallow soils preferred. It is shade tolerant to very tolerant. Red spruce is long-lived (350-400 years) and slow growing.

*White Spruce* is tolerant of a wide range of sites in northern North America, from moist to dry, alkaline and acidic. It is intermediate in shade tolerance and long lived (250-300 years).

Moisture is important to *Black Spruce* and it prefers dark brown peat, boggy areas, and wet organic soils. It is a common inhabitant of swamps or bogs. Black spruce is a pioneer species, though shade tolerant. A 200 year lifespan is typical.

*Balsam Fir* provides food and cover for wildlife and is the second best species on this list for northern flying squirrel. It requires abundant moisture and prefers slightly acidic sites. It is very shade tolerant and slow growing with a typical lifespan of 80 years.

*Pitch pine* is usually found on dry, low quality sites with

poor sandy soils. Pitch pine requires a mineral soil seedbed for regeneration. It is a pioneer species and is shade intolerant. A typical lifespan is 200 years.

*Virginia Pine* requires well drained sites and prefers poor sandy soils. A mineral soil seedbed is essential for its regeneration. Virginia pine is shade intolerant with a typical lifespan of 100 years.

*Eastern Redcedar* grows on a wide variety of conditions, but it prefers deep, moist, well drained sites and calcareous soils. It is shade intolerant to very intolerant and has a typical lifespan of 150 years. It is a pioneer species and can tolerate drought and temperature extremes.

*Red Pine* prefers dry sites but will grow on wetter sites. It is shade intolerant to very-intolerant and has a typical lifespan of 200 years.

*Northern white-cedar* provides an abundance of food and cover for wildlife, especially in winter. It prefers moist, nutrient rich sites, such as those along streams and it prefers calcareous soils. Northern white-cedar is shade tolerant, slow-growing, and persistent. A 300 year lifespan is typical.

*Eastern White Pine* prefers well drained, drier sites, with coarse textured soils. White pine is intermediate in shade tolerance. A 200 year lifespan is typical, but it can be long-lived (450 years).

*Shortleaf pine* occurs on a wide range of sites from dry sites to deep well-drained soils. It is shade intolerant with a typical lifespan of 200 years.

## Leaves as Large as Elephant Ears

James Finley, Penn State University

“Those leaves are huge! Are you fertilizing those trees?” exclaimed a participant on a recent walking tour of a timber harvesting demonstration site in central Pennsylvania. Immediately, I had a mental flashback to summers in Pittsburgh as a child.

One of the outside games I had fun playing was “Find the biggest leaf.” It was not a game that most of the kids in the neighborhood played. Really, there were only two of us who found joy in finding the biggest leaves. Through this game, we learned something about tree and plant biology. First, we discovered that, as youngsters, we were ideally structured for finding big leaves -- we were closer to the ground. We soon learned that big leaves were more common down low on trees and other plants. Second, we noticed the big leaves weren't common on the sycamores lining the streets; rather, they were in the shaded alleys and along the edges of unkempt properties, the abandoned old farm field and barn, and near the strip mine where the young trees were at a convenient height.

We'd call the giant leaves “elephant ears.” The game had one major rule -- you had to stay with the same species. Sycamore leaves competed with sycamore leaves, Norway maple leaves with Norway maple leaves, forsythia leaves with forsythia leaves. You get the picture. Likely we never found a leaf as large as even a small elephant's ear, but we learned and searched. It was fun!

So, why are some leaves -- even on the same individual tree or plant -- bigger than others? Biologists describe the size difference simply as “sun leaves” and “shade leaves.” For the most part, leaves growing in the sun are physiologically different from those growing in the shade. The difference relates to the environment they have to deal with and the light resources they receive.

At the top of a tree, a leaf receives more light and wind. These sun leaves are thicker and smaller. They are thicker because of the distribution of chloroplasts within the palisade cells, which are tall cells standing on end just under the leaves’ “skin.” This arrangement makes the leaves efficient at converting light to make sugars. It also suggests



A very large Sycamore leaf.

Photo: Greg Dodge, lifeandscience.org

upper leaves are often darker green. Because upper leaves gather more light, they get hotter. Therefore, they have more and smaller stomata, which are a leaf structure designed to exhaust oxygen and water -- a cooling mechanism -- than are found on shade leaves. The advantage of having lots of small stomata on a smaller leaf is the ability to adjust moisture loss not only to heat, but to increased wind moving across the leaf's surface.

Lower down in the tree, where the leaves are shaded by those higher up, the process begins to reverse. The leaf is thinner because the palisade cells are shorter. This arrangement makes sense because light is less intense and does not reach as deeply into the leaf, and the leaf is often a lighter shade of green. Because the chloroplasts are closer to the surface, the leaf area increases to make it more efficient resulting in bigger leaves. The stomata are larger and wider spaced. In general the shade leaf stays cooler, has less wind moving across its surface, and needs less cooling.

What was a fun game for us as children turned out to be a great lesson: Trees and other plants respond to their environment in ways that increase their efficiency. Sometimes the reasons behind the differences in plant structures seem obscure, but

nature is about efficiency. It is fun to explore our forest environment and to share our observations and thoughts. If you have the chance this summer, go looking for an “elephant ear” in your woodlot. While you are at it, invite a child to enjoy the game, “Who can find the biggest leaf?”

### New Website URL

Our friends at the Alliance for the Chesapeake Bay recently updated their website's address. Find them at [www.forestsforthebay.org](http://www.forestsforthebay.org).



## Events Calendar

For more events and information, go to  
<http://extension.umd.edu/woodland/events>

August 28, 2015

1:00 PM—4:30 PM

### Forestry Friday: Tree ID Tips

Western Maryland Research & Education Center, Keedysville MD

Join University of Maryland Extension staff to learn a variety of tips and techniques that will help you identify common Maryland tree species. For more information and to register, go to

<https://umeforestryfridaytreeandshrubid.eventbrite.com>

September 10, 2015

6:00 PM—8:30 PM

### Maryland Tree Farm/Maryland Forests Association Regional Meeting

Alleghany Community College, Cumberland MD

Join us for an evening of fellowship and information. Presentation topics include Emerald Ash Borer, Northern Long-Ear Bat, and much more. Dinner is included (nominal charge). For more information, contact MFA at (410) 823-1789 or [director@mdforests.org](mailto:director@mdforests.org).

*Additional events in this series will be held October 14th at American Legion in Salisbury MD and October 27th at the Baltimore County Agricultural Center.*

September 17, 2015

12:00 PM—1:00 PM

### WSE Webinar Series: Nature-based Forestry: The Pro Silva Movement in Europe

Online webinar

This presentation will provide an overview of the Pro Silva movement sweeping across Europe promoting continuous cover forestry which mimics natural forest stand development for optimizing social, ecological, and economic benefits. For more information and to register, go to

<http://woodlandwebinars-prosilvamovement.eventbrite.com>

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