

BRANCHING OUT

Maryland's Woodland Stewardship Educator



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Spring 2023

Changes and More Changes

Andrew A. Kling, *Branching Out* editor

Welcome to a new issue of *Branching Out*. First, let me thank everyone who took time to participate in our reader and subscriber survey after our Winter 2023 issue. We received more than 150 responses. They included a number of valuable observations and provided feedback to our questions. We're still in the process of crunching the numbers, but the survey's results will lead to some changes to the newsletter in the coming issues.

Another change came earlier this year when John Hooven was hired to fill the role of Forest Stewardship Educator and MD-DE Master Logger Program Coordinator. John is duty-stationed at the Wye Research and Education Center, and comes to forestry after more than 20 years in commercial real estate. After taking his core courses part-time at a community college, he enrolled full-time and graduated magna cum laude in 2021, in spite of all of the challenges of the COVID-19 pandemic. His areas of study include forest ecology, silviculture, dendrology, forest pathology, forest entomology, mosses and mycology. John is also an active member of the Society of American Foresters. Read more about him below, and read his first contribution to the newsletter on [page 2](#). You can contact him via email at jhooven@umd.edu or by phone at (443) 446-4257 Ext. 125.

John will also contribute to our revamped monthly webinar series. The name has been simplified to "Wildlife Wednesdays," but will continue to include topics of interest to woodland owners, especially those



involved in creating habitat for wildlife. We will continue to share the webinars on our website at <https://extension.umd.edu/resource/wildlife-wednesdays-webinar-series> and on the WSE YouTube channel at <https://www.youtube.com/user/UMdFSE>. Additionally, Wildlife Wednesdays can be found on the new "Maryland Wildlife Management" YouTube channel at <https://www.youtube.com/@marylandwildlifemanagement2312>, which includes the recordings from 2022's Delmarva Woodland Stewards training there as well.

So stay tuned to changes to *Branching Out* and to the Woodland Stewardship Education program. We look forward to continue to serve your needs in 2023 and beyond.

Meet John Hooven

John Hooven joins Extension from the Maryland DNR Forest Service, where he served as the Somerset County forester. He started as a New Jersey Woodland Steward in 2015, and by 2017 he was not only facilitating the program but had also been elected vice president of the New Jersey Forestry Association. His interest in forest ecology grew out of his time in the woods as a youngster as well as his participation in UME's "The Woods in Your Backyard" online course in spring 2017. He enrolled as a full-time forestry student at the SUNY College of Environmental Science and Forestry in 2019 and following his graduation, worked with the New York state Department of Environmental Conservation. John is an avid writer and photographer, and enjoys biking, hiking, outdoor walks and many other forms of outdoor recreation. Welcome aboard!



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Beech Leaf Disease

John Hooven, Forest Stewardship Educator

A novel non-native microbe is locally impacting beech tree health and mortality throughout the northeastern United States and southern Canada. The microbe, *Litylenchus crenatae mccannii*, a subspecies of a nematode found in Japan, is causing beech leaf disease (BLD). BLD is a foliar disease affecting leaves of beech trees. BLD was first documented in 2012 after it was discovered affecting leaves of American Beech (*Fagus grandifolia*) trees in Lake County in northeastern Ohio. Since then, it has spread to nine states throughout the northeast, the mid-Atlantic, and the Canadian province of Ontario. Our native beech as well as non-native varieties, such as European beech that is commonly used in landscaping and in gardens, are susceptible to BLD. The Maryland Department of Agriculture's Forest Pest Management section has been actively surveying forests statewide for the disease since 2019. The disease has not yet been documented in Maryland. However, it has been found in neighboring Pennsylvania counties of western Maryland and one county in northern Virginia adjacent to southern Maryland.

The nematodes increase in numbers as they infect leaves throughout the growing season. How the leaves are impacted is still under investigation. Similar nematodes of the family Anguinidae affect other tree species by producing galls in their leaves. While researchers at Penn State University and others have observed galls in affected beech tree leaves, they are still studying the galls' function as it relates to BLD. The disease affects the structure of the leaves, interfering with their normal biological functions. Affected leaves exhibit a



BLD leaf striping. Photo courtesy New York Department of Environmental Conservation.

unique banding, or darkening, of the leaf area between the veins. Symptoms progress from leaf banding to shrinkage in leaf size, as well as heavy banding and a crinkling leather texturing of the leaf. Advanced symptoms include leaf curling and dead and dying leaf tissue. As the damage progresses over the years, leaf buds are aborted and premature leaf drop occurs. Trees will typically die in two to seven years after infection. BLD can affect all sizes of beech trees in the forest, but younger trees in the understory are more susceptible.

The characteristic banding is best seen from underneath looking up into the canopy of the trees. If surveying saplings closer to the ground, turn over the leaf to view its underside. The banding that BLD exhibits is quite distinct. There are, however, some other lookalike issues in the forest affecting beech trees that may result in false identification. Anthracnose, caused by fungi, is relatively common among beech trees and can cause

brown spots and dead tissue in leaves. Sometimes, anthracnose also causes leaves to curl. However, the damage anthracnose causes is not restricted to the area between veins. Another disease, erineum patch, also causes patchy leaf damage on beech trees. Unlike BLD and anthracnose, erineum patch is caused by mites that do not threaten the health of the tree. The mites' damage does not show the distinct banding of BLD. Finally, a native insect known as the beech leaf rolling aphid can also cause curling and fading/yellowing between leaf veins. Beech leaf rolling aphids are also native and do not threaten tree health.

BLD nematodes overwinter in the buds of the next season's leaves and continue to affect them as they develop. There is currently no known treatment to address BLD although researchers continue to seek mitigation strategies. While it is unknown how the nematodes spread to affect new trees, landowners and managers of properties with beech trees can take certain precautions. Avoid coming in contact with areas of infected vegetation to help prevent spread to unaffected trees. Avoid spreading leaves, twigs, soil, branches, seedlings, and similar material from infected areas. As a further precaution, disinfect footwear with a solution of bleach and water immediately after walking through stands of infected trees. Please report any suspected findings of beech leaf disease to MD's Department of Agriculture's Forest Pest unit by email at fpm.mda@maryland.gov, or call 410-841-5870.

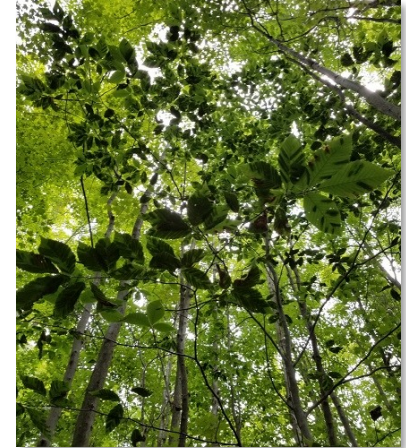
Resources:

["Beech Leaf Disease."](#) Forest Health, Insects & Diseases. Ohio Department of Natural Resources.

["Beech Leaf Disease."](#) New York State Department of Environmental Conservation.

"Beech Leaf Disease." Pest Alert, USDA U. S. Forest Service. March, 2022.

Reed, SE, Greifenhagen, S, Yu, Q, et al. Foliar nematode, *Litylenchus crenatae* ssp. *mccannii*, population dynamics in leaves and buds of beech leaf disease-affected trees in Canada and the US. *Forest Pathology*. 2020; 50:e12599. <https://doi.org/10.1111/efp.12599>



Looking into the canopy to observe BLD. Photo courtesy New York Department of Environmental Conservation.

Woodland Wildlife Spotlight: Timber Rattlesnake

Undoubtedly, snakes have an unpopular reputation. Perhaps it has to do with the fact that they do perfectly well without legs for locomotion. However, fish are also legless, and for many birds, it is easier to fly than to walk or run. Perhaps it's because their cold-blooded system is alien to warm-blooded humans; but other cold-blooded species, such as frogs and turtles, don't engender the same repulsion as snakes. Whatever the reason, humans and snakes have a grudging relationship, although that has improved in the last few decades as scientists have revealed the benefits snakes provide in a healthy ecosystem.

Maryland is home to 27 species of snakes, most of which humans rarely see in day-to-day lives. Of these, only two, [the Eastern Copperhead and the Timber Rattlesnake](#), are pit vipers and thus dangerously venomous to humans. The latter is the subject of this issue's profile, as it is the only snake in Maryland with a tail rattle and as it can be found in two color patterns, which can make identification challenging. The species' yellow phase, which is the more common, features a background of yellow, grey, or brown, with dark brown to black chevrons. In the black phase, the head is black and the body features black chevrons or blotches on a background of dark brown or black. Furthermore, these shades and patterns vary from snake to snake and can exist in both males and females.

The timber rattlesnake is found mostly in Maryland's four western counties (Frederick, Washington, Allegany, and Garrett), where it can find forested uplands with open areas and ridgetops for its habitat. Like many predators, it prefers to hunt by ambush, and will hide in cover such as fallen logs and leaf litter, waiting for its prey to approach. When the animal is close enough, the snake strikes and injects venom through its hollow fangs into the prey. After the bite, it releases the animal and then follows its chemical trail to consume it. The snake's diet consists mostly of rodents and other small mammals, although they may take advantage of the opportunity to consume birds, amphibians, and other snakes. Not only does this species provide an ecological service by keeping the rodent population in check, [a 2013 study by University of Maryland researchers](#) found that a single timber rattlesnake removed up to 4,500 ticks annually from a woodland by consuming tick-bearing mammals.

Timber rattlesnakes hibernate in groups during the winter in dens below the frost line, and emerge in the warmer weather, when they can often be seen basking on warm rock faces or other exposed surfaces. They may cover a distance of up to four miles from the den during the warmer months before returning to the same den in the fall.

Timber Rattlesnake Basics

Appearance: Distinctive triangular head. Elliptical pupils in eyes. Sensory "pits" below eyes. Head much wider than neck. Both black and yellow phase colorations found in MD. Rattles on tail. Heavy body.

Size: 3 feet on average; up to six feet at largest. Weight 1-3 lbs.

Lifespan: Average 16-22 years in the wild; up to 30 years.

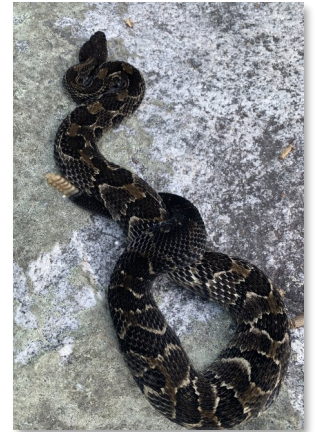
Timber Rattlesnakes in Frederick County, MD.

Above: Black phase.

[Photo © james-scanio, iNaturalist.org.](#)

Right: Yellow phase.

[Photo © Scot Magnotta, iNaturalist.org](#)



The species once occupied a range from southern Canada to Georgia and as far west as Wisconsin in the north and northeastern Texas in the south. A variety of circumstances, including its biology, have reduced that range significantly. Male timber rattlesnakes only reach maturity at five years of age, and females at 7-11 years. Additionally, females give birth only once every three to five years. Consequently, two-thirds of all females may reproduce only once in their lifetime. Unlike other snakes, timber rattlesnakes bear live young, up to nine at a time. Each is born with venom and a small "button" rattle on its tail. Each time the snake sheds its skin, every one to two years, it grows an additional rattle.

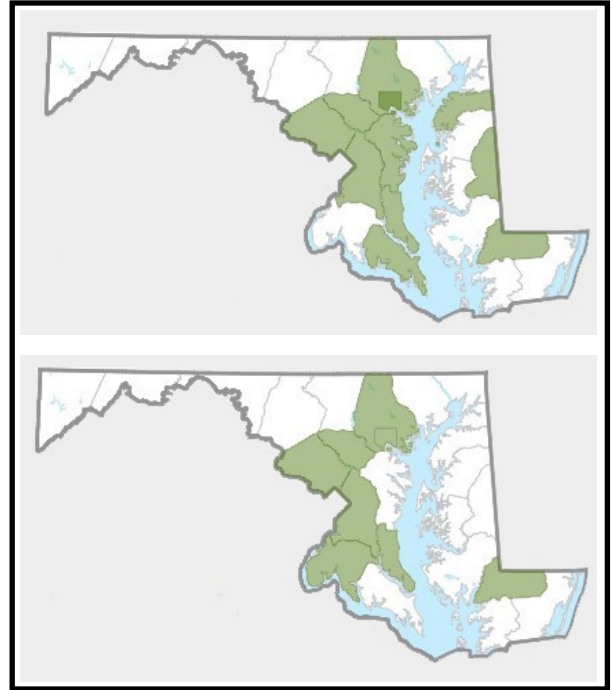
However, the greatest threat to the species comes from human pressures. Destruction of habitat through development is accompanied by illegal hunting for poaching or collecting. Additionally, snakes find roadways to be ideal basking spots, or may discover they cross traditional migration routes; either way, they are subject to being run over by vehicles. Consequently, they are [endangered in seven states and threatened in five others](#). In Maryland, they are considered [at vulnerable risk for extirpation](#).

Invasives in Your Woodland: Chinese and Japanese Wisteria

Recently, observers in the area of Pemberton Historical Park in Salisbury MD noticed a plume of smoke rising into the air. This was the result of the ongoing battle against the invasive vines Chinese and Japanese Wisteria, that were in great abundance in the park. After staff removed them from the park's trees, [rangers from the Maryland Fire Service burned two slash piles of the vines](#)—hence the smoke.



Chinese Wisteria. Photo by Rebekah D. Wallace, University of Georgia, Bugwood.org



Reported distribution of Chinese Wisteria (top) and Japanese Wisteria (bottom) in Maryland. Courtesy Maryland Biodiversity Project.

As their names suggest, Chinese and Japanese Wisterias are native to Asia. As with many other non-native plants, these were imported for landscaping and decorative purposes, as growers prized the pink and purple flowers they gave. (Apparently, the native wisteria's similarly-colored flowers were less desirable.) They arrived in the early 1800s and soon escaped from landscaping into the surrounding environment. Today, both have spread along the east coast; Chinese Wisteria is more widespread, with populations as far south as Louisiana and as far west as Wisconsin. Japanese Wisteria infestations are concentrated in the mid-Atlantic and mid-south states. The Maryland Department of Agriculture designates both as "Tier 2" invasives; while retailers can still sell them, they must post a conspicuous sign indicating the plant can be invasive. Similarly, landscapers must provide a Tier 2 list to any customer considering them as plantings.

What are they?

Chinese Wisteria (*Wisteria sinensis*) and Japanese Wisteria (*Wisteria floribunda*) are both perennial woody vines. They prefer full sun but can tolerate shade, and are aggressive climbers. They can shade out native trees or strangle them with thick and heavy growth. Killing the native trees can open the canopy and expose the forest floor to full sun, encouraging the vines' continued growth. They can also form dense thickets that suppress native species.

How do they spread?

These wisteria spread vegetatively as short stems form along the vines and will sprout roots if touching the ground.

The vines can produce abundant seeds, which can be carried long distances in riparian settings.

How can I identify them?

These invasives are easily distinguished from the native wisteria by both the flowers and the seed pods. Chinese and Japanese Wisteria bloom in April and May; the native species blooms in the summer. Native seed pods are smooth and 2-4 inches long; the invasives' seed pods are velvety, 4-6 inches long, and have constrictions that separate the seeds. Additionally, Chinese and American Wisteria vines twine around trees counter-clockwise; Japanese Wisterias twine clockwise. See the photo gallery on the next page.

How can I control them?

The key to treatment is early detection. Cutting the vines on trees will cause sprouting from the cut edge, so repeated cutting is necessary. Herbicide applications to the cut stump can be effective. Foliar spraying in denser infestations may be the best option.

For more information:

Learn more about Chinese and Japanese Wisteria: [Chinese and Japanese Wisteria](#) (UME Home and Garden Information Center)

[Fact Sheet: Exotic Wisterias](#) (Plant Conservation Alliance-Alien Plant Working Group)

[Plant Invaders of Mid-Atlantic Natural Areas: Exotic Wisterias](#) (invasive.org)

Image Gallery: Chinese and Japanese Wisteria

Chinese wisteria infestation in a loblolly pine stand.
Photo by David Stephens, Bugwood.org



Chinese Wisteria leaf structure at different age structures. Photo
by USDA Natural Resources Conservation Service, Bugwood.org



Chinese Wisteria Fruit.

Photo by Franklin Bonner, USFS (ret.), Bugwood.org



The direction in which these invasive wisterias twine around a tree can be diagnostic.

At left, a Chinese Wisteria vine twines counterclockwise around a Princess tree in Calvert County, MD in 2018. Photo by Jim Brighton, Maryland Biodiversity Project.

At right, a Japanese wisteria vine twines clockwise around a Tree of Heaven in Anne Arundel Co., MD in 2017. Photo by Bill Hubick, Maryland Biodiversity Project.



News and Notes

Measuring Your Woods with Your Phone?

Foresters and woodland managers have a variety of time-honored tools and techniques for measuring trees. Determining trees' diameter at breast height (DBH, approximately 4.5 feet above the ground) provides valuable information to determine tree and woodland health. Measuring the DBH of a woodland's trees individually is reliable but time-consuming. Now, a team of researchers from Great Britain's Cambridge University have developed an app that uses low-cost, low-resolution LiDAR sensors incorporated into many mobile phones. They tested the app in forests in the US, Canada, and Great Britain in spring, summer, and fall, and the results were comparable to hand measuring accuracy.

The researchers plan to release the app for Android phones this year. [Read more about their work in this article.](#)

Yes, SLF Could Be Worse This Year

This year's mild winter means that the now-hatching Spotted Lanternflies could pose an even larger threat to plants and agriculture than in



previous years. SLF eggs hatch in the late spring; the insects mature by the fall, and lay eggs until the first winter freeze. According to Mike Raupp, retired University of Maryland entomologist, more lanternflies survived the winter because the region did not experience many extended freezes. [Learn more here.](#)

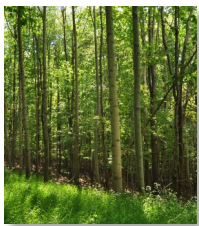
Own a Car in Maryland? Help the Trees!



For as little as \$1, state residents can voluntarily donate to Maryland's [Tree-Mendous Program](#). The state's Department of Transportation

Motor Vehicle Administration has teamed up with the Maryland DNR to invite vehicle owners to donate \$1.00 or more when they register or renew their vehicle registration using the MVA's website or a self-service kiosk. [Read more about the program here.](#)

New Maryland Legislation Strengthens Forest Conservation Regulations



Maryland's Forest Conservation Act was strengthened during the 2023 session of the General Assembly with [the passage of two bills](#) that modified the state's goals for forest acreage. The original language of the act called for the state to experience "no net loss" of forests;

the amended language calls for "net gain" of both forests and forest canopy across the state.

The legislation comes on the heels of [a 2022 study](#) by the Harry R. Hughes Center for Agro-Ecology, the Chesapeake Conservancy, and the University of Vermont. The study found that while the state was approaching "no net loss," several counties were showing significant rates of forest loss due to land use change and development.

Chesapeake Conservancy president and CEO Joel Dunn noted, "This legislation is the culmination of many years of hard work and effort, by many partners, to update and improve Maryland's forest preservation and retention laws."

It's Not Just in the U.S.

In a study lasting twenty years, botanists in Great Britain studied the landscape of the United Kingdom and Ireland. Botanists and thousands of volunteers counted millions of flora to produce the Plant Atlas 2020, the third produced by the Botanical Society of Britain and Ireland. According to the Society's head of science, the findings are "catastrophic" for native species.

The decline in biodiversity is large part to the presence of non-native species. The volunteers documented nearly 3,500 plant species, of which more than 1,700 were non-natives, such as Japanese Rose and American skunk cabbage.

Read more about the study from the BBC [at this link](#). To read the Plant Atlas 2020, [go to this link](#).

Planting trees helps our forests weather climate change

Craig Highfield, Forest Programs Director, Alliance for the Chesapeake Bay



A volunteer works with the Alliance for the Chesapeake Bay to plant a streamside buffer in Lancaster County, PA. Photo by Eric Braker/Alliance for the Chesapeake Bay

Spring is here, and there is no better time to get outside and plant new trees on your property or in your community.

And opportunities to do so abound this time of year. The Alliance for the Chesapeake Bay and many other environmental groups are hosting tree-planting events throughout the region to improve water

quality, create wildlife habitat, clean the air and enhance climate resiliency for the watershed.

Our forests have always endured natural stresses and disturbances like fires, storms, drought, insects and pathogens — not to mention human-caused disturbances like deforestation, fragmentation and invasive species. The impacts of climate change in the Bay region will certainly exacerbate these stresses and alter the composition of our forests in various ways.

Unlike the western U.S., where periods of drought are expected to increase and be more severe because of climate change, the East will likely see an increase in annual rainfall. The pattern of precipitation is also predicted to change. Our region will likely see an increase in precipitation in the winter and spring and longer periods of drought in the summer and fall. We will also see more frequent and intense storms.

Climate change is already lengthening our growing season and shortening our winters. The eastern U.S. just experienced one of its warmest winters in our history.

Several forest tree species will respond positively to a longer growing season and the increase in carbon dioxide. But these conditions can also be quite advantageous for the proliferation of invasive nonnative plants, especially those that already break bud earlier and go dormant later than our native deciduous vegetation.

Many forest insect pest populations will expand because they are no longer subject to natural control by long, deleterious periods of below-freezing temperatures.

The species composition of our forests has consistently changed over the millennium and will likely continue to do so because of new climate conditions. [According to an exhaustive report from the U.S. Forest Service](#), species that will likely tolerate periodic dry spells and warmer summers include black oak, northern red oak, pignut hickory, sweetgum, white oak and yellow pine. Species that thrive in moist soil conditions, like white pine, sugar maple, American beech, eastern hemlock and red spruce, will likely be diminished.

Mid-Atlantic forest types that have been shaped by disturbance over the millennia — like oak-hickory or oak-pine communities — will likely not change dramatically. But some of the region's rarer forest types — spruce-fir in the high elevations of the Appalachian Mountains and lowland conifer forests — may be the most vulnerable to higher temperatures and varying soil moisture in the summer and fall.

Maritime and tidal swamp forest ecosystems in the coastal plain region are also expected to suffer from the effects of sea level rise, storm surges and saltwater intrusion.

Finding a tree-planting event to join is as easy as typing "volunteer tree planting near me" in your search engine.

If you own a patch of forest or mostly wooded land, the bar is a little higher. I suggest contacting your state's native plant society (every state in the Bay watershed has at least one) for advice on native species that are best suited for your land — and, if it's a well-established forest, how you can best manage it.

Controlling invasive plants helps existing trees grow and sequester carbon while allowing new trees to regenerate. Thinning a crowded stand of trees reduces the stress of competition and allows the remaining trees to vigorously grow in response to the additional light. It also helps trees defend themselves against threats from insects and pathogens.

Promoting a diversity of species in your woods helps to buffer it from a variable climate and soil moisture regimes. Periodic selective harvesting can also be beneficial, as long as soil disturbance is kept to a minimum and the remaining trees are protected — to continue carbon storage and sequestration while new trees emerge.

The American Forest Foundation and Nature Conservancy have developed their Family Forest Carbon Program to help private woodland owners turn enhanced carbon-sequestration practices into income through voluntary carbon markets.

Both Maryland and Pennsylvania have set reforestation goals with the [5 Million Tree Initiative](#) and the [Keystone 10 million Trees Partnership](#), respectively. Successful reforestation requires planting the most suitable tree species for the specific and future site conditions of the parcel and providing care for the new forest until it is established.

There are several nongovernmental organization and public conservation programs available to support reforestation endeavors, including several with the Alliance for the Chesapeake Bay.

There is little doubt that our woodlands provide a multitude of public benefits like clean water and air, wildlife habitat, flood mitigation, forest products, recreational opportunities and more. So it should be of little surprise that healthy thriving woodlands are one of our best tools to buffer us against the deleterious impacts of climate change. We just need to help them help us.

This Issue's Brain Tickler...

Last issue we asked for the specific term applied to firewood stacked four feet high by eight feet wide by 16 - 20 inches deep. The answer is *face cord*. (A full cord is 4' x 8' by 4 feet deep. A face cord is generally 1/3 the volume of a full cord.) Congratulations to Samantha Grimes for her correct answer.

For this issue, we go across the Potomac River to Shepherdstown WV, where a bald eagle couple became an

Internet sensation earlier this year with [this nest maintenance video](#). The nest, high atop a tree on the grounds of the US Fish &



Wildlife Service's National Conservation Training Center, has been occupied by eagles for at least 20 years. What species is the tree? Email Andrew Kling at akling1@umd.edu with your answer.

Events Calendar

June 14-15, 2023

2023 Watershed Forestry Summit

Blair County Convention Center, Altoona PA

The PA DCNR and Western Pennsylvania Conservancy are hosting the 2023 Watershed Forestry Summit. Designed for watershed forestry professionals, decision makers, and volunteers, attendees will enjoy sessions on the latest watershed forestry science, outreach and implementation strategies, funding options, and more. For more information, [visit this Eventbrite link](#).

June 19-21, 2023

National Conference of Private Forest Landowners Omni Nashville Hotel, Nashville TN

Designed for family forest landowners, forest consultants, government agencies, and more, this conference provides sessions on owning and managing your forest, ecosystems services, and legacy strategies, plus additional networking opportunities. For more information and to register, go to this link: <https://www.forestlandowners.com/conference/>

June 21, 2023, 12–1 PM

Wildlife Wednesday Webinar: "The Trouble with Oaks"

Oak trees are a fantastic tree genus for wildlife. But oaks are in decline across our region. A complex of issues collectively called "oak decline" is impacting oaks across the Mid-Atlantic region. Further, oaks are notoriously a more difficult tree when it comes to regeneration. Join UME Forest Stewardship Educator John Hooven as we explore the trouble with oaks, their benefits to our ecosystems, and the problems facing regeneration of oak trees in our forests. This webinar is free but registration is required. To register, visit: go.umd.edu/wildlifew

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Branching Out

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