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COLLEGE OF AGRICULTURE & NATURAL RESOURCES

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UNIVERSITY OF MARYLAND EXTENSION | WOODLAND STEWARDSHIP EDUCATION

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GPS Isn't Just for Going to the Store

Jonathan Kays, Forestry Specialist, University of Maryland Extension

Global Positioning System (GPS) is a technology that is now utilized in every aspect of life and business. Businesses use it to deliver packages to your home. People use it to find their way to a location or determine how far they have biked or run. GPS was developed by the military for about $10 billion in the 1970s but was opened to the public by President Reagan in 1983 with one catch: there was fuzzy accuracy within 100 meters to allow the military to have the most accurate systems. President Clinton removed the interference signal in May 2000, making GPS accurate and responsive to civil and commercial use. This was the start of widespread GPS applications.

Today, many people confuse the GPS available on a smartphone that requires a cell phone tower signal with that of a handheld GPS unit or one in a car (such as Sirius radio or GPS navigation) that works anywhere directly from satellites. There is a big difference, because once you are out in the woods or in rural areas, cell towers are few and far between. This has spawned a large industry of handheld recreational GPS units from companies such as Garmin and Magellan that can be dropped, submerged in water, and otherwise abused, but still work. Try that with a smartphone!

GPS handheld receivers use signals received from a network of satellites, which also communicate with ground stations. Using very accurate clocks, receivers calculate their distance from the satellites by the amount of time each signal takes to travel from the satellite to the antennae in the receiver. The receiver is able to calculate its location using the signals from at least four satellites. Most mid-priced units ($150 - $400) have a 10-15 ft. accuracy or less, and can access 8 or more satellites. More expensive units with advanced technology and a separate antenna can be accurate to inches or less. Your unit will give you an estimate of the error in its current reading.

GPS is useful for finding points (known as *waypoints*) and lines of travel made up of waypoints (known as *tracks*) that can be used to calculate distance and acreage. Longitude and latitude data for a certain point can easily be stored as a waypoint on the unit. Lines between waypoints, called *routes*, are also easy to make just by connecting the dots. *Tracks* are lines of points automatically recorded at a set interval. Finding a stored waypoint once you're in the field is easy. Just select the waypoint you're looking for (usually by pressing a "GoTo" button) and a screen with an arrow will show you which way to go.

For the woodland owner, forester, hiker, camper, deer hunter, or recreationalist, handheld GPS receivers allow the marking of stream crossings, deer stands, roads & trails, emergency locations, and a host of other purposes. For the woodland owner, GPS can allow you to create an accurate map of your property's corners and boundaries, along with roads, structures, and any other features you wish to add.

A handheld GPS receiver is most useful when utilized with computer software. Information on the receiver can be uploaded to a computer and mapped. You can also locate waypoints on aerial photographs on computer software, transfer it to the GPS receiver, and travel to that location. All this can save a lot of time in the woods. University of Maryland Extension did extensive training using Garmin MAPGPS 76 units over a decade ago and the training documents are still available at go.umd.edu/woodland. They still have some educational value since most of the GPS functions on Garmin units have not changed greatly.

What you do with your GPS data is dependent on the software you choose. Fortunately, there is a variety of free or low-cost software that comes with geo-referenced aerial photographs. EasyGPS is a good place to start. It is easy to use and aerial photographs are available for a nominal annual or monthly fee. If you have not tried a handheld GPS receiver, now is a good time to try. The accuracy of the units has improved greatly and pricing has become more competitive.

Inside this issue:

Two online courses offered by University of Maryland Extension this Fall!

Becoming a Steward of the Land: UME Forestry Program Offers Certification Course

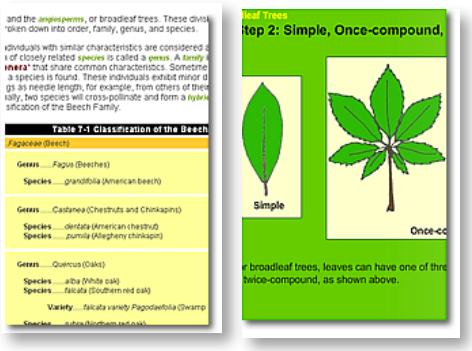
Learn to be a steward of the land this fall with the University of Maryland Extension General Forestry Course. This online course will be offered beginning Sept.1 through Dec. 15, 2021. Registration is now open, and interested participants can learn how to register at go.umd.edu/GFC.

This is a non-credit course with no formal classes – work from the comfort of your home using your own woodlot, a friend's or a public forest. The course covers how to protect your trees from insects, diseases, and fire; step-by-step procedures walk you through a forest inventory and stand analysis; and the details of the forestry business are presented, including tax nuances and the sale and harvest of forest products. Ultimately, the course exercises help you develop the framework for a stewardship plan for your forest.

The cost for this forestry course is $150. 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," a small pamphlet entitled "What Tree Is That?" and "Common Native Trees of Virginia Tree Identification Guide." At the conclusion of the course, all participants receive a flash drive of the paper version of the text and appendices. A certificate of completion is awarded when all assignments are completed.

To learn more about the course and what it entails, go to go.umd.edu/GFC. There you can read a lesson from the text, view an interactive exercise, and read through detailed course information and FAQs.

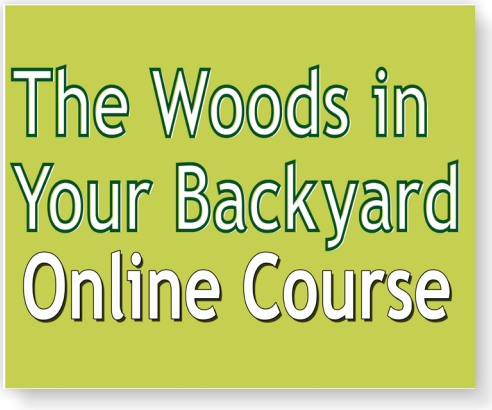
For more information, contact course coordinator Andrew Kling, University of Maryland Extension, akling1@umd.edu, 301-432-2767, extension 307.



Sample course pages

Registration is Now Open for "The Woods in Your Backyard" Online Course

Registration is now open for the Fall 2021 session of "The Woods in Your Backyard" online course. Our course is designed primarily for small-acreage property owners who want to learn how to care for or expand existing woodlands, or to convert lawn space to woodlands.



The self-directed, non-credit online course runs for ten weeks, from September 6 to November 15. It is offered through the University of Maryland's Electronic Learning Management System, and is accessible from any Internet connection and Web browser.

The course closely follows the published guide of the same name, but includes some important extras. Quizzes reinforce important concepts within the text. Optional activities give participants the opportunity to share one or more of their stewardship journal entries, or photos or narratives of their woodland stewardship accomplishments. In addition, many of the course's units are accompanied by short videos, created and produced by Woodland Stewardship Education staff. These 2- to 5-minute videos demonstrate essential skills and techniques (such as tree identification or crop tree release) and share the experiences of other woodland owners.

The course costs $95.00 and each session is limited to 25 participants. Each paid enrollment includes printed copies of "The Woods in Your Backyard" guide and workbook, plus a copy of *Common Native Trees of Virginia*. Visit our website page about the course at this link for more information, including updated registration information and a way to preview the course at no charge.

Go to this Eventbrite link for participant comments, more information, and how to register.

If you are a Maryland Master Naturalist or a Maryland Master Gardener, participating in this course can contribute to your annual hours commitment. See this website page for more details.

Woodland Wildlife Spotlight: Sharp-shinned Hawk

The sharp-shinned hawk is unlike many of the raptors that make a home in Maryland. Some, such as the osprey or the bald eagle, migrate to warmer habitats; others, such as a variety of owls and other hawks, will remain year round. The sharp-shinned hawk, apparently, does both, depending on where in the state it resides. Populations in western Maryland as well as in upland areas from New England south into the Appalachians will stay in the state throughout the year, while populations found in the central and eastern areas of the state are migratory, passing through from Canada to as far south as Central America for the winter. It is during the annual migrations that the sharp-shinned is easiest to observe, and there are a variety of "hawkwatch" sites across the eastern U.S. where observers and enthusiasts gather to watch them. Otherwise, the bird remains very elusive.

Why is it so elusive? One reason is its preferred habitat. They prefer closed woodland canopies and forest edges during the breeding and nesting season, which makes them difficult to observe. The other reason is its size. It is the smallest of North America's "accipiter" hawks (those that prey on other birds). Other accipters, such as the Northern Goshawk and Cooper's Hawk, are larger and, in the case of the Goshawk, will hunt the sharp-shinned. Therefore, it pays for the sharp-shinned to be somewhat reclusive.

As is the case with other members of the hawk family, the female sharp-shinned is up to one-third larger and heavier than the male. And as is the case with other accipiters, sharp-shinned hawks hunt birds on the wing, swooping down and capturing their prey, which are primarily birds the size of a robin or smaller, such as thrushes, warblers, and sparrows. Rather than diving down from a great height, the sharp-shinned will use cover and stealth to approach the prey and then surprise their target with a burst of speed from a hidden perch. They will then take the prey to a stump or low branch and pluck the feathers from it before eating. They have also been known to eat small rodents such as voles or mice.

Many people observe sharp-shinned hawks not under forest cover but in open country, when they can be seen moving from one woodland to another or along a forest edge. One way to distinguish them from other hawks is its flight behavior. They use a distinctive flap-and-glide method of flight favored by accipiters. The bird will make five or six shallow wing beats, followed by gliding. They will flap their wings constantly on rare occasions, usually when being pursued. But within the forest canopy, they are more agile fliers, swiftly and acrobatically maneuvering through dense cover, using their long tail as a wide rudder to help them turn.

For most of the year, these hawks will live alone or in pairs, particularly during nesting season. In the eastern part of North America, they prefer conifer trees for their nests, which are placed in dense cover near the tops of tall trees. The broad, flat nest is made of dead twigs, and may be lined with flakes of bark. Both male and female sharp-shinneds bring material to the nesting site, but the female does the actual construction, anchoring it between the tree trunk and horizontal tree limbs. When finished, the nest is usually 1-2 feet in diameter and 4-6 inches deep.

The female lays a clutch of 3-8 eggs that are incubated for up to 35 days. The male, as the smaller adult, will provide food to the fledglings until they can consume the larger prey brought by the female. The adults will continue to feed the young for several weeks after they have fledged at 5-6 weeks old, to help their offspring hone their hunting skills. While the young are still in the nest, the adults will drop food for them to consume, but once the young are fledged, the adults will begin passing prey to the offspring while in flight. The adult approaches and calls to the young, which then fly up and grab the food from the adult's talons.

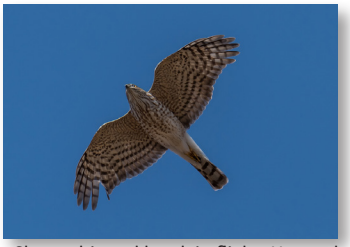
Populations of sharp-shinned hawks in North America suffered while DDT was in use, and some may still carry it in their bodies because of their diet of songbirds, many of which migrate from South America where the pesticide is still in use. Additionally, the species is challenged by habitat loss as the dense woodlands upon which it relies for cover, nesting, and hunting become fragmented or disappear altogether.

Sharp-shinned Hawk Basics

Appearance: Adults have blue-grey back and upper wings; immature birds have browner feathers. Brown, barred chest feathers. Short, rounded wings, long tail with squared-off corners.

Size: Male 10.5 inches long; wingspan 21 inches. Females up to 30% larger

Lifespan: Unknown but oldest banded bird on record was 12 years, 2 months when found and re-released.



Sharp-shinned hawk in flight, Howard Co. Maryland. Photo by Bonnie Ott, Maryland Biodiversity Project

Sharp-shinned hawk, Queen Anne's Co. Maryland. Photo by Jonathan Irons, Maryland Biodiversity Project

Invasives in Your Woodland: Porcelain-berry

Porcelain-berry is an invasive plant reported in widely scattered area in the United States (see map at right). But like many other invasive plants that were once cultivated intentionally, chances are that its impact is more wide-ranging than what the map represents. As more observers become familiar with this member of the grape family and understand the differences between it and native species, it is likely that more counties on the map will turn green, and more attention will be paid to its presence.

Those who have discovered it in areas they manage have discovered that once established, this plant can be very difficult to eradicate. The horticultural staff at Lewis Ginter Botanical Garden in Richmond, VA declare that it is "the most pervasive of all invasive plants that we are currently battling" on their grounds.

Porcelain-berry fruits. Photo by Leslie J. Mehrhoff, University of Connecticut, bugwood.org

What is it?

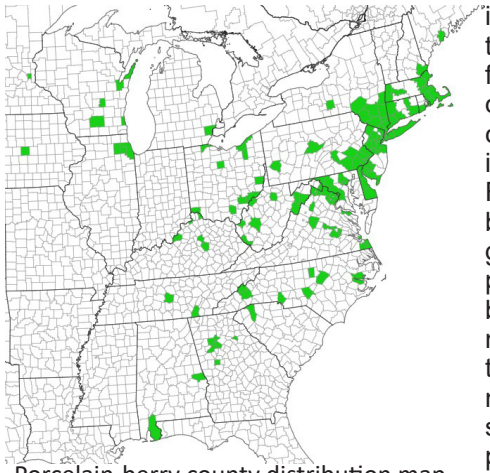
Porcelain-berry, *Ampelopsis glandulosa var. brevipedunculata*, is a deciduous, climbing, woody vine also styled as "porcelain berry" or "porcelainberry." It was introduced from northeast Asia in the 1870s as a bedding and landscape plant. It became popular for its tolerance of adverse conditions and its ability to provide ground cover. However, it is an aggressive plant that invades damp, shady areas such as streambanks, forest edges, pond margins, and disturbed areas. It forms dense mats that crowds out native vegetation, making it difficult to discover what, if anything, grows beneath it by shading them out. It can also climb into trees, reaching up to 20 feet in height.

How does it spread?

Porcelain-berry spreads both vegetatively and by animals. Birds and small mammals eat the fruit and spread the seeds through their droppings. The seeds sprout readily and may be viable in the soil for several years. The plant also reproduces asexually by resprouting from its roots.

How can I identify it?

The vine has deciduous, heart-shaped leaves that have coarse teeth along the margins. Because porcelain-berry's stems may closely resemble native grapes superficially,



Porcelain-berry county distribution map. Courtesy eddmaps.org

it is important to recognize a few important distinctions that can assist in identification. For example, the bark of native grapes shreds or peels; porcelain-berry's does not. Additionally, the center of a native grape's stem is brown; porcelain-berry's is white. In June through August, the vine develops groups of white flowers which in September and October turn into berries of a variety of colors. Beginning as white fruits, they turn yellow, lilac, green, or turquoise. Observing both the small flowers and the fruits will also aid in identification. Native grape flowers and fruits droop from the vine. Porcelain-berry flowers and fruits are held above the stem, even when the stem is drooping.

See the photo gallery on the next page.

How can I control it?

Porcelain-berry can be controlled by a variety of methods. As with most invasive plants, the best time to control it is during early detection. Repeated treatment will likely be necessary after initial removal because seeds may remain viable in the soil or because unseen root fragments may exist from which new growth will occur. Hand-pulling vines in the fall or early spring will prevent flower buds from producing the following season. If the plants are already producing fruit, take care to ensure that all fruit is collected when the stems are being removed to prevent seed dispersal. Larger vines can be removed with shovels, but care must be taken to ensure that the entire root system is removed to prevent resprouting.

Chemical treatment may be necessary to supplement manual or mechanical methods if the infestation is sufficiently large. Cut large vines during the summer and allow to re-sprout before treating with glyphosate. Foliar and basal-bark applications with triclopyr-based formulations are also effective.

For more information:

Learn more about porcelain-berry:
Fact Sheet: Porcelain-berry (Plant Conservation Alliance)
Unwanted and Un-loved: Porcelain-berry! (Virginia Native Plant Society)
Ampelopsis brevipedunculata (North Carolina State Extension)

Image Gallery:
Porcelain-berry

All photos by Leslie J. Mehrhoff,
University of Connecticut, bugwood.org

Porcelain-berry plants.

Porcelain-berry vine fruits showing early coloration.

Porcelain-berry vine infestation.

Porcelain-berry vine foliage. Note the variation of leaf shapes in this one area.

News and Notes

The Importance of Community Forests

A new report from The Trust for Public Land highlights the economic, cultural, spiritual, and other tangible and intangible benefits that community forests provide to communities nationwide. The report, entitled *Community Forests: a path to prosperity and connection*, was made possible by co-funding from the U.S. Forest Service and the U.S. Endowment for Forestry and Communities.

Diane Regas, president and CEO of The Trust for Public Lands, notes, "The community forest movement is powerful because it provides spaces for people to connect to nature and each other where they live, and direct economic benefits to the people in the communities they serve. The rich diversity of the communities that are stewarding and creating community forests across the country is inspiring, and we're proud to ensure that community voices drive this work."

To read the report, visit The Trust for Public Land's website.

Forest Management and Bats

A good deal of media attention has focused on the plight of bats across North America in the last several years as white-nose syndrome has spread from colony to colony. A recent publication from the White-Nose Syndrome Response Team outlines what woodland owners can do to help preserve these important species, such as understanding the role that both living and dead trees can play in providing habitat for bats.

The publication also provides a primer on white-nose syndrome and an introduction to bat species across North America. Read "Forest Management and Bats" here.

Dan Feller, Western Regional Ecologist for the Maryland Dept. of Natural Resources Wildlife & Heritage Service, presented a Woodland Wildlife Wednesday webinar on bats and conservation in Maryland in June. Watch the webinar here.

List Your Land Care Services Business in our New Directory

Following the publication of the *Woodland Health Practices Handbook and Assessment Checklist* in 2020, and the Natural Area Management Services webinar series last fall and this past spring, the Woodland Stewardship Education program is providing businesses an opportunity to become listed in a new directory. This Green Services Providers directory is for businesses in Maryland that provide land care services such as controlling invasive plant species, planting and/or maintaining riparian buffers, small woodlot tree harvesting, and much more.

The online directory will enable customers to search for providers based on a dozen different land care practices.

To have your business listed, please visit https://go.umd.edu/GSP-directory and complete the form found at the "Submission Form" button. Each submission will be reviewed before being included in the directory.

More Kudos for Mike Kay

In our Winter 2021 issue of *Branching Out*, we noted that **Mike Kay, Project Manager for Frederick/Washington Counties, was recognized as the 2021 National Tree Farm Inspector of the Year. Recently, his accomplishments were noted in the Summer 2021 issue of *Woodland*, the national magazine of the American Forest Foundation.**

The article "ATFS Recognizes Outstanding National Volunteers" highlights Kay's projects and dedication to the Tree Farm System. The author, Mary Lou Jay, notes, "Kay's success can be attributed to his ability and willingness to really listen to what landowners want and then find ways to help them achieve it."

Find the article at this link: https://www.woodlandmagazine-digital.com/afoq/0221_summer_2021/MobilePagedReplica.action?pm=2&folio=28#pg28.

Forest Pests:
Gypsy Moth

Nancy Stewart & Agnes Kedmenecz
Woodland Stewardship Education Program - Wye Research & Education Center

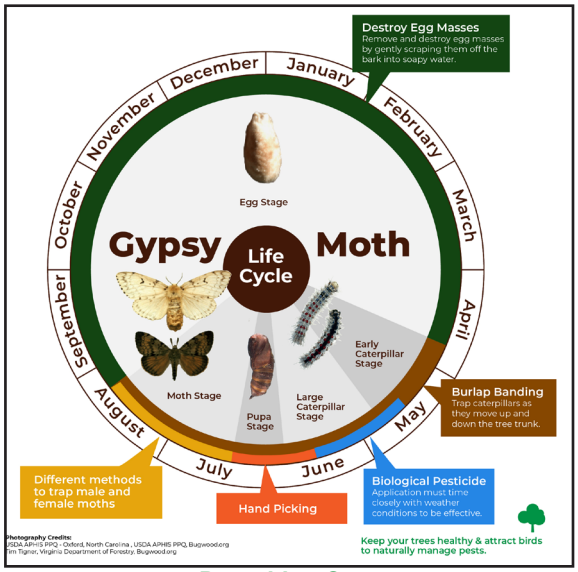
The European gypsy moth was brought to North America in 1869 by an entrepreneur who hoped to cross breed it with the silk worm, to create a hardy silk-producer that would be easy to raise and inexpensive to feed. He was unsuccessful, and unfortunately, several gypsy moths escaped and established a wild population. By 1890, they had begun defoliating trees in his Massachusetts neighborhood. More than a century later, the gypsy moth has expanded its range throughout Northeastern United States and Canada, west to Minnesota and south to North Carolina to be one of the most significant pest of shade trees and forests.

There are many telltale signs that gypsy moths are invading your trees. The most obvious is gypsy moth egg masses, which are fuzzy, tan in color, and about the size of a nickel or quarter. The eggs masses are laid individually or in large clumps in protected places. Although there are a few native predators of the colorful caterpillars that hatch (including mice, shrews, and some birds), these insects can ravage a tree, feeding on unripe tissues of annual shoots, flowers and buds, and killing about 15% of the trees. In the long term, this mortality and defoliation can cause changes in tree species composition of the forest. Regenerating tree species may be less valuable to wildlife and less valuable as timber. This then causes a ripple effect throughout the ecosystem.

The Maryland Department of Agriculture has a Forest Pest Management Section (FPM) which manages this pest using an integrated management approach. The purpose of the integrated pest management approach is to have maximum impact on the pest species with minimum impact on non-target organisms, including humans. FPM monitors the presence and severity of gypsy moth infestations using surveys. Based upon surveys, integrated management is used to determine the best strategies to help minimize moth and caterpillar populations and damage. These strategies include biological, cultural, manual, and chemical controls.

What methods can be used to control gypsy moths? The key is understanding the life cycle. Several biological controls have been used, including the introduction of an egg parasitoid wasp, a ground beetle, and the use of biological pesticides. There are many chemical insecticides such as acephate, bifenthrin, and carbaryl that can be used to help minimize the gypsy moth devastation. However, some insecticides can harm non-target species in forests and streams. If not used properly, they can also harm humans. Be sure to read product labels carefully and follow the recommended guidelines.

FPM may recommend spraying with aerial treatments in areas threatened with defoliation. This method of control is particularly useful for large forested areas. Bacillus thuringiensis (Bt), a bacteria, or the insecticide Dimilin are used in Maryland depending upon such factors as the level of infestation, location, logistics, and public concern. In May 2021, Maryland's gypsy moth suppression program focused on spraying sections of the lower Eastern Shore (Wicomico and Worcester counties). The rest of the state did not require treatment. For more information go to the Gypsy Moth Cooperative Suppression Program.



Landowners can also use the life cycle to combat gypsy moths. From May to July, hand pick caterpillars by gently shaking the tree so the caterpillars fall from the leaves. Place the fallen caterpillars in soapy water to be destroyed. From June – August, the larger caterpillar will be trapped in burlap banding. The burlap wrapping will also be helpful in July and August, by trapping the female moths before they crawl up the tree and lay eggs (fun fact, female gypsy moths are flightless). During these months, pheromone traps can be hung in trees to attract male moths. Once trapped, they can also be place in soapy water.

November to late April is a great time to destroy egg masses. Survey your property for egg masses and scrape them from surfaces into soapy water to destroy them. In the spring and fall, plant flowers, herbs or shrubs beneficial to wildlife to attract birds and other critters likely to consume the gypsy moths.

Keep your trees healthy to better ward off attacks by watering trees in time of drought as well as fertilizing and pruning them. A healthy tree can sustain a heavy defoliation and suffer minimal damage. But several consecutive years of defoliation can kill even the healthiest tree. Drought can further stress a tree, making it more susceptible to gypsy moth damage.

The history of the gypsy moth in the U.S. is a stark example of the devastating impact an introduced species can have on an ecosystem. The gypsy moth is here to stay. As stewards of the land, it's up to us to keep the gypsy moth in check by walking our woods often, keeping an eye open for their presence, and taking the steps necessary to minimize their impact. Be sure to contact your local forester if you have questions or concerns about gypsy moths in your woodlot.

This issue's Brain Tickler...

Photo courtesy US Forest Service

Last issue we asked you to identify the owner of the residence (and its name) in the photo at left. Grey Towers was once the home of Gifford Pinchot, considered the father of American forestry.

Congratulations to Joanne Sheffield for her correct answers!

For this issue, put on your historical thinking caps:
The U.S. Forest Service was created under which U.S. president?

Email Andrew Kling at akling1@umd.edu with your answer.

Events Calendar

August 13, 2021, 12:00 pm - 4:30 pm
Forestry Friday series: Assessing the Health of Your Woodlands Workshop
Western Maryland Research & Education Center, Keedysville, MD
Our Forestry Friday series is back! Join us to learn about two new tools to help you better manage your woodlands: the "HealthyWoods" app and the "Woodland Health Assessment Checklist." CECs approved for SAF and ISA, and applied for for Maryland Tree Expert. The workshop costs $12 per person and registration is limited. For more information and to register, go to https://umeforestryfriday08132021.eventbrite.com.

August 18, 2021, 12:00 noon - 1:00 pm
Woodland Wildlife Wednesday webinar series: Wildlife Ecology and Management in Maryland
Online
The Woodland Wildland Wednesday webinar series continues with Luke Macaulay, wildlife biologist with the University of Maryland Extension. He'll present a broad overview of ecological principles applicable to wildlife management in Maryland, with highlights of how to identify plants and animals and best practices to manage habitat to support wildlife and reduce problems. Join us to learn more about The webinar is free, but registration is required. For more information and to register, visit this Eventbrite link.

August 27, 2021, 9:00 am - 12:00 noon
Maryland's Forests - Great for the Environment and the Economy
Rocky Gap State Park, Flintstone MD
Join the Maryland Forests Association at the western regional meeting to learn more about the state of Maryland forestry, market opportunities, and how conservation and utilization are equally important elements of sustainable forestry. The meeting is free; go here to register (required). See this website for the schedule of additional regional meetings.

UNIVERSITY OF MARYLAND EXTENSION

WOODLAND STEWARDSHIP EDUCATION

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