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Maryland's Woodland Stewardship Educator

COLLEGE OF AGRICULTURE & NATURAL RESOURCES

University of Maryland Extension – Woodland Stewardship Education

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Woodland Owners Need the Forest Industry

A basic maxim of woodland ownership is that forest industry provides the markets to harvest forest products and accomplish objectives to improve forest health, alter species composition, enhance wildlife habitat, derive income, and repair damage from storms, insects, and disease. Sawmills, pulp mills, and other parts of the forest industry are major economic drivers in rural and exurban areas but several current events are causing reductions in the forest industry that will impact forest product markets depended upon by landowners.

According to the BEACON report from January 2018, the economic contribution of Maryland's forest industry is comprised of direct and indirect sources, and totals $3.5 billion statewide, supporting 15,271 jobs and providing $132 million in state and local tax revenue. This is ten times the impact of the seafood industry and more than 3 times the impact of the equine industry. Like most industries, forest products compete in a global markets and market decisions, environmental regulations, and government policies significantly impact the industry.

The Maryland forest industry lost a number of sawmills and loggers in the 2008 recession but recent events will have an even greater impact.

The Verso Pulp Mill in Luke, Maryland will close June 30 with loss of 675 jobs in rural western Maryland. The reason for the closure is due to a number of factors, including the decreasing demand for high-quality paper, increasing global competition, and stringent environmental regulations. The estimated direct and indirect economic impact is at least $1 billion. The lack of markets for low quality hardwood in western Maryland will make it difficult for private and public landowners to carry out improvement harvests needed to produce high quality hardwoods produced in the region. The future of the mill after closure is uncertain but options are being investigated.

The Eastern Correctional Institution (ECI) on the lower Eastern Shore has used low-grade pine wood chips to produce all its thermal heat and 70% of its power since the 1980s. It is an excellent example of using clean burning wood energy technology to produce heat and power. The State decided to convert the facility to natural gas to support a new gas line extension to the lower Eastern Shore. Unfortunately, the impact on the forest industry and markets for landowners was not adequately considered. ECI uses one-third of the pulpwood harvested on the Eastern Shore and the conversion will result in the overall impact of 250 jobs and $50 million. The conversion from wood to gas for fuel will also almost double the annual fuel cost to run the facility, an increase paid by taxpayers. The conversion has not been finalized and is still under discussion.

Dorchester Lumber, Cropper Brothers Lumber, and Sutphin Lumber are three large lumber mills that have closed recently. The first two are on the Eastern Shore and the third in southern Maryland. This is a major loss of processing capacity and markets for pine and hardwood logs.

The Port of Baltimore fumigating facility for the export of high-quality hardwood and pine logs sold overseas has been closed for two years, eliminating export from the Port. There were a number of reasons for the closure but the end result is loss of another market.

The loss of markets reduces options to actively manage forests to maintain and enhance forest health and protect water quality for the Bay. A basic principle of sustainable forestry is to thin forests and leave better trees to grow and produce quality trees in the future. Most forest thinnings produce low-quality material that is not suitable for sawlogs and is best used for pulp, biomass, and firewood. If markets do not exist it is likely a harvest will only occur when trees are large enough to produce sawlogs. The result may be highgrading of the best trees with poor quality trees left be-

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hind, which is not a desirable sustainable forestry practice.

What are the options for landowners? Learn more about the forest industry in your region and contact local and state government officials to see what policies and programs can be brought to bear. Some major efforts are needed to improve the business climate for the industry. The use of wood chips as commercial fuel to produce heat and power is an option. The BEACON report details the economic impacts but this translates into real life impacts on families, communities, businesses, as well as forest management. Organizations such as the Maryland Forest Association, Association of Forest Industries, and Maryland Wood Energy Coalition are actively involved. Other resources are available at our website. Our forest are a precious resource but need to be tended and woodland owners have a vested interest in helping the forest industry.

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. Both paper and online versions of the course will be offered, beginning Sept.1 through Dec. 15, 2019. **Registration opens June 1**, and interested participants can register online at extension.umd.edu/forestry-course.

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"). The paper version text and appendices for the course 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.

To learn more about the course and what it entails, go to 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, 410-827-8056, ext. 107, or nstewar1@umd.edu. Check for details on our website and mark **June 1 for open enrollment** on your calendar!

Garrett County's Buckels Nominated for National Tree Farmers of 2019

The American Tree Farm System has announced its nominations for the 2019 Outstanding Tree Farmer of the Year. Two nominees are selected from each of four regions across the country, and Bill and Tina Buckel of Garrett County, Maryland have been chosen as one of the Northeast Region's nominees.

Bill and Tina have been American Tree Farmers for 38 years, and actively manage 134 wooded acres, Their nomination on the website of the American Tree Farm System webpage describes the wide variety of stewardship activities the Buckels have performed on their acreage. For example, they dealt with dead and dying wood from trees affected by emerald ash borer and hemlock wooly adelgid by turning it into lumber for the family's new home. Other projects include timber stand improvement, building brush piles and nesting boxes for birds and bats, and developing young forest habitats. The Buckels have opened their Tree Farm to local school and forestry-related groups for educational tours to demonstrate a variety of management techniques.

Bill became a Maryland Woodland Steward (under its previous incarnation, the COVERTS Program) in 1993, and Tina used their maple tree collection system as her field project in obtaining her Master's in adult learning. Bill is also currently enrolled in this spring's session of "The Woods in Your Backyard" online course to develop a strategy for managing a 13-acre area for wildlife management, especially grouse. He says, "I have taken several [University of Maryland Extension] courses in forestry and wildlife enhancement and have attended several seminars in the past. I have found that I always find something new or discover new resources to use in my efforts." Good luck to Bill and Tina in the national selection! Read their nomination on the American Tree Farm System website.

Woodland Wildlife Spotlight: Bobcat

North America is home to a variety of wild cats, including the Canada lynx in the north and the cougar in the west and southwest. But the bobcat (*Lynx rufus*) is the most widely-distributed native wild cat on the continent, and can be found in habitats from central Mexico to Canada. The bobcat's range covers much of the United States, including Maryland.

In fact, the bobcat is the only type of wild cat found in Maryland. As the state's forests have regenerated and aged since the mid-1900s, the cat has recovered portions of its original territory. It is primarily found in the western counties of Allegany, Garrett, Washington, and Frederick. A sighting in the Washington County community of Cascade made the news this past April. They are found across the ridge in Catoctin Mountain Park. Individual cats have been found as far east as the western shore of the Chesapeake Bay. Additionally, suspected bobcats made the news in 2018. An unconfirmed sighting of one occurred in Wicomico County (read more here), and a camera caught what wildlife officials believe was one in Carroll County.

Bobcats resemble large house cats with a number of differences (see box at right). The wide variation of coloring and patterns of spots and stripes make individuals easy to distinguish. The species' preferred habitat is dense forests interspersed with open areas. They also inhabit swamps and bogs, and will frequent rocky ledges and slopes, which make ideal locations for courting and for creating dens. Like many cats, they are excellent climbers, and like other cats, they generally avoid water, but will swim when necessary. Their choice of habitat and their solitary nature may contribute to their infrequent contact with humans.

Within these habitats, the solitary bobcat will hunt for a wide variety of prey. It prefers live animals, using its keen hearing and eyesight for hunting small mammals such as mice, voles, rabbits, squirrels and woodchucks, as well as larger animals such as white-tailed deer. Hunting takes place during dusk and after nightfall. Bobcats may remain motionless for long periods or may stealthily move through the forest, patiently stalking their prey. They often cache their food by covering it with dirt, leaves, sticks or snow to conceal it from scavengers, and return for another meal later.

Each bobcat marks a territory of five to fifty miles in diameter, depending on how much food is available. A female's home range will rarely overlap with that of another female, but a male's range may overlap with other females' ranges. The mating season (January to April) is the only time when males and females interact. Their behaviors may include yowling and hissing at each other as courtship.

After mating, they return to their separate territories. The female may create several dens throughout her territory, such as in rocky crevices or in brush piles, or in downed or hollow logs. They have also been known to take advantage of abandoned human structures, such as cabins or sheds.

The female will give birth after about a two-month gestation period. Most have litters of two to three kittens, and raise the young without assistance from the males. The kittens stay with their mother during the late spring and early summer. They begin exploring their surroundings after four weeks and are weaned after about two months. They spend the rest of the summer learning how to survive on their own. By early fall, the young leave to find their own territory. Females mature after one year and males after two.

Adult bobcats have no consistent natural predators; scientists record individual cases of falling prey to larger animals such as cougars and coyotes. Foxes, coyotes and large owls will prey on bobcat kittens. Generally, their only threats come from human activity. Although they were once hunted and trapped for their fur, there is currently no season for such activities in Maryland.

Bobcat Basics

Bobcat caught on a trail camera, Garrett County, Maryland. More information on the Maryland Biodiversity Project.

Bobcat in a tree. Photo by Don Breville, US Fish and Wildlife Service

Appearance: Stocky build, notable pointy tuffs of black fur on ear tips. Characteristic short (bobbed) tail. Coats range from grayish brown to yellowish brown with wide variations of stripes or spots. White belly fur with dark spots. Ruff around neck resembling bushy sideburns.

Size: 29-39 inches in length; 15-40 lbs. weight.

Lifespan: 7-10 years average; up to 15 years in the wild.

Invasives in Your Woodland: Kudzu

Kudzu has become such an iconic invasive plant in the United States that it's found in many parts of American culture, particularly in the southern states. The name appears in coffeehouses, cafes, bakeries, and more; *Kudzu: A Southern Musical* toured the country; schools and communities elected kudzu kings and queens; and one blogger commented that apparently all a writer needed to do to become considered a Southern novelist was to "throw in a few references to sweet tea and kudzu."

Kudzu infestation. Photo by Chris Evans, University of Illinois, bugwood.org

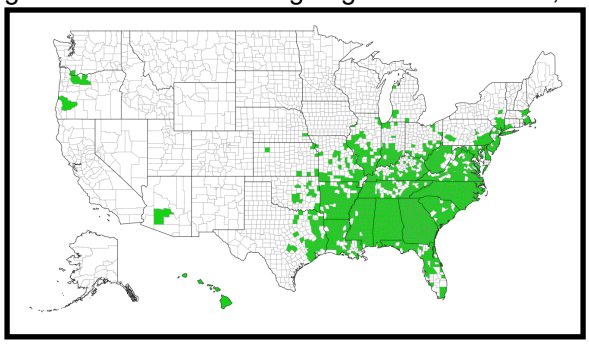
But is kudzu really, to borrow the title of a novel, "The Vine That Ate the South"? Certainly it grows prolifically and can be found throughout the South. It is found as far west as Texas and as far north as Massachusetts and Michigan, as well as in most of West Virginia, Virginia and all of Delaware. In Maryland, it is mostly confined to areas east of Frederick County and the lower Eastern Shore, and in Pennsylvania it is found mostly in the southeastern counties.

What is it?

Kudzu (*Puerania montana* var. *lobata*) was introduced to the United States from Asia during the 1876 World's Fair Centennial Exhibition in Philadelphia. During the Great Depression, it was touted as a way to reduce farmland erosion, as grazing fodder, and as a means to stabilize steep slopes along railroad and highway rights-of-way. The newly-created Soil Conservation Service offered bounties to farmers willing to plant the vine. While it failed as a cash crop, it excelled at spreading where it was not subject to grazing.

How does it spread?

Kudzu is a deciduous, climbing, semi-woody perennial vine that grows 35 to 100 feet long. It grows via runners, rhizomes, and from nearly every node that touches the ground. The vine also produces flowers after its third year from June to September, if it is growing off the ground onto trees or other vertical surfaces. It spreads most rapidly in open areas, including disturbed areas such as abandoned fields, roadsides, and forest edges. It grows best in deep, well-drained loamy soils and where winters are mild.



Kudzu US county distribution. Courtesy eddmaps.org.

How can I identify it?

Kudzu can form thick mats along the ground and into trees. The vines themselves can grow up to 10 inches in diameter, with taproots that can reach 7 inches in diameter and extend more than ten feet underground. The mature bark is rough, rigid, and dark brown. The leaves are alternate and compound with three broad leaflets up to 4 inches across. They may exhibit lobes unless the vine is growing in the shade. The leaves and the smaller vines will die off with the first frost. Stems that climb vertically, such as those invading woodland edge habitats, can overwinter in the canopy. See the photo gallery on the next page.

How can I control it?

Mechanical methods of control include repeated cutting of vines just above ground level and frequent mowing. Chemical methods have also been found to be effective; readily-available herbicides such as glyphosate and triclopyr can be applied by spraying climbing vines as high as possible. Additionally, herbicides can be applied to cut vines.

One of kudzu's natural predators, the Japanese kudzu bug, arrived in the US in 2009. It was first discovered in the Atlanta, GA area and is suspected to have arrived via an airplane at the nearby airport. Since that time, it has worked its way north, feeding on the vines in the surrounding habitat. It is now found as far north as central Maryland. Research continues on whether this invasive insect will help control the invasive vine.

For more information:

Learn more about kudzu:

Vines: Kudzu (invasive.org)

Weed of the Week: Kudzu (USDA Forest Service)

The True Story of Kudzu, the Vine That Never Truly Ate the South (Smithsonian.com)

Image Gallery:
Kudzu

Kudzu foliage. Photo by James H. Miller, USDA Forest Service, Bugwood.org

Kudzu plants. Photo by Amy Ferriter, State of Idaho, Bugwood.org

Kudzu infestation. Photo by Kerry Britton, USDA Forest Service, Bugwood.org

Kudzu flower. Photo by Peggy Greb, USDA Agricultural Research Station, Bugwood.org

News and Notes

New Recordings Available from Woodland Stewardship Education

The Woodland Stewardship Education program has two new sets of recordings available on our website and on social media. In March, WSE presented another in its series of Forestry Friday workshops at the Western Maryland Research & Education Center, entitled "Who's Up Next?: Extending Your Stewardship Beyond Your Tenure." The workshop examined the often-postponed but valuable topic of the future of woodland properties after the current owners pass away.

Three speakers provided important information for woodland owners. Jonathan Kays, University of Maryland Extension forester, shared an overview of land use history in Maryland, the benefits of effective woodland stewardship planning and management, and available cost share programs. Jennifer E. Jones of GROUND discussed the benefits of successful conservation-based estate planning, including ways to create family discussions about owners' wishes for the next generation. Paul Goeringer, Extension Legal Specialist for the University's Agriculture Law Education Initiative, shared information on creating wills, estate plans, trusts, and tax issues associated with each.

In April, WSE, in cooperation with the Maryland Dept. of Natural Resources' Forest Service and Wildlife & Heritage divisions, presented an in-service workshop on managing deer in a variety of environments. Speakers presented information about the impact of overabundant deer populations on residential landscapes, commercial agriculture, woodlands, and more. Additional presentations reviewed the efforts of two Maryland jurisdictions (Howard and Montgomery counties) to curb their deer populations through managed hunting.

The playlist of the "Who's Up Next?" workshop sessions is available through our YouTube channel here. PDFs of the presentations' slides are available on our website. The playlist of the deer damage in-service workshop is available here on YouTube, and the PDFs of the presenters' slides are posted on our website.

Good News about Spotted Lanternfly?

Marylanders are on the lookout for the spotted lanternfly, a new invasive insect that currently infests southeastern Pennsylvania and is moving into the adjacent states. (See our recent coverage of it here and here for more.) Two researchers from Cornell University recently published findings that document their observations of two native fungi are affecting spotted lanternfly populations. They theorize that the two unrelated fungi (*Batkoa major* and *Beauveria bassiana*) could assist in the fight against the invasive insect.

The Cornell researchers findings are summarized in this Science Daily article. The full report is here.

Emerald Ash Borer in Canada

The destructive nature of the emerald ash borer is all too familiar to woodland property owners in the United States. In addition, it has caused widespread damage in the Canadian province of Ontario and has been found as far west as Winnipeg, Manitoba. It was recently found in the province of New Brunswick. In April, the province of Nova Scotia banned the movement of firewood from Halifax County after the beetle was found last year in Bedford, NS. According to the Canadian Broadcasting Corporation, the insect has already destroyed several trees in an area park and others are suspected to be infected as well. The park is home to up to 9,000 ash trees, and ash species make up roughly five percent of the metropolitan area's trees. Crispin Wood, superintendent of urban forestry for the Halifax Regional Municipality, noted that the proportion is even higher in newer neighborhoods, where it is up to 30 per cent.

Read more about the Canadian restrictions here and the impacts here.

Tree Seedlings Have a Very Good Reason to Shirk their Parents

Veronique Greenwood, *The Atlantic*

In the study of forests, a central mystery has long stood unsolved: The seed that falls far from the tree does a whole lot better in life than the seed that stays close. Though scientists have never fully understood the reasons behind this pattern, they believe that something about the soil of an adult tree makes it unfriendly to seeds of the same species.

In a recent study published in the *Proceedings of the National Academy of Sciences*, researchers grew seedlings in soil from various trees to probe this question. And they found an additional, fascinating wrinkle. The deadly effect is very particular: Seeds can actually grow relatively well in soil from trees of their own species. It's the specific soil of their parents that afflicts them most.

Furthermore, the team believes that what ails the offspring is bacteria living in the soil of their parent trees—not dangerous to the adult, but somehow adapted to sicken its own seedlings.

In the past, scientists have considered many possible advantages to seeds flying farther from the feet of the adults of their species. This arrangement might encourage the growth of a wide variety of species, with the rare sheltering in the shadow of the common. Indeed, in tropical rain forests, there's an enormous diversity of trees, all of them thriving together.

The team set out to examine several different variables, including the nutrients in the surrounding soil and the presence of symbiotic fungi, in a sampling of trees from a forest in Panama. The researchers put seedlings of the baboonwood—a tall, lanky tropical tree—in pots whose soil had been mixed with soil carefully collected from under the seedlings' parents, from under other baboonwood trees in the forest, or from under trees of other species.

After eight months, they checked the total weight of each of the plants. That was when it became clear that there was a difference between growing in a parent's soil versus another baboonwood tree's soil.

"Being near another member of your own species is a much better situation for seedlings than being near their maternal plants," says Jenalle Eck, a postdoctoral researcher at University of Zurich who led the study. In the past, experimenters had sometimes pooled the soil from all the trees of a given species, for simplicity. This would have obscured the effect that Eck and her colleagues saw, making it look like growing near any tree of the same species is harmful.

In contrast, there was no correlation between the nutrients in the soil or the symbiotic fungi and the final size of the plants. That confirmed a suspicion the researchers had—that something else living in the soil, probably bacterial, is to blame. The soil in the pots had been dosed with forest soil whose bacteria were intact. The bacteria in that dose would have spread throughout the soil, and if pathogens were present, they would have been able to infect the seedlings, hampering their growth.

Extensive red oak regeneration. Photo by Howard Nuernberger, Penn State University

The fact that such pathogens would affect only seedlings of a given parent suggests that they target something specific to the offspring's genome. A computer model built by the researchers to show how such genotype-specific pathogens might work confirmed that their presence would produce the patterns the team saw.

Such pathogens might build up over time in the soil around a tree, Eck says. They might not be present in the soil around a newly sprouted tree, but once it has matured into adulthood, the tree might draw them with its constant rain of young unable to fend off an attack. "Essentially, as these trees live over decades and they every year produce offspring, it attracts ... pathogens that affect those offspring," Eck suggests. The identity and the workings of such pathogens are still unknown, but Eck and her colleagues are hoping to answer these questions in future research.

For a forest, the implications of being controlled by bacteria might be profound. If pathogens can limit the growth of offspring near their parent trees, then they can shape the pattern of species intimately. Of course, the exact effects would depend on just how bad it is for seeds to fall near parents, compared with falling somewhere else, Eck points out. But over evolutionary time, the bacteria might select for plants that can cast their seeds far and wide.

"There is increased selection pressure for seeds to disperse," she says, "because basically no matter where they land, they're better off."

Events Calendar

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

May 20, 2019, 1:00 pm—4:00 pm
Forest Action Plan Listening Session—Southern Maryland
Potomac Branch Library, Indian Head MD

The Maryland Department of Natural Resources, in concert with the Harry R. Hughes Center for Agro-Ecology of the University of Maryland, will host a listening session related to he development of the MD Forest Service's 2020 Forest Action Plan. For more information, go to go.umd.edu/fapsmd.

May 28, 2019, 2:00 pm—3:00 pm
Managing Oaks for Northern Bobwhite Quail
Online webinar
Participants in the free webinar will learn about managing oak forests and restoration efforts related to Northern Bobwhite Quail. For more information, go to http://www.forestrywebinars.net/webinars/managing-oak-forests-for-northern-bobwhite-quail.

June 1, 2019
General Forestry Course Registration Opens
For more information, see the article on page 2. To register, go to this link.

This Issue's Brain Tickler ...

Last issue, we featured this photo and asked readers to identify the new invasive species in this photo. The correct answer is the spotted lanternfly. Congratulations to Suzanne Hill for her correct response.

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Photo: Leslie J. Mehrhoff, University of Connecticut, Bugwood.org

For this issue, please identify the tree that bears this fruit. Hint: it's a popular species that now is considered invasive in many places.

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

June 5, 2019. 6:00 pm—9:00 pm
The Woods in Your Backyard Evening Workshop
Bowie City Hall, Bowie MD
Join Jonathan Kays and Agnes Kedmenecz of the Woodland Stewardship Education program for an evening program of "The Woods in Your Backyard." Learn how to create new natural areas from lawn or pasture, or enhance existing woodland for wildlife, recreation, privacy, timber or other objectives. Registration is $25.00 per person and includes the full-color guide. Register at this link; registration closes May 31.

UNIVERSITY OF MARYLAND EASTERN SHORE

UNIVERSITY OF MARYLAND EXTENSION

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