<table>
<thead>
<tr>
<th>Species</th>
<th>Size</th>
<th>Type</th>
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<tr>
<td>Spicebush</td>
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<td>Seedlings</td>
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<tr>
<td>American Arborvitae</td>
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<td>Allegheny Serviceberry</td>
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<td>Black Walnut</td>
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<td>Silky Dogwood</td>
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<tr>
<td>River Birch</td>
<td>18-24&quot;</td>
<td>Seedlings</td>
<td>$670.00</td>
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<tr>
<td>Swamp White Oak</td>
<td>12-18&quot;</td>
<td>Seedlings</td>
<td>$580.00</td>
</tr>
<tr>
<td>Speckled Alder</td>
<td>12-18&quot;</td>
<td>Seedlings</td>
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<tr>
<td>White Pine</td>
<td>7-10&quot;</td>
<td>Seedlings</td>
<td>$240.00</td>
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<tr>
<td>Norway Spruce</td>
<td>16-24&quot;</td>
<td>Transplants</td>
<td>$800.00</td>
</tr>
</tbody>
</table>

Contact us today for complete seedling list!
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The 13th Forestry on Ohio’s Public Lands Teacher Field Days program was held in June at Vinton Furnace State Forest. Dr. Mike Graziano (holding tub) is pointing out evidence of amphibian life netted by a teacher from one of the vernal pools where he recently completed his OSU doctoral research.

The image on this page shows Andrew Hoffman, OSU doctoral candidate, sharing a recently captured timber rattlesnake with the teachers. Photos by ODNR
As has been said many times, “the only thing constant in life is change.” Whether we are driving those changes or not, our ability to adapt will usually dictate our success and, oftentimes, happiness.

Change has been on my mind – in the time since I wrote for the previous issue of The Ohio Woodland Journal, I have made a relatively drastic life change in leaving the Division of Forestry after 18 years of service. However, even if I didn’t choose that career change, there were certain to be changes within the Division of Forestry, as is the ongoing norm at organizations of any size.

Watching the forest change over time is one of the things that I have always enjoyed about being a forester. That forests change is not news to you, as woodland owners. Obviously there are changes from season to season: spring wildflowers, the winter snow, the beauty of fall color, and the majestic mosquitoes of summer.

There are also those long-term changes in the forest. Take, for example, that day you walk into your “young woods” and realize all of the trees are large saw logs. Less exciting, there are times when you walk in your mature woods after a storm has taken that stand back to being a young forest. As devastating as that can be, it creates a new beauty of its own – for example, early successional song birds will find their way to that spot. Another example of a forest change is a right-of-way that takes a slice out of your forest. While there is no doubt that can look like a scar on the land, I’ve encouraged people to stop looking at the missing forest and start seeing a wildlife opening or an access trail.

I heard the suggestion that humanity has “restarted” three times. The first happened when early humans went from cave writings to tablets. The second happened when stone writings went to scrolls. The third massive change was ushered in by the introduction of the printing press. If you see the trend with those changes of how we communicate, you might realize that we are in the middle of the fourth “restart” now. Technology is often accelerating the rate of change in almost all facets of life. (Have you heard that more people in the world have a cell phone than a toothbrush?) One place to track those technology changes in the forest industry is OFA’s Paul Bunyan show.

The last change I wanted to touch on are changes that will likely impact the Tree Farm program. The American Forest Foundation (AFF) is the parent organization of the American Tree Farm System. The other major program that has been under AFF is Project Learning Tree (PLT). Recently, it was announced that PLT is going to be transferred to the Sustainable Forestry Initiative (SFI). That leaves Tree Farm as AFF’s only major program. I don’t know what that means in the long-term for Tree Farm, but my intuition says it will strengthen it, giving AFF a more singular focus. Regardless of what is happening with the national administration of Tree Farm, you, the Certified Tree Farmer, will remain the constant that makes the program great in Ohio. ♦
Greetings!

One of the many projects that the Ohio Department of Natural Resources Division of Forestry foresters have been working on this year is participation in training in order to conduct BMP inspections for Master Logger timber harvests.

We all know how important BMP (or Best Management Practices) are in woodland management, and that it is especially important that they are implemented correctly when harvesting timber. To help ensure that forestry BMPs are implemented correctly, the Ohio Forestry Association (OFA) maintains a Safety Training and Voluntary Certification Program for logging contractors and their employees. It is called the Master Logger Program. The Master Logger Program has certain requirements for loggers to be certified, including that each logger is trained to use BMPs to reduce soil erosion and improve the appearance of timber harvesting activities. Another requirement for Master Loggers is that they must grant permission to allow the Ohio Logging Standards Council (LSC) Inspectors to review all aspects of a timber harvest operation.

Many of the division’s foresters have undergone training this year which will enable them to work with LSC members throughout the state in the inspection and evaluation of BMPs used on Master Loggers’ timber harvest sites. Some of the things they look for in the inspections include: haul road layout, drainage and use of culverts; landing layout and drainage controls; skid road layout, drainage and slope; stream crossings avoided if possible, and if not possible, that they are crossed correctly and filter strips are used correctly.

BMP demonstration areas have been developed at Scioto Trail State Forest and most recently at Fernwood State Forest. The sites are serving as training areas for division foresters as well as for Ohio loggers as part of their Master Logger training through OFA.

The ODNR Division of Forestry supports the OFA’s Ohio Master Logging Company Program. We only use Master Logging Companies to perform work on state forest lands, and we recommend the use of Master Loggers for any timber harvesting project. Additionally, private landowners in the Ohio Forest Tax Law Program are required to use Master Loggers.

Inspections of BMP practices at Master Logger harvest sites benefit forestry in Ohio by helping OFA maintain consistent and effective use of BMPs through its Master Logger Program.

Fernwood State Forest Manager Justin Law (center, pointing) instructing at BMP training, Jefferson County.

ODNR foresters looking at BMPs at Scioto Trail State Forest, Ross County. Photos courtesy of ODNR.
AUGUST 2017

11
A Day in the Woods 2nd Friday Series**
Improving Habitat for Game Wildlife

SEPTEMBER 2017

8
A Day in the Woods 2nd Friday Series**
Tips, Tools, Techniques to Improve Your Woods

19-21
Farm Science Review
London
http://fsr.osu.edu/gwynne-conservation-area

OCTOBER 2017

6-8
Paul Bunyan Show
www.ohioforest.org

13
A Day in the Woods 2nd Friday Series**
White Oak-Importance, Ecology, Management

18
Forest Health: Invasive Species
Medina
woodlandstewards.osu.edu

21
Ohio Tree Farm of the Year Tour
Hepatica Falls Tree Farm
Harrison County
(330) 364-2386

21
Hocking State Forest Fall Color Tour
(740) 385-4402

27
A Day in the Woods 2nd Friday Series**
From Trees to Lumber

NOVEMBER 2017

17
A Day in the Woods 2nd Friday Series**
Winter Tree Identification

17
A Day in the Woods 2nd Friday Series**
Stargazing (6:30-10:30 pm)

**All A Day in the Woods 2nd Friday Series are designed for woodland owners and enthusiasts, and take place at Vinton Furnace State Forest and other southern Ohio sites. Pre-registration required. http://u.osu.edu/seohiowoods or 740-596-5212

Photo credit to Advanced Tree Technology – student picking apples for the local food bank. See story on page 13.
Directions to the 2017 Ohio Tree Farm of the Year Tour

October 21, 2017
10 a.m. to 3 p.m. - Rain or Shine
Hepatica Falls Tree Farm, Harrison County
Koral and Randy Clum

Signs for parking will direct travelers to the former Lakeland High School, now Select-O-Sep business.

Shuttle busses will provide transportation to the Hepatica Falls Tree Farm.

Parking address: 77520 Freeport-Tippecanoe Rd. (State Route 800), Freeport, Ohio 44907. Parking is just north of Freeport.

The tour will feature field demonstrations and talks. Food will be available on site: lunch items will be available for purchase, with a restaurant and markets nearby.

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Farm Science Review (FSR) is September 19-21 at the Molly Caren Agricultural Center, two miles north of London, Ohio at the intersection of US 40 and SR 38. The show is open Tuesday and Wednesday from 8 am – 5 pm and Thursday from 8 am to 4 pm. Before traveling, type Farm Science Review, London, OH in your mapping device and it will guide you to the show. Online ticket sales are available at http://fsr.osu.edu.

<table>
<thead>
<tr>
<th>TUESDAY, September 19, 2017</th>
<th>Topic &amp; Speaker</th>
<th>Topic &amp; Speaker</th>
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<th>Topic &amp; Speaker</th>
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<tbody>
<tr>
<td></td>
<td>Cabin</td>
<td>Wildlife &amp; Aquatics</td>
<td>Forages &amp; Grazing</td>
<td>Woodland</td>
<td>Woodland Demo Area</td>
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<tr>
<td>10:00</td>
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<td>Forestry Students</td>
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<tr>
<td>10:30</td>
<td>Prairie Restoration Plots Mike Retterer</td>
<td>Managing Aquatic Vegetation Perry Orndorff</td>
<td>Warm season bunch grasses Christine Gelley</td>
<td>Low-Impact Logging Lee Beers</td>
<td>Chainsaw maintenance, sharpening and safety demo</td>
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<tr>
<td>11:00</td>
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<td></td>
<td></td>
<td>Fall Mushroom Hunting Erika Lyon</td>
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<tr>
<td>11:30</td>
<td></td>
<td>Creating and enhancing pollinator habitat Denise Ellsworth</td>
<td>Warm season bunch grasses Christine Gelley</td>
<td>Low-Impact Logging Lee Beers</td>
<td>Fall Mushroom Hunting Erika Lyon</td>
</tr>
<tr>
<td>12:00</td>
<td>Common Ohio Woodland Fungi Curtis Young</td>
<td>Bee Identification Denise Ellsworth</td>
<td>Managing Native Warm Season Grasses for Grazing, Haying and Wildlife Bob Hendershot</td>
<td>Chainsaw cutting techniques (demo)</td>
<td></td>
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<tr>
<td>12:30</td>
<td>Outdoor Photography Erika Lyon</td>
<td>The Exclusion Solution: How to Build a Deer Exclusion Fence Lenny Farlee</td>
<td>Winter stock piled forages Dave Libben</td>
<td>Chainsaw cutting techniques (demo)</td>
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<tr>
<td>1:00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Winter stock piled forages Dave Libben</td>
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<tr>
<td>1:30</td>
<td>Attracting and utilizing pollinators on your farm Amanda Bennett</td>
<td>Deer Food Plots Tim McDermott</td>
<td>Deer Food Plots Tim McDermott</td>
<td>Winter stock piled forages Dave Libben</td>
<td>Winter stock piled forages Dave Libben</td>
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<tr>
<td>2:00</td>
<td>New Herbicides for the Management of Aquatic Plants in Ponds Eugene Braig</td>
<td>Attracting Hummingbirds to Your Backyard Marne Titchenell</td>
<td>Warm season annuals Mike Estadt</td>
<td>When is it time to harvest your trees? Dave Apsley &amp; Bob Mulligan</td>
<td>When is it time to harvest your trees? Dave Apsley &amp; Bob Mulligan</td>
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<tr>
<td>2:30</td>
<td></td>
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<td></td>
<td>Trees and Taxes Lenny Farlee</td>
</tr>
</tbody>
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Located on the west side of the Molly Caren Agricultural Center is the 67-acre Gwynne Conservation Area. If you haven’t been to “the Gwynne” when you have traveled to Farm Science Review each September, you have missed a unique part of the farm. The Gwynne contains multiple tree plantings, warm season grass plantings, ponds, and has Deer Creek running through it. During the Review each year, the Gwynne offers numerous conservation-focused talks, a guided wagon tour through the grounds, and educational displays.

Take a look at this year’s talk schedule for the Gwynne Conservation Area and you will see a little bit of everything. Along with the Woodland, Wildlife and Aquatics, and Cabin amphitheaters, the Forages and Grazing amphitheater has been added for 2017. The intent of this new amphitheater is

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Speaker</th>
</tr>
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<tbody>
<tr>
<td>10:00</td>
<td>Forestry Students</td>
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<tr>
<td>10:30</td>
<td>Prairie Restoration Plots</td>
<td>Mike Retterer</td>
</tr>
<tr>
<td>11:00</td>
<td>Hydroponics</td>
<td>Brian Kleinke</td>
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<tr>
<td>11:30</td>
<td>Attracting Bluebirds and Purple Martins to Your Farm</td>
<td>Christine Gelley</td>
</tr>
<tr>
<td>12:00</td>
<td>Recreational Fisheries Basics for Farm Ponds</td>
<td>Eugene Braig</td>
</tr>
<tr>
<td>12:30</td>
<td>Worm Composting</td>
<td>Carri Jagger</td>
</tr>
<tr>
<td>1:00</td>
<td>Basics of Pond Aeration</td>
<td>Perry Orndorff</td>
</tr>
<tr>
<td>1:30</td>
<td>New Herbicides for the Management of Aquatic Plants</td>
<td>Eugene Braig</td>
</tr>
<tr>
<td>2:00</td>
<td>Attracting Hummingbirds to Your Backyard</td>
<td>Carri Jagger</td>
</tr>
<tr>
<td>2:30</td>
<td>Warm season grasses?</td>
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<tr>
<td></td>
<td>Conservation Tree Planting</td>
<td></td>
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<tr>
<td></td>
<td>Own woodlands?</td>
<td></td>
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</table>

• **Fantastic Variety!**

**Talks for Everyone**

Kathy Smith
OSU Extension Program Director, Forestry, School of Environment and Natural Resources
to focus on the many warm season grass areas that cover the grounds. The other addition this year is a dedicated Woodland Demonstration Area that will feature extended sessions on chainsaw maintenance and chainsaw cutting techniques on all three days of Farm Science Review.

Talks this year cover a wide range of topics. The current hot topic is pollinators, and we have several sessions on creating and enhancing pollinator habitat, along with identifying bees. On the wildlife side there are talks on deer (both food plots and exclusion fences), hummingbirds, bats, bluebirds, and purple martins.

For woodland owners, you can enjoy the chainsaw demonstrations and talks on low impact logging equipment, when to harvest your trees, and taxes. Need help on identifying what trees you have on your property? Take in sessions on both conifer and hardwood identification to help you with the process.

There are all sorts of other topics. Mushrooms, worms, photography, and pond management are all part of the program. Check out the schedule to see when the talks you are interested in are taking place. Catch a shuttle on the west end of the main Review grounds and the Gwynne will be the first stop on the shuttle route.

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### THURSDAY, September 21, 2017

<table>
<thead>
<tr>
<th>Time</th>
<th>Cabin</th>
<th>Wildlife and Aquatics</th>
<th>Forages and Grazing</th>
<th>Woodland</th>
<th>Woodland Demo Area</th>
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<tbody>
<tr>
<td></td>
<td>Topic &amp; Speaker</td>
<td>Topic &amp; Speaker</td>
<td>Topic &amp; Speaker</td>
<td>Topic &amp; Speaker</td>
<td>Topic</td>
</tr>
<tr>
<td>10:00</td>
<td>Forstmetry Students</td>
<td>Prairie Restoration Plots</td>
<td>Establishment of Wildlife Food Plots</td>
<td>When is it time to harvest your trees?</td>
<td>Chainsaw maintenance, sharpening and safety demo</td>
</tr>
<tr>
<td>10:30</td>
<td>Mike Retterer</td>
<td>Mark Landefeld</td>
<td>Mike Retterer</td>
<td>Dave Apsey &amp; Bob Mulligan</td>
<td></td>
</tr>
<tr>
<td>11:00</td>
<td>Putting Pollinator Habitat to Work</td>
<td>Colleen Sharkey</td>
<td>Year-round grazing</td>
<td>Tim McDermott</td>
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</tr>
<tr>
<td>11:00</td>
<td>Owning woodslands?</td>
<td>Overview of Ohio’s Property Tax Programs for woodlands</td>
<td>Own woodlands?</td>
<td>Cotton Randall</td>
<td></td>
</tr>
<tr>
<td>11:30</td>
<td>How to Build the Best Bat Houses</td>
<td>Marne Titchenell</td>
<td>Controlling Wildlife Damage around the Home and Yard</td>
<td>Mark Landefeld</td>
<td></td>
</tr>
<tr>
<td>12:00</td>
<td></td>
<td>Brian MacGowan</td>
<td>Pasture Walk</td>
<td>The Secrets of Tree ID</td>
<td>Kathy Smith</td>
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<tr>
<td>12:30</td>
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<td></td>
<td></td>
<td></td>
<td>Chainsaw cutting techniques (demo)</td>
</tr>
</tbody>
</table>
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jeremy.scherf@dnr.state.oh.us

Killbuck Valley Woodland Interest Group
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Muskiongum River Woodland Interest Group
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Joe Puperi
Advanced Tree Health
joe@advancedtreehealth.com

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ODNR Division of Forestry
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Southern Ohio Forestland Association
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(740) 634-2470

Southwest Ohio Woodland Owners Association
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Advanced Tree Technology was started in 1984 by brothers Mark and Randy Bruick in New Haven, located in northeastern Indiana. The brothers originally started in business as Bruick Brothers Produce, developing an apple orchard along with producing fruits and vegetables for local grocery stores and restaurants. They began grafting apple trees for their own orchards as well as windbreak trees for the orchard.

The brothers enjoyed the tree production side of things and entered into production contracts for other nurseries, renaming the business Advanced Tree Technology. That nursery business has grown to include genetically superior hardwood timber trees used as long-term investment opportunities by customers. It is always interesting to hear customer stories about why they are investing in timber trees. Sometimes it is for them, but many times they are planting the trees – developing a tree plantation – for their kids and grandkids.

For over 30 years, Advanced Tree Technology has grafted, grown, sold, and maintained hundreds of thousands of genetically superior hardwood timber trees now growing in several states. Improved trees include black walnut, white oak, black cherry, and curly poplar. The business also has produced and sold over 2 million genetically superior seedlings from grafted trees, and maintains a large plantation of genetically superior trees from which scion wood and seed are harvested for propagation. The owners of Advanced Tree Technology personally oversee the collection of seed and scion wood from these plantations to ensure the best genetics in what they sell.

Along with the hardwood timber trees, we also produce a wide variety of fast growing trees and plants for windbreaks, screens, and shade. Most of our hardy plants are grown at the nursery in northeastern Indiana. A few items are produced for us by other nurseries that we have worked with for years, and these plants also have to measure up to our high quality standards. We also supply liners to the nursery and landscape industry.

Advanced Tree Technology has 4 greenhouses and over 45 acres in production, propagation, and plantations. There are 8 full-time employees and 4 part-time employees, with several staff having been with the company for over 20 years.

The vegetables are gone, but the You-Pick apple orchard and pumpkin fields, along with fresh apple cider, is a bustling part of business in the fall. If the company has a year with an overwhelming amount of apples that don't all get picked by You-Pick customers, school groups are invited to come help pick the remaining apples which are donated to a local food bank. It is a good experience for the students and the apples don't go to waste.

When you call the company, you'll talk to someone who is involved in the nursery production of the trees and plants. It may take a moment for someone to answer the phone while they kick the dirt off their shoes, but everyone who works at Advanced Tree Technology gets dirty.

Advanced Tree Technology is located at 12818 Edgerton Road, New Haven, IN. For product and contact information, see their ad on page 22.
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Welcome to a Brief History of the State Forests of Ohio

Don Karas
ODNR Division of Forestry
A brief review of the history of the Division of Forestry clearly demonstrates that the proper land use of all state forest properties has been of paramount importance from the time of the Division of Forestry’s initial acquisitions in 1916 and the formation of the Ohio Department of Natural Resources (ODNR) in 1949.

The study of the ODNR Division of Forestry’s (DOF) history and philosophy is incomplete without looking at the role it played in the reclamation of impoverished farmsteads and unregulated surface mines, the formation of the state parks and nature preserves, and its continued leadership in wildfire prevention and suppression. The state forests continue to be managed to encourage the production of timber as well as to enhance the other forest benefits inherent to judiciously managed forests.

The construction of canals and railways and the production of iron were largely responsible for the settlement of southeastern Ohio. Roads, canals, and railroads carried iron ore, charcoal, and coal to the furnaces, and then, in turn, facilitated the movement of cast iron to manufacturers during the Industrial Revolution. Ohio iron played a critical role in the production of munitions during the Civil War. Most modern industry in Ohio traces its origin to the iron industry, which was enabled by the construction of canals and railroads during the 1800s.

During the period of iron production in southern Ohio from 1850 through 1900, homes and structures were erected to accommodate growing communities. Land clearing for farming, iron ore mining, clay mining, coal mining, and stone quarrying—in addition to logging for charcoal production—was extensive, significantly altering the landscape. Most of the original or old growth forest was removed and the hillsides were stripped bare.

The history of the Division of Forestry dates back to a 1906 legislative action that formed the DOF to study the forestry-related problems of the state. This included the level of deforestation, treatment of forested stands on private lands, conditions affecting the rate of growth, and forest problems associated with the hill counties of the state, including the destructive forces of wildfire. At that time, the DOF was part of the Ohio Agricultural Experiment Station.

Initial state forest acquisitions began in 1916. These were impoverished agricultural lands where the DOF experimented with planting various tree species to determine the best way to improve site conditions and the tree species best suited for those purposes. Poor agricultural
practices, mining for coal, iron ore, stone, and clay, and iron production with its associated timbering for charcoal production had greatly reduced the timber resources of the state, leaving the hillsides barren and badly eroded. Later acquisitions continued to be of depleted agricultural lands, but were expanded to include abandoned, unregulated mining lands.

Tree seedling nurseries were started on the early state forests to provide seedlings for planting on state forests and private lands. Most of these seedlings were of coniferous species known to grow better than many hardwood species on the impoverished soils resulting from poor agricultural practices. Soil augmentation was essentially non-existent, fields were often plowed up and down the hills rather than on the contour, crops were not rotated, and livestock were allowed to graze in the farm woodlots. The decline in soil fertility was further exacerbated by forest fires from railroads and debris burning that often burned uncontrolled. Repeated fires further reduced the soil fertility by destroying organic matter. Many of these areas required artificial reforestation since natural regeneration was hampered by the poor soil conditions. Rill, gully, and sheet erosion were commonplace.

A restriction was placed on the early state land acquisitions to limit the purchase amount to $10.00 per acre. This ensured that only the most impoverished lands would be purchased for forestry purposes. Trees were planted and fire towers were constructed on these sites.

In the early 1920s, the law was modified to allow the expenditure of larger sums of money to permit the acquisition of state forest-parks. These were areas of unique natural beauty with a potential for the development of recreational opportunities. State forest-parks often featured unique geological formations. The Division of Forestry took great pride in the management of these areas. Trees were planted, trails blazed, picnic areas built, fire towers erected, and roads and fire breaks were constructed, much of which was accomplished by the Depression Era Civilian Conservation Corps. Lodges, cabins, and lakes were built by DOF staff. The unique geology was aggressively protected, and timber management was confined to more appropriate areas of the state forests.

In 1949, the Ohio Department of Natural Resources was formed and with it the Division of Parks and Recreation. Areas best suited to recreation were transferred to this newly formed division. The Division of Forestry was charged with managing the remaining state forest land for forestry purposes, including timber management and dispersed back country recreation, and with protecting state and private property from the ravages of wildfire. The DOF continues to support the management of the state's parks by removal of unsafe timber and the production of wood products to enhance the beauty of their facilities.

Early in its formation, the DOF established state tree seedling nurseries to reclaim abandoned farmsteads. From 1965 to 1971, in excess of 15 million DOF-produced tree

An impoverished farm purchased by the Division of Forestry. Poor agricultural practices resulted in sheet, rill, and gully erosion.
Reforestation for erosion control.

Poles thinned from a pine plantation on Pike State Forest being treated at the former CCC Camp Pike. Treated and untreated posts and poles were sold locally at many state forests. Pine was planted on abandoned fields to quickly establish cover and reduce further soil erosion, with the goals of producing products and serving as nurse crops until native hardwoods became re-established by natural regeneration.

Mohican forest road project, 1933.

Seedlings were planted to reclaim the most horrendously abused lands in Ohio, the abandoned pre-law surface mines. As a logical consequence, the DOF was combined with the Division of Reclamation in 1965 to become the new Division of Forestry and Reclamation.

In 1966, ODNR purchased the land which became Goll Woods, confirming 90 acres of woodland representative of the original forests of the Black Swamp in northwest Ohio. This area was entrusted to the Division of Forestry and Reclamation to be managed and protected, marking the inception of the ODNR natural areas program. The Division of Reclamation (now Mineral Resources Management) became a division of its own to enforce newly formed surface mine laws passed in 1972 that favored grasses, legumes, and other agricultural crops as the new form of reclamation. Tree plantings for reclamation were relegated to a minor role.

In 1973, the DOF became the Division of Forests and Preserves. The division actively sought out new land acquisitions for the sole purpose of protection from development or exploitation. Areas of state forests displaying unique geologic formations and their associated plant communities were dedicated by the Division of Forests and Preserves as state nature preserves. During the five-year period from 1971 to 1975, nineteen preserves were acquired with considerable support from the state legislature. The division managed those sites to preserve their integrity and associated plant communities until 1975, when the Division of Natural Areas and Preserves was formed. Once again, the DOF focused primarily on the state lands best suited to forestry purposes, including production of timber and the sustainability of this resource.

The responsibility of managing the state forests that have approximately 11.6 million citizen-owners poses incredible...
challenges and user conflicts. The Division of Forestry uses a methodical procedure of zoning to maximize the benefits of managing the state forests for multiple uses. The management of the state forest within each zone is modified to best meet the objectives of each of these zones. The DOF continues to identify areas of unique plant communities and zone them and manage them accordingly. The goal of the management of the aesthetic roadside scenic corridor is to protect the scenic nature of the drive through the forest. On some stretches of road, trees are removed to enhance scenic vistas, provide for safe travel by removing deteriorating pine plantations or otherwise unsafe trees, and protect utilities passing through the forests to our neighbors.

A well-managed forest is a healthy forest that serves as a natural filter and provides clean air and water while sequestering and storing atmospheric carbon. Timber management helps maximize a diversity of habitats for a great number of forest dwelling species of flora and fauna. Many state threatened and endangered species of plants are disturbance-related species, and the greatest threat to them is being over-topped by competing vegetation. Many species of forest dwelling wildlife rely on openings in the forest canopy to produce layers of plant growth to accommodate foraging, bugging, mating, and nesting.

The “Best Management Practices for Logging Roads in Ohio” (BMPs) guidelines were at least partially developed on state forest land, with DOF foresters playing a significant role in the formulation of the practices. All harvests on state forest land are conducted in compliance with these BMPs. The water quality on state forest lands remains protected during and after harvesting operations. Loggers operating on state forest land are contractually required to follow the BMPs as defined (continued on page 23)

Cabinets from quality hardwoods grown on state forests were hand built and installed by Division of Forestry craftsmen in a cabin at Malabar Farm State Park.

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Fall Webworm Nest on Walnut Red-headed Biotype
**Fall Webworms (Hyphantria cunea)** have at least two generations in Ohio, and overwintered eggs that produce the first generation hatched in late spring near my home in southwest Ohio. The image below was taken in late May and shows a first generation nest on dogwood with 1st instar "black-headed" caterpillars constructing their characteristic silk nest and feeding upon the leaves enveloped within.

**It’s a Generational Thing**

So why are fall webworms that are appearing in the spring called “fall” webworms?

First generation nests are seldom as numerous or as large in size as those produced by the second generation; the first generation nests normally involve only a few leaves. However, first generation female moths often lay their eggs on or near the nests from which they developed, thus second generation caterpillars expand the nests once occupied by first generation caterpillars. The second generation nests typically reach their maximum size in the fall which accounts for the common name.

**Feeding Behavior; Black-Headed vs. Red-Headed; and Nest Size**

Fall webworm caterpillars feed as leaf skeletonizers and they only feed on the parts of leaves enveloped by their silk. As caterpillars grow in size, they expand their nest by casting silk over an increasing number of leaves to accommodate their expanding appetites. However, nest size ultimately depends on the webworm **biotype**.

Fall webworms have two distinct biotypes named for the color of their head capsules: black-headed and red-headed. Caterpillars of both types are very hairy, but differ in body coloration, nesting behavior, dates for spring adult emergence, and to some extent, host preferences.

Black-headed fall webworm nests appear to include caterpillars from only a few overwintered egg masses. They tend to produce small, wispy nests that envelop only a dozen or so leaves. However, it is not uncommon for several of these small communal nests to be found on the same branch.

Red-headed fall caterpillars are far more cooperative; their communal nests may include caterpillars from a large number of egg masses. Thus, they can produce some truly spectacular multilayered nests enveloping the leaves on entire branches. This biotype is the more damaging of the two and is commonly found in the eastern part of Ohio. The black-headed biotype is common in the central and western parts of the state; however, last season I found red-headed biotypes in a county park in southwest Ohio.

**A Word From Management**

The caterpillars of both bio-types may be found on a wide variety of woody ornamentals as well as fruit trees. If first generation nests are few in number and easily accessible, the best control approach is to use your five-fingered IPM [integrated pest management] tool to physically remove and destroy the nests and caterpillars. Destroying the first generation nests will prevent second generation nests. The digital control approach is highly effective and thus far, no populations have become resistant.
Insecticide applications should be used sparingly since insecticides may kill bioallies that help keep population densities in check. Fall webworms are native to North America and there are over 50 species of parasitoids, and 36 species of predators known to make a living on fall webworms. Indeed, it is not unusual to find fall webworm nests surrounded by a compliment of hungry predators including predacious stink bugs. These and other beneficial insects are very effective in reducing year-to-year populations of this defoliator.

Editor's note: a rag on a pole works well to swipe up those hard-to-reach webs. Grandpa's method of a flaming rag on a pole is not only harmful to the tree, but certainly not worth the risk to the operator. In most cases, by the time the webs are large, the tree has already stored up enough reserves for winter that webworm activity causes minimal damage to the plant.

Dr. Boggs article was originally published in the May 28, 2017 Buckeye Yard & Garden onLine newsletter, and can be seen at http://bygl.osu.edu/node/769.

See page 34 for OWJ advertising rates and school sponsorship information.

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in the timber sale agreement, and are monitored and directed by the Division of Forestry Timber Sale Administrator. As a result, many of Ohio’s loggers use these skills learned on state forest land when they work on private lands.

Non-native invasive species are an on-going concern. Routine forest inventory cruising includes the documentation of infestations by non-native invasive plants. Timber stand improvement operations are conducted to remove invasive species several years prior to harvesting if the regeneration of acceptable species of timber is threatened by them.

State forest lands are administratively divided into compartments that generally have geographic boundaries, such as roads or geologic formations. Systematic inspection of these areas is carried out and they are reviewed by our foresters for management planning purposes. Sometimes this results in a higher level of activity on any particular forest in any given year than in other years.

As the state forests mature, the need for harvesting to thin or regenerate forested stands increases. It follows that after more than 100 years of management, an increase in the level of harvesting on state forests would be needed to promote forest heath and maintain stand vigor and productivity. A well-managed forest is one that contains a diversity of age classes across the forest landscape. Timber harvesting helps create this diversity.

With proper planning and common sense, timber management and back country recreation are quite compatible as state forest uses. Recreational opportunities help fuel the tourism industry in counties containing state forests.

A large percentage of the trails on state forests started as log skidding and haul roads. As a result of the application of BMPs during logging, these trails are designed to be usable over the long run for a number of purposes, including access for forest fire suppression activities as well as hiking, biking, bridle, and APV trails where appropriate. Diversity of habitat created by timber harvesting results in a diversity of plant and animal species enjoyed by botanists, bird watchers, hunters, hikers, and other outdoor enthusiasts.

The DOF shares the concerns of the special interest groups, recreational and user groups, and the public concerned about the welfare of the state forests, state parks, and state natural areas. More than one hundred years of sound management and wise use by the DOF have created and protected these natural jewels. The ODNR Division of Forestry wishes to thank our constituent groups for the support and encouragement we have received over the last century.

(History of State Forests in Ohio continued from page 19)
The OFA Forestry and Wildlife Conservation Camp just completed its 67th year of providing forestry and natural resource education opportunities to high school students in an outdoor setting, the most appropriate classroom of all.

The camp was held June 11-16, 2017 at its home for many years now, FFA Camp Muskingum on Leesville Lake in Carroll County, a beautiful eastern Ohio location. Ninety students attended the weeklong camp for high schoolers who have completed the eighth grade prior to coming to camp.

Students took a variety of classes during the week including: Name That Tree, Ecology, Nature’s Puzzle, Forest Measurements, and Wildlife CSI. Class instructors were natural resource professionals from many disciplines, all of whom have careers in some segment of natural resource management.

Campers also had ample opportunity to enjoy their camp experience through various recreational and fun activities, either individually or in groups.

Personally, I have had the opportunity to attend camp as a student (1972, 1974 at Hidden Hollow Camp near Mansfield), teach at camp for 20 years, manage the program for 10 years as Chairman of the Camp Committee, and now as Executive Director, to oversee the entire camp process. It never ceases to amaze me how much the students enjoy this camp. I particularly feel proud of what this camp represents when I see some of the students go on to have careers in natural resource fields because of the seeds that were planted during their week at camp.

The graduation ceremony at the end of the week was a fun-filled event, held for the first time in the air conditioning of Camp Muskingum’s new Discovery Center.

Learn more about camp online at www.ohioforest.org
and demonstrated how much campers bonded with one another and became friends. I’m sure some of them will stay in contact for life. Five college scholarships totaling over $5,000 were awarded to top performing campers. These scholarships were provided by Hocking College, Ohio University, The Ohio State University, and the Ohio Forestry Association Foundation.

I would like to thank the Camp Committee, the Camp Muskingum staff and counselors, all the resource professionals that gave of their time for class instruction, the students, their parents, and the many sponsors that made it possible for many of these students to attend. Each of you contributed to making this another great week of Camp.

Camp is truly a unique opportunity that far too few high school students experience. If you know of someone who might be interested in attending the 2018 version of Forestry and Wildlife Conservation Camp, please have them contact the Ohio Forestry Association at 888-388-7337 or Info@ohioforest.org. We guarantee that students will forever remember the experience! ◆
It’s just around the corner! October 6-8, 2017 are the dates for the 61st annual Paul Bunyan Show, the official trade show of the Ohio Forestry Association, Inc. For the 12th consecutive year, the show is being held at the Guernsey County Fairgrounds, near Cambridge, Ohio in Old Washington, a few miles east from the intersection of I-77 and I-70.

The first Paul Bunyan Show was held in McArthur, Ohio in 1957. The show moved around to different locations over the next 15 years, before coming to rest for over 30 years on the beautiful campus of Hocking College in Nelsonville, Ohio. The show then moved to the Guernsey County Fairgrounds, where it has been held for the past 11 years.

As one of the largest forestry and logging equipment expos east of the Mississippi River, the grounds will once again be filled with equipment ranging from small, hand-held pruning saws to the largest timber harvesting and wood processing machines on the market. Everything in between will include wood stoves, firewood processors, chainsaws, safety equipment, arborist supplies, outdoor boots, and clothing.

Great craftsmanship is always on display. Check out the chainsaw sculptures being created during the

A wood grinder making short order of logs is one of the many equipment demonstrations that can be seen daily at the Paul Bunyan Show. Photo by ©Mediaworks Marketing, Inc.
show, or the other fine products in the exhibit areas.

If you like competitive entertainment, the Paul Bunyan Show will have a full slate featuring lumberjack competitions, a log loader competition, a truck rodeo, the Great Portable Sawmill Shootout, and a skid-steer rodeo. Other entertainment options include the Great Lakes Timber Show and musical entertainment by Barefoot McCoy.

The Paul Bunyan Show also offers a wide array of educational seminars for the wood industry professional as well as the general public. Again this year, in conjunction with the Great Portable Sawmill Shootout, there will be fee-based professional seminars on such subjects as lumber drying, log grading, and managing small woodlots.

And, you should never go hungry while at the show. A wide variety of food and beverages are offered to keep everyone’s appetite satisfied, including the world famous Bunyan Burger, and a Flapjacks for Lumberjacks Breakfast.

Concerned about the weather for the show? Don’t be! We’re not going anywhere. The Paul Bunyan Show is put together by, and for, folks that have spent their lives working in the woods, rain or shine. Then again, maybe we’ll get the picture-perfect weather that we had for last year’s show. Come on out and see us!

◆

Check for further details, including the show schedule, on the OFA website at http://www.ohioforest.org/.
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Wild Wonders in the Woods

Shorts, tank tops, swimming pools, iced tea, a lawn chair in the shade, and air conditioning - these are some of the ways we keep cool during the hot days of summer. Now, last I checked, I didn't find any air-conditioned tree cavities in the woods, nor did I see any squirrels sipping on iced beverages. So how do our wild wonders beat the heat? As you may guess, Ohio's woodland critters have some pretty interesting adaptations when it comes to staying cool…

Birds don't sweat the small stuff

One key strategy that humans employ to stay cool is sweating. Once evaporation kicks in, we are on our way to cooler temperatures. Many animals however, do not sweat at all, or sweat very little, and so use evaporation to cool themselves in other ways.

Take a look at a bird on a hot day and you might see it perched with its bill open. Look a little longer, and you might see the bird flutter its neck muscles. This action is called 'gular fluttering' and helps to expel heat out of the body and increase evaporation within the throat membranes. It is similar to a dog panting, but without as much water loss. Along with gular fluttering, birds will also ruffle their feathers and perch with open wings to allow for increased air circulation. Seeking out shady spots within and under trees and shrubs is another beat-the-heat strategy of birds. Some birds will create shade for their young by opening their wings or moving their bodies while on the nest.

Finally, staying hydrated on a hot day is just as important to birds as it is to us. If you don't have a bird bath already, consider adding one and supplying fresh water every 2-3 days for the birds. A shallow bird bath (1-2 inches deep) with a rough surface to prevent slippage will provide birds a place to cool down and recharge.

Mammals know how to shed the heat

How many of you have spared a sympathetic thought towards your pet dog or cat, sporting a fur coat, on a hot day? Don't worry--while they get hot like the rest of us when temps soar, they have ways to keep cool. First of all, they shed, trading in their heavy winter coats for a much lighter, much cooler coat of fur. They also pant. Humans are unique (along with primates and a few species of ungulates) in their ability to sweat copiously in response to heat. Other mammals, like coyotes and foxes, rely on panting - rapid, shallow breathing that increases water
evaporation from the upper respiratory tract - to keep them cool.

Small mammals, which already have high body temperatures, reduce activity during high heat, spending time in cooler, underground burrows. Other mammals have bare or sparsely furred areas, called thermal windows, where heat is lost through convection or conduction. Woodchucks are quite good at thermoregulation in high temperatures, and research has indicated that the nose and pinnae (ear flaps) may serve as thermal windows.

Not so cool ways to cool down

Don’t get me wrong, the following methods are effective. However I think if we had a choice in cool down methods, these are not ones we would choose.

The first is called saliva spreading.

It works in pretty much the way it sounds…saliva is spread on limbs, tail, chest, and other body parts, and cools the critter as it evaporates. This technique is used largely by rodents and marsupials, and best employed when heat stress is short as internal water supplies are limited. Interestingly, the secretion of saliva is controlled by the hypothalamus, the same as sweat. Therefore, when a mouse’s body temperature reaches a certain point, its salivary glands start flowing in preparation for saliva grooming. And we as humans think involuntary sweating at high temperatures is hard to deal with - at least we don’t have to worry about drooling as well!

Finally, the last not so ‘cool’ way to cool down is a strategy used by birds, specifically vultures and storks.

Once again we see evaporative cooling coming into play. However this time the evaporative liquid is not water, or sweat, or saliva…it’s feces. As we all know, the majority of a bird’s dropping is liquid (think of the splatter on your windshield), so it works that same way sweat does. Vultures will defecate on their legs in order to cool down. Well, for a vulture it’s no worse than munching on that decaying raccoon lying on the side of the road!

Wrapping it up

These are just a few of the interesting and peculiar adaptations wildlife have to keep cool during the long, hot summer. Given the last few strategies mentioned, let’s all be thankful we sweat. Stay cool this summer! ♦

Sweating can sometimes cause awkward moments for us, but consider the evolutionary advantages our ability to produce large amount of perspiration afforded us. Scientists at Harvard University believe that our many sweat glands (2-5 million to be somewhat exact) allowed us to run longer during hotter conditions than other animals, meaning we could still hunt while other predators needed to rest and cool down. In addition, our brains may have been able to grow bigger because we have an efficient way (sweating) of keeping our bodies cool.
Field, Forest, and Stream

Physical factors such as sunlight, wind, and water influence the suitability of an area for plant and animal life. By comparing different environments, we can begin to understand how nonliving elements can influence living elements within an ecosystem.

Select two outdoor study sites. You might choose a forested area, local park, or even your own backyard. Use a data collection sheet (such as the one provided by PLT at http://bit.ly/208en6S) to track and compare data points for levels of Sunlight, Wind, and Slope at each of your chosen locations.

For Sunlight, use relative terms such as shady, dark, medium light, or bright.

For Wind, use a compass to determine the direction from which the wind is blowing (see Compass Measurements inset at right).

For Slope, slowly pour water onto the ground and observe where it goes. Then use a compass to determine the direction of water flow (see Compass Measurements). Later look at a map of the area to identify the body of water that will eventually be reached by the water you poured.

Explore and Review
- Which study site had the greatest number of plants? Animals? How might you explain this difference?
- How might wind and water flow affect plants?
- Which site did you prefer? Why?

Test Your Understanding

You are standing on your forest field site with the wind at your back. You have followed Steps 1–3. From which direction is the wind blowing?

ANSWER: Northeast (approximately 45 degrees)

Make Learning Fun!

For more activity ideas and materials, attend a PLT workshop:
- Visit www.plt.org/ohio
- Contact your Ohio PLT State Coordinator, Sue Wintering at Sue.Wintering@dnr.state.oh.us, 614-265-6657

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Since 1948, the members of the Association of Consulting Foresters of America (ACF) have worked with respect and cooperation with woodland owners to keep their land healthy, while also providing for wildlife, recreation, and the growth and harvesting of quality trees.

Members of the ACF are located throughout Ohio and can assist you with the care of and management of your woodland. Visit the ACF website at www.acf-foresters.org or call 888-540-tree.

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Walter & Donna Lange ................................................ Williams

The Ohio Woodland Journal Ad Rates

The Ohio Woodland Journal is a quarterly publication of the Ohio Tree Farm System. It is published and mailed each year in February, May, August, and November.

<table>
<thead>
<tr>
<th>Standard Black and White Ad Rates</th>
<th>Premium Color Ad Rates</th>
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<tbody>
<tr>
<td><strong>Size (approximate)</strong></td>
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<td>1/8 pg. (2 1/2”H x 3 ¾”W)</td>
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<td>1/4 pg. (5”H x 3 ¼”W)</td>
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<td>$990</td>
<td>$1,750</td>
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Contact Information for reserving your place in the magazine:
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Ohio Tree Farm Committee
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Email: trmill67@att.net

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