

# THE ECOFORESTER

FALL 2018 NEWSLETTER

## EcoForesters Creates New Mapping Program to Guide Cherokee Forest Restoration

Many of the threats to Appalachian forests are widespread across communities and watersheds. While foresters can help to prioritize where and when to conduct restoration activities, this becomes much more difficult when working over thousands of acres. At this scale, foresters can't rely on a simple afternoon walk in the woods to understand the forest landscape and areas where a landowner should apply various treatments.

The Eastern Band of Cherokee Indians' (EBCI) forestland is a case in point. With over 50,000 acres, hundreds of landowners, and a forest facing threats from invasive plants and a legacy of unsustainable timber management, EBCI's forestland requires a large-scale restoration plan. Faced with the task of prioritizing restoration on 50,000 acres, EcoForesters' mapping wizard, Wade Johnston, has pioneered new methods utilizing remote sensing, geographic information systems (GIS), and volumes of natural resource data. These new methods will have applicability well beyond EBCI. EcoForesters is now better able to assist other communities, landowners, conservation groups and foresters in their attempts to address forest restoration at such large scales.

(Continued on Page 2)

## EcoForesters' Expertise Needed in Pioneering Appalachian Forest Carbon Offset Projects

EcoForesters' staff has a unique expertise in the measurement and quantification of Appalachian forest carbon. While this can be useful for any landowner to understand how their forestland contributes to carbon sequestration, for very large landowners it also has the potential to generate revenue through the quantification and sale of carbon offsets.

These offsets, measured as metric tons of carbon dioxide-equivalent stored or sequestered in trees, are purchased by large industry and utility companies in the state of California under a mandatory cap and trade system, or voluntarily by individuals and companies that want to reduce their ecological footprint. EcoForesters' staff has assisted landowners in this process over the past several years on multiple projects in the Appalachians covering approximately 24,000 acres. Our most recent project was to assist with a forest carbon inventory for Doe Mountain Tennessee Recreation Area.

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## STAFF

**Andy Tait** | *Director of EcoForestry*

**Wade Johnston** | *Director of  
Mapping & Technology*

**Jon Shaffer** | *Director of N.E. Forestry &  
Ecosystem Services*

**Ian Anderson** | *Boone Office  
Forestry Associate*

**Mary Vann Johnston** | *Forestry,  
Education, & Outreach Associate*

**Gabby Hovis** | *GIS & Conservation  
Technician*

**Armin Weise** | *Forestry Technician*

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# EcoForesters

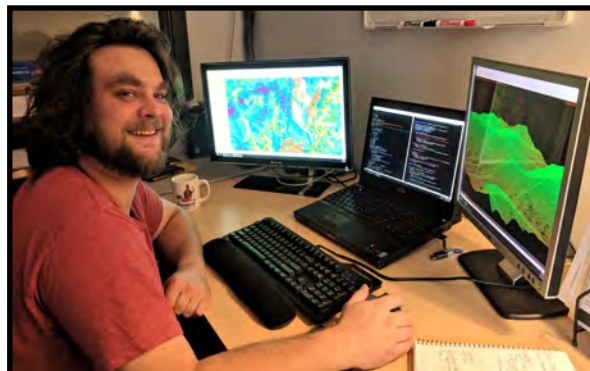
Forestry. Conservation. Education.

(New Mapping Program continued from front page)

There are two essential questions foresters and landowners must answer when considering prioritizing forest restoration treatments. First, where on the landscape are the forest health problems, e.g. where have past timber harvests occurred and what has been their impact? Wade answers this question with many data inputs and analyses, including the forest community types, location of roads and LIDAR (Light Detection and Ranging) data. LIDAR uses light in the form of a pulsed laser to measure variable distances to the Earth. North Carolina's LIDAR data allows high resolution mapping of tree heights and the slope of the earth so accurately we can see old abandoned logging trails, and high-grade and clear-cut timber harvests that occurred decades ago. With this data and our in-depth analyses using GIS, we can determine where timber harvests have occurred on all 50,000 acres of EBCI's forestland. We use similar analyses with different data inputs to locate invasive plant populations and fire prone forests needing restoration.

The second question we must answer is how to prioritize where to begin? With thousands of acres in need of restoration and a limited budget, EBCI forest managers must be efficient with their efforts. Is it more important to restore fire-adapted communities and protect against wildfire, or to prevent the spread of invasive plants? These are difficult questions. Wade has created a model so that landowners and foresters can set priorities that can be used to locate important restoration areas. For example, EBCI would prefer to protect productive forestlands, core forest habitats far from roads, rare species, and unique habitats from invasive plants. Wade's analyses allow us to input these datasets, set priorities and produce a map showing the most important locations to treat invasive plants.

EcoForesters will complete this mapping work and a Forest Restoration Plan for EBCI by the end of 2018. Once complete, we will use this same mapping and technology to assist other communities and landowners to prioritize restorative forestry practices at a large scale. Threats to our forests are large and our resources always finite. But with these new methods and technologies, we can be strategic in our work such that our forests are restored and sustained for future generations.



**Wade Johnston** in his natural habitat; these three screens display a tree height map, a 3D model of the EBCI property and computer coding filled with the recipe for prioritizing management areas.

(Forest Carbon Offset continued from front page)

Doe Mountain is an 8,600-acre, densely forested mountain, reaching 3,900 feet, that is located just southwest of Mountain City, Tennessee. Protected by a collaboration between The Nature Conservancy and the state of Tennessee, Doe Mountain now accommodates hiking, mountain biking, horseback riding and low-impact ATV use. The mountain forests and its environs harbor some 40 rare species of plants and animals as well as plentiful species such as deer, turkey and black bear. The carbon offset project is needed to help fund the stewardship and ongoing conservation of the property.

Led by EcoForesters forest carbon experts, Jon Shaffer and Wade Johnston, with teams of 2-4, spent over a month this past spring and summer measuring over 100 forest carbon inventory plots at Doe Mountain. Spaced on a grid approximately 600 meters apart, these forest inventory plots required a high level of precision because of the carbon offset project protocol and third-party verification process. The number and accuracy of measurements sometimes required spending 2-4 hours at a single forest inventory plot, just to measure 10-30 trees. It took especially long because of the dense vegetation which often prevented the use of laser-based instruments and required us to pull a measuring tape from plot center to each tree. According to Wade, "it was some of the densest rhododendron and mountain laurel I've seen in the southern Appalachians. In some areas, it would take us a whole hour to walk or crawl the 600 meters between plots."

After the inventory was complete, Ian Anderson joined the project verifiers in early November at Doe Mountain for the next stage of the project. Working with the carbon project developers, Blue Source, EcoForesters expects carbon offsets from this project to be sold in the next few years, assisting in the ongoing long-term conservation of this ecologically valuable property which absorbs climate threatening carbon while providing revenue to the property owners.



View from the Doe Mountain Recreation Area property looking towards Lake Watauga and the Doe Valley.



EF staff Ian Anderson uses a clinometer to determine total height of a tree in the plot for inventory purposes.

"EcoForesters is very thorough with their plot measurements, has excellent data organization, and, overall, conducts work of the highest quality. We would definitely work with them again on future forest carbon inventories."

- Cakey Worthington  
Forest Carbon Projects Manager,  
Blue Source



## Shortleaf Pine, A Keystone Species

You may have noticed the reddish-brown flat plated bark and the tiered crowns of shortleaf pines (*Pinus echinata*) in old pastures, on roadsides, or scattered throughout the forest interior. The shortleaf pine is a tall tree of up to 130 feet with a diameter of up to 40 inches that bears needles in bundles of two or three. This pine has the widest native range of any southern pine species, reaching from hilly

Shortleaf pine in a regularly burned native grass field, Cedar Creek Farm in Somerset, KY.

northeast Texas to the New Jersey pine barrens. While it grows best in the sandy-silt loam soils of the piedmont and coastal plain, it also thrives on dry and rocky uplands in the southern Appalachians. Though having a wide range, the species has been in steady decline since the 1950s. Its decline is attributed to loblolly pine plantations on former shortleaf pine sites, pine bark beetle infestations, and fire suppression.

Shortleaf pine requires bare mineral soil for germination that are primarily brought about by fire. In addition to improved germination success, re-occurring fire also aids fire-loving shortleaf pine, by reducing competition from fire intolerant woody species.

As shortleaf pine benefits from fire, so do countless other associated species of plants and animals, making it a keystone species in many southern forests. Reoccurring fires frequently benefit wildlife that feeds on nuts, mycorrhizal fleshy mushrooms, and affiliated insects. Early successional non-woody habitat created by fire fosters habitat for eastern cotton-tailed

rabbit, ruffed grouse, mice, and their predators. Deer benefit from browse, shelter, and bedding as a sapling layer begins to establish over grass and herbs. Using fire to promote shortleaf pine will sequentially foster an uneven aged forest ecosystem dominated by ecologically and economically desired species in which a variety of habitats are present. Essentially, if shortleaf pine does well everything does well in the ecosystem.

In July, EcoForesters staff members Ian Anderson and Armin Weise participated in a shortleaf pine restoration workshop hosted by the Forest Stewards Guild in Daniel Boone National Forest of Kentucky. Topics included ecosystem processes with controlled burns and naturally caused fires as well as the importance of improving woodland health by shortleaf pine restoration to Appalachian forests. Successful methods to achieve this goal include group selection and shelterwood harvests – favoring shortleaf pine presently in the stand – followed by reoccurring burns of the understory. To succeed, a joined effort of private forest owners, resource professionals, and forestry officials at the county, state, and federal level will be required to implement practices benefitting this great southern pine and the health of its associated forests ecosystems. EcoForesters actively promotes these ecological techniques to increase shortleaf pine in our Appalachian forests.



Bark of shortleaf pine in a shortleaf pine-oak-hickory stand on Cedar Creek Farm, Somerset, KY.

Shortleaf pine branch



## EcoForesters Receives Its First Grant

Spreading the word about ecologically beneficial forestry is part of our mission; but planning, publicizing, organizing, and leading these Ecological Forestry Workshops and our annual EcoForester of the Year Award Event take time and money. EcoForesters is pleased to announce that we have received our first small grant from the NC Sustainable Forestry Initiative (SFI) to support our outreach work. We welcome all the help and support we can get promoting ecologically beneficial forestry.

## Local Conservation Committee EcoForestry Tour

In August, EcoForestry Director Andy Tait presented to Blue Ridge Forever's Conservation Committee. Blue Ridge Forever is a consortium of local land trusts in western North Carolina. Staff from the Southern Appalachian Highlands Conservancy, Conserving Carolina, The Nature Conservancy, The Foothills Conservancy, Blue Ridge Conservancy, Mainspring, and RiverLink learned about how to promote better forestry practices on their "working forest" conservation easements, to make sure these permanently protected forests are well-managed for future generations.

After a discussion of good forestry practices, Dr. Dave Ellum led a tour of recent timber harvests on the Warren Wilson College's forest to see firsthand how active stewardship can benefit biodiversity and to learn about native plant propagation. Curtis Smalling from the Audubon Society also shared the benefits of ecological forest management for bird conservation. Many bird species of concern now need our help to create a greater diversity of habitats for them through beneficial timber harvesting.



"The training that EcoForesters provided was so engaging and well-tailored to our needs as land trusts. Participants walked away feeling empowered and armed with the knowledge necessary to make the best-informed decisions in their stewardship of working forests."

-Elsea Brown  
Director, Blue Ridge Forever Coalition

## EcoForesters

### BY THE NUMBERS



Provided assistance with **119** landowners, agencies, and conservation groups



Conducted **15** education and outreach events on positive impact forestry



Composed forest stewardship plans for forestland owners, covering over **124,000** acres



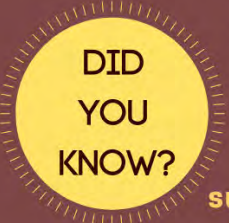
Coordinated **13** ecologically beneficial timber harvests, covering **700** acres



Provided mapping and geospatial analysis services to **16** conservation groups and landowners

- SINCE OUR FOUNDING IN 2015 -





**Conserving forestland isn't just protection from development. Proactive stewardship is also necessary to sustain healthy forests.**

Without active stewardship, forests can be at risk of a serious decline in overall health, directly impacting wildlife habitat, species richness, and the future of the forest. Forest health issues range from the presence of invasive species to erosion on logging roads and even to past forest abuse, such as high-grading.

**To address and combat forest health issues on protected lands, we have teamed up with several local conservation groups.**

**Our work this year includes:**

Collaborating with Southern Appalachians Highlands Conservancy and the Forest Stewards Guild to assist landowners with combating the threat of non-native invasive species in the Sandy Mush community



Conducting a positive impact harvest on The Nature Conservancy's Birch Branch property to promote hardwood regeneration for both ecological and wildlife benefits

Assisting Foothills Conservancy in a forest stewardship plan that will further protect and improve forest health on added acreage around the protected Catawba River headwaters



**Ecologically beneficial forestry protects habitats on these properties and restores and enhances forest health, ensuring their overall well-being and longevity.**

## A New Face of EcoForesters

With honors in Environmental Studies and a concentration in Sustainable Forestry from Warren Wilson College, Armin Weise joined the EcoForesters' team this past June as our Forestry Technician. Armin's work will focus on creating stewardship plans for landowners. Every day Armin is either in the woods recording inventory on a property or documenting his findings to determine the best stewardship options for forest landowners.



**Armin Weise**  
Forestry Technician

Armin enjoys observing various forest and non-forest ecosystems, assessing their stewardship needs, and communicating these to our various landowners. While he came prepared with a foundation of stewardship plan-writing skills from Warren Wilson College, Armin has put those to ample good use while honing his skills analyzing forest ecosystems. Since coming to EcoForesters he has been able to delve much deeper into the complicated dynamics between landowner goals and ecologically-based stewardship. Armin is glad to join the work of EcoForesters and directly contribute to better stewardship of Southern Appalachian forests using an ecologically-based forestry model.

## Our Partners

*EcoForesters is proud to work with the following organizations:*

- Southern Appalachian Highlands Conservancy,
- Conserving Carolina, Mountain True, The Nature Conservancy,
- Foothills Conservancy, Blue Ridge Conservancy,
- Warren Wilson College, Forest Stewards Guild,
- Blue Ridge Forever, Sustainable Forestry Initiative,
- Rainforest Alliance, Blue Source, The Wedge Brewing, Urban Orchard

## Partnering with The Nature Conservancy for Oak-Hickory Forest Restoration



A view of TNC's Birch Branch property from the upper pasture.

Shady Valley, in the mountains of northeast Tennessee, has long been recognized as one of the Southern Appalachians' most ecologically important areas, containing rare wetland habitat including high-elevation sphagnum/cranberry peat bogs. Protecting and restoring this habitat and the upland forest surrounding these wetlands has been a

priority for The Nature Conservancy (TNC) since 1979. This past summer, EcoForesters and TNC formed a partnership to restore oak-hickory forests on their John R. Dickey Birch Branch Sanctuary in Shady Valley.

With approximately 440 acres of mixed hardwood forest, TNC and EcoForesters have improved forest health in the Sanctuary by increasing forest diversity and creating wildlife habitat. Restoring oak-hickory forests is key to improving forest health in Shady Valley, and for many other Southern Appalachian hardwood forests.

In addition to being magnificent long-lived trees that have historically dominated much of Appalachia's forests, oaks and hickories provide food and shelter for wildlife and are highly valued as timber. Unfortunately, these important forests have been decreasing across the region in part due to past management. In years past, clear cut and high-grade harvests have been implemented to maximize profit in the Southern Appalachians. As trees that prefer a mid-level of sunlight to regenerate and grow, oaks and hickories suffer from timber management practices.

Clear cut harvests result in full sun light on the forest floor in which oak and hickory are typically out-competed by fast growing species, such as yellow poplar. High-grade harvests, many times referred to as "selective harvests", degrade the forest by removing the largest healthiest trees and leaving smaller, less healthy trees. Oaks and hickories struggle to reestablish themselves under these conditions. Removing the healthy trees from an area also removes the most viable seed source for the next generation of trees.

EcoForesters is committed to practicing long term positive impact forestry in order to improve forest health and maintain biodiversity in Appalachian forests. One way EcoForesters achieves this goal is through oak/hickory restoration harvests. We use group selection and shelterwood harvest methods that create light conditions best-suited for oak and hickory regeneration. Our approach also retains vigorous healthy trees as seed sources and as wildlife food and habitat, while removing less healthy competing vegetation that impedes the growth of oaks and hickories.



A marked stand: red paint indicates trees that will remain in the stand and blue paint signifies trees that will be removed to create more growing space for the next generation of hardwoods.

Using these methods and EcoForesters' forestry expertise, TNC's forest restoration efforts in Shady Valley are off to a good start. TNC plans to use the income from timber sold as part of the restoration work to maintain the Sanctuary and implement future restoration projects.

Donations fuel our mission through both the ability to provide educational opportunities for forestland owners as well as our actions to restore and protect our Southern Appalachian forests. We greatly appreciate your support!

If you would like to make a tax-deductible donation to EcoForesters, please visit our website: [www.ecoforesters.org/donations.html](http://www.ecoforesters.org/donations.html)



## Our Mission

EcoForesters is a 501(c)(3) non-profit professional forestry organization dedicated to conserving and restoring our Appalachian forests.



**Keep an eye on your mailbox and email inbox for upcoming EcoForesters events!**

## How To Reach Us

**Mail:** PO Box 16007  
Asheville, NC 28816

**Office:** 167 Haywood Road  
Asheville, NC 28806

**Email:** [info@ecoforesters.org](mailto:info@ecoforesters.org)

**Phone:** (828) 484.6842

**Website:**  
[www.ecoforesters.org](http://www.ecoforesters.org)

**Facebook:**  
[www.facebook.com/ecoforesters/](http://www.facebook.com/ecoforesters/)

**Instagram:** @ecoforesters



### 2018 EcoForesters of the Year: Bob and Barbara Strickland

On Thursday, November 8<sup>th</sup> we celebrated this year's recipient of the 2018 EcoForester of the Year Award Bob and Barbara Strickland The Wedge at Foundation in Asheville.

In 2003, the Stricklands purchased a 2,000 acre property in Polk County that had previously been owned by a paper company. When they bought the property, the majority of the forest was loblolly plantations that had been planted by the paper company.

The Stricklands have been hard at work trying to restore the forest back to much more natural and diverse mixed hardwoods. Their work ranges from intermediate forest treatments such as thinning, to working in the woods with trained professionals to remove invasive species. The Stricklands have already conserved 1,600 acres of the property through Conserving Carolina, as well as established a nonprofit nature center on their property.

Bob and "Babs" can often be found out mowing the trails and removing nonnative plants: actively stewarding their land toward a more ecologically natural state. They are truly implementing ecologically beneficial forestry on their property, and so deserving of our 2018 EcoForesters of the Year award.



**A special thanks to those who attended our EcoForester of the Year event. Thanks again to The Wedge at Foundation for having us!**

