

THE DUKE FOREST

LOG

A bulletin from the
Office of the Duke Forest

Fall 2014



Biodiversity Focus

Natural Heritage Areas

While enjoying the Duke Forest for its recreational amenities, you may see signs of active timber management and scientific research. But did you know that the forest also plays an important role in protecting the biodiversity of North Carolina?

The Duke Forest contains 12 registered natural heritage sites – totaling over 1,200 acres or about 17% of its land base. These sites contain exceptional plants, animals, and natural communities that are documented by the NC Natural Heritage Program (www.ncnhp.org) as significant for preserving the state's biodiversity.

These areas are excluded from active timber management and each site is monitored once every 3 years to assess overall condition, and if possible, to reconfirm the presence of important natural features. As a result, we know the status of every Duke Forest natural heritage site, and if necessary, can plan for management activities like the removal of trash or invasive species.

Here's a quick profile on three of Duke Forest's unique natural heritage areas:

Blackwood and Bald Mountains

These areas rise over 700 feet and are characterized by a natural community known as a Piedmont Monadnock Forest. The term monadnock refers to the underlying geology, which is volcanic in origin and highly resistant to weathering – hence their dominance in the surrounding landscape. Large Chestnut Oaks, which favor high, dry, and rocky habitats, occupy the summits. These trees are identifiable by their deeply furrowed, dark bark and leaves with wavy edges. Bald Mountain is the only monadnock in Orange County that is completely undeveloped on its upper slopes and summit, and Blackwood Mountain is home to a rare plant population, Torrey's mountain-mint.



An example of Chestnut Oak bark and leaves (Photos by Jeff Pippen).

New Hope Creek Slopes

These slopes contain a variety of distinct habitats along 4 miles of New Hope Creek and are a favorite location for migrating birds. The most well-known community type in this area is the Piedmont Heath Bluff because it contains a population of Catawba Rhododendron. Within the floodplain, Piedmont Alluvial and Bottomland communities with canopies of Sycamore, River Birch, and Ironwood exist. Rare plants include Sweet Pinesap and Indian Physic, and animals of note are the Gray Petaltail Dragonfly and the Red Salamander. Within the creek, state endangered and rare mussels are present including the Atlantic Pigtoe, Carolina Creekshell, and Brook Floater.



A Catawba Rhododendron bloom in April.

Rocky outcrop of volcanic origin at the summit of Bald Mountain.



A Red salamander (Photo by Jeff Pippen).



THE DUKE FOREST comprises over 7,000 acres of land in Durham, Orange, and Alamance counties and has been managed for research and teaching purposes since 1931. The mission of the Forest is to facilitate research that addresses fundamental and applied questions concerning forested and aquatic ecosystems and to aid in the instruction of students so that they will be informed citizens and effective stewards of our natural resources. In addition to supporting education at local universities, the Forest also participates in community outreach through tours and other events.

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www.dukeforest.duke.edu

Photo credit for Cypress Swamp,
top right: Ms. Scottee Cantrell

DUKE FOREST STAFF:

Sara Childs, *Director*

Jenna Schreiber, *Operations Manager*

Michael Burke, *Forestry Technician*

Beverly Burgess, *Administrative Assistant*

Brad Shewmaker, *Grounds and Maintenance Supervisor*

Judson Edeburn, *Special Projects Manager and retired Resource Manager*

ADVISORY COMMITTEE:

Alan Townsend

Dean of the Nicholas School of the Environment - Chair

Norm Christensen

Professor of Ecology & Founding Dean of the Nicholas School

Pat Halpin

Gabel Associate Professor of Marine Geospatial Ecology

Bill LeFevre

Executive Director, Sarah P. Duke Gardens

Dan Richter

Professor of Soils and Forest Ecology

David Singleton

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Greetings from the Forest

Staff Spotlight

Many of you may already know that the Duke Forest Staff has undergone significant changes in the last year. After over 35 years of exceptional stewardship, Judd Edeburn retired as the Duke Forest Resource Manager. Judd was honored at two events in April and May, and Duke University's Board of Trustees voted to rename the Eno Division to the Edeburn Division. Though there is no replacement for his experience and intimate knowledge of the Duke Forest, we are fortunate to have him on staff through the end of the year.

Following a national search, Sara Childs, our Program Director for the last several years was selected as the next Duke Forest Director. Sara's leadership promises to continue the tradition of excellence established by Judd, but as indicated by the title change, the staff structure has been slightly reorganized. In her role as Director, Sara will continue to work with staff to accomplish the teaching and research mission while also engaging across the university to ensure the forest's vibrant future as an asset to Duke and the community.

To support Sara as Director and take on some of Judd's former responsibilities, Jenna Schreiber joined the staff as the Forest Operations Manager in July. Jenna is a 2012 graduate of the Nicholas School MEM/MF program. She offers a combination of on-the-ground forestry skills, forest certification expertise, and a people-focused approach that has already been a tremendous addition to our team.

After 25 years of dedicated service to the Duke Forest, we have said goodbye to long-time Grounds and Maintenance Supervisor, George Pendergraft. In retirement, George is enjoying lots of time at the beach and on his boat! Luckily, we were able to find an excellent replacement. In April, we hired Brad Shewmaker as our new Grounds and Maintenance Supervisor. Brad came to us with over 13 years of experience in construction and landscaping, and he is already an invaluable team member. He has wasted no time getting up to speed with the wide-variety and sometimes strange responsibilities he is tasked with!

We have also bid farewell to Nick Biemiller, our Forest Management Intern. Nick was with us for over a year and played a major role in implementing the Duke Forest Recreation Study, among other important forest management projects. He is now off adventuring in Central America before returning to graduate school. We wish him the very best and can't thank him enough for his reliably excellent work with the Duke Forest.

Lastly, we remain very fortunate to still have Beverly Burgess, our Administrative Assistant, taking your calls and deftly running the office from day to day, and Mike Burke, our Forestry Technician, maintaining his position as the veteran boots-on-the-ground for forest management activities.

So while this year brings a lot of change to our office, we remain 100% committed to the teaching and research mission and to the excellent stewardship of the Forest.

- The Office of the Duke Forest

Judd passes the torch, in this case a log, to Sara.



George on the tractor.



L to R: Sara, Beverly, Lemurs!, Jenna, & Brad



L to R: Nick, Sara, Mike, George, Judd, Beverly, & Brad



News and Updates

Millstone Returns

Judd Edeburn and Gail Boyarsky (a longtime friend and neighbor of the Duke Forest) recently purchased the contents of an old log building on the property of Stanford and Sue Whitfield. After Sue passed last year, Judd and Gail felt strongly about keeping this “museum”, as the Whitfields called it, in the community. It was full of cultural and historical artifacts symbolic of the area’s rich farming and mill history. One item of special interest was a 36-inch diameter millstone - one of a pair used to grind grain at a water powered mill. The stone had been obtained by Glenn Whitfield, Stanford’s father, from a mill site along New Hope Creek in what is now the Korstian Division. Several water powered grist mills operated along New Hope Creek from the late 18th century through the early 20th century. This stone likely came from either the Robson mill or a so-called “Laurel Hill” mill referenced by Glenn in past interviews. To provide an opportunity for others to learn about the historical importance of New Hope Creek, Judd and Gail donated the millstone to the Duke Forest.



The millstone now resides near the Wooden Bridge, close to the creek from whence it came. We hope to install interpretive signage at this location.

Korstian Trail Project

We concluded Phase II in April of this year but continue to work on trail closure and compliance monitoring. This is the most ambitious effort we have undertaken to protect the forest’s natural resources and improve the recreation experience. With the help of tremendous volunteers, dedicated Duke Forest Staff, and Stewart Bryan of Native Trails, we successfully completed:

- 5,783 ft of new trail and 1,229 ft of rehabilitated trail
- 6 new bridges, 2 new boardwalks, and 1 viewing platform
- 2 new fences, 1 erosion control structure, and new trail signage

In total, the project cost \$40,000 over two years and was entirely funded through donations, map and book sales, picnic shelter rentals, and revenue from the Pine Cone Pacer 5K.

A BIG thanks to everyone that continues to support the Duke Forest; we could not accomplish important projects such as this one without you!

Recreation Study

In September, we completed one year of sampling for our recreation study. Preliminary results show an estimated annual visitation of 100,000 adults, 5,500 children, and 18,000 dogs. Most visitors travel less than 20 minutes to recreate in the Duke Forest and while most do not feel that other uses of the forest conflict with their own, they do cite ‘dogs off leash’ and ‘dog waste bags’ as nuisances. We hope to have a formal summary report available soon.

Much appreciation to everyone that filled out a survey, and many thanks to everyone that responsibly enjoys the Forest with their dogs!

Deer Herd Reduction

We are well into our 7th season of the Duke Forest Deer Herd Reduction Program and despite a large acorn crop, hunter success is up slightly from last year. In contrast, news from the NC Wildlife Resources Commission notes that in this part of the state, overall hunting success is down - possibly due to an increased incidence of hemorrhagic disease. We have yet to find sick deer in the Duke Forest, but hunters are watching for signs.

Please continue to obey all closure signs and always stay on authorized roads and trails - staff are writing lots of citations this year!



To see more pictures and learn about the Korstian Trail Project, check out: dukeforestproject.wordpress.com



If you want to support future projects on the Duke Forest, please visit: dukeforest.duke.edu/giving-opportunities



Year in Review

July 2013 - June 2014

Management

Every year the Duke Forest Staff manages hundreds of acres to support teaching and research, to protect and enhance natural habitats, to generate revenue for operations, and to provide outreach and recreation opportunities for the public. In the past fiscal year, we executed operations on over 500 acres – more than double the year before! A series of ice storms in early spring severely damaged several recently thinned pine stands and littered the roads with fallen trees and debris. Staff spent countless hours assessing damage and implementing appropriate responses including coordinating the salvage cutting of 22 acres and overseeing unusual work to straighten ice-damaged trees across 28 acres. We also completed the final phase of the Korstian Trail Project, but some trail closure and compliance monitoring is still underway. Overall, it was a very challenging but productive year.

| 2013 - 2014 | |
|---------------------------------------|------------------|
| Harvesting | 303 acres |
| Clearcut | 69 |
| Commercial thinning | 118 |
| Salvage harvest (ice storm response) | 22 |
| Seed tree harvest | 44 |
| Seed tree removal | 9 |
| Selection harvest | 41 |
| Pre-commercial Thinning | 64 acres |
| Hardwood Control | 61 acres |
| Invasive Control | 53 acres |
| Site remediation (ice storm response) | 28 acres |
| Road Work | 55 miles |



Duke Forest hired crews from TROSA to stand up bent over pine trees in areas that had been pre-commercially thinned just before the ice storms hit. The procedure involved baling twine, a long hooked pole, and lots of arm strength to pull the trees upright and then tie them off to adjacent trees or stumps. All the trees that were tied up are now standing vertical on their own.

Research and Teaching

The Duke Forest fulfills its primary mission by hosting a wide variety of researchers, educators, and students. Thirty-three new research projects began this year, including a multi-university effort to build a seed bank for the study of plant evolution and the reuse of an existing well by the US Geological Survey to monitor ground water levels in Orange County. Teachers and students from all levels of study also took advantage of learning opportunities at Duke Forest. Nicholas School graduate students used the forest to learn about forest ecosystems, silviculture, and forest measurements. Several groups including the NC School of Science and Math and the Duke Action Science Camp for Young Women played in New Hope Creek to learn about aquatic ecology. In addition to supporting these activities on the ground, staff shared gigabytes of geospatial data to facilitate local historical research, as well as undergraduate and graduate group projects.

| 2013 - 2014 | |
|---|--------------------|
| Number of research projects (33 new projects) | 84 |
| Number of primary investigators | 63 |
| Number of research affiliations | 23 |
| Total research dollars (44 of 84 reporting) | \$4,080,055 |
| Number of teaching activities | 23 |
| Number of educators | 19 |
| Number of class visits | 157 |
| Number of participating students | 534 |



In partnership with the North Carolina Forest Service, Duke Forest Staff deployed Emerald Ash Borer (EAB) Monitoring Traps. The EAB is a non-native insect that attacks and kills ash trees. Since being detected in Michigan in 2002, it has spread to 22 states including North Carolina. It has not yet been found in Durham or Orange county. EAB photo (left): Eric R. Day, Virginia Polytechnic Institute and State University, Bugwood.org

Year in Review

July 2013 - June 2014

Community Outreach

Rainy weather thwarted several outreach events this year, but we were able to offer our popular geology and stewardship tours. We also hosted a couple special tours – an adventurous off-trail hike for members of the Eno River Association (enoriver.org) to explore the banks of the river as it flows through the Hillsboro Division, and a history tour for the Duke Women's Campus Club focused on colonial settlement and mill culture along New Hope Creek. As in most years, we provided several "Introduction to the Duke Forest" tours for students from Duke and other local schools.



Volunteers

With the help of dedicated volunteers and an ambitious group of students from the NC School of Science and Math, we completed Phase II of the Korstian Trail Project including 3 new bridges and one erosion control structure. On April 5th, we celebrated Invasive Species Awareness Week with a volunteer effort to remove Chinese Privet and other invasives from a Registered Natural Heritage Area. Additional efforts focused on ongoing trail closure work and prescribed burning for restoration and stand improvement. Without the support of public volunteers and interested student groups, we could not have accomplished all of these important projects.



The Office of the Duke Forest looks forward to offering more events in the coming year. To receive notifications about upcoming activities, **sign-up for the events list serve at:** www.dukeforest.duke.edu/contact-us



AT A GLANCE

2013 - 2014 Outreach

| | |
|--------------------------------|-----|
| Number of tours and activities | 24 |
| Number of participants | 531 |
| Total outreach hours | 61 |



The Office of the Duke Forest relies on volunteer efforts to get important work accomplished; look for more opportunities to participate on the website, or **submit a volunteer interest form at:** www.dukeforest.duke.edu/volunteer-opportunities



AT A GLANCE

2013 - 2014 Volunteers

| | |
|-----------------------------|----|
| Number of volunteer events | 9 |
| Number of participants | 69 |
| Total volunteer event hours | 37 |



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Teaching & Research Laboratory
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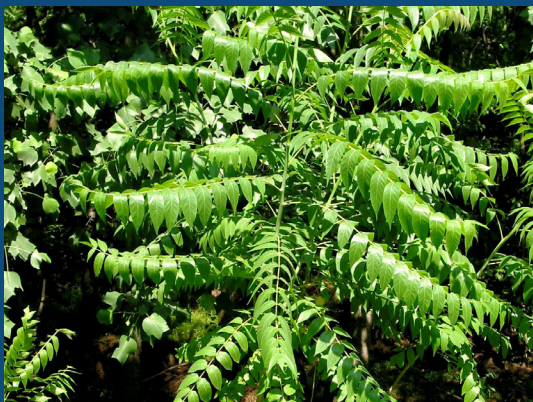
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The Duke student chapter of the Society of American Foresters is excited to host the 8th Annual Duke Forestry Symposium on "Forestry and Ecosystem Services". The event will be held Friday, November 14th. For more information and to register, please email: safduke@gmail.com.

UPCOMING EVENTS

Annual Gathering

Thursday, November 13th, 6 - 8:30 pm



An evening of food and drink to learn about activities on the Forest with a special focus on invasive species and their impacts on our forests.

Annual Research Tour

Friday, December 12th, 1 - 4 pm



An afternoon tour around Duke Forest to visit active research sites and learn about some of the topics under study.

All events are free and open to the public. For more information and to register, please visit: www.dukeforest.duke.edu