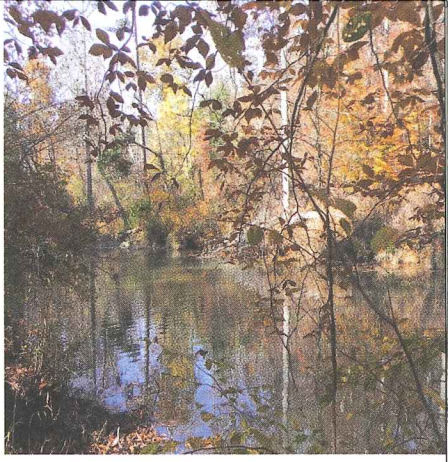
THE DUKE FOREST LOG

A bulletin from the Office of the Duke Forest

Fall 2013



Teaching Spotlight

Professor Rebecca Vidra teaches to restore

For the second fall in a row, Professor Rebecca Vidra has worked with Duke Forest Staff to identify student projects for her Restoration Ecology: Theory and Applications course. Trained as a restoration ecologist at NC State and UNC-Chapel Hill, Professor Vidra offers Duke students real-world experience working through the web of biological, political, and social factors relevant to ecological restoration. With the Duke Forest nearby, this task is made a little easier. Professor Vidra says:

Teaching restoration ecology is about both theory and applications. The theory is easy to cover in the classroom but the applications can really only be taught through practice. Duke Forest provides an incredible resource to learn about restoration of many different ecosystem types, from shortleaf pine stands to New Hope Creek. My class also benefits from the knowledge and resources that the Duke Forest staff provides, making it an ideal location to learn about how the theory of restoration can be applied right down the road from Duke!

During the semester, students work in teams to develop a restoration plan that includes a site assessment and history, restoration strategies and expected outcomes, and a monitoring plan. With guidance from Duke Forest Staff, Duke Faculty, and other area professionals, students have developed plans for the Rhododendron Bluffs, a Shortleaf Pine community, a Piedmont Prairie, and an abandoned road. This year students are exploring the possibility of modifying the low-water concrete bridge at New Hope Creek to improve aquatic habitat for mussels and other wildlife.

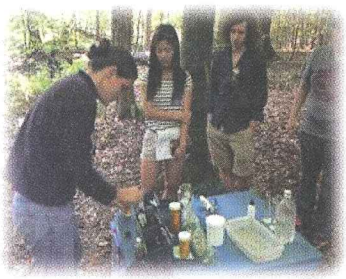
Duke Forest Staff uses the information generated by the students to help prioritize, plan, and implement restoration efforts. In return, students walk away with a memorable and useful learning experience. So for professor, forest, and students alike, the situation is a win!

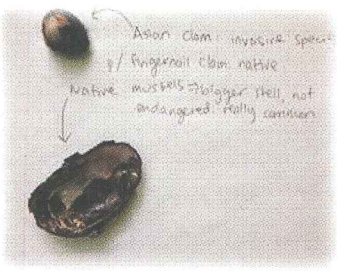
I am already in my third year at Duke, and I cannot believe it has taken me this long to realize how invaluable the forest is as a resource to us students! Being able to directly explore and learn from the environment surrounding us has taught me more than sitting in a classroom ever could.

- Silvia de Denaro Vieira, Class of 2015

Working in the forest and with the forest staff gives us a feel for the actual process of ecological restoration, which I think adds another dimension to learning about restoration in the classroom or on my own.

- John Hare-Grogg, Class of 2016





(From L to R) Water from New Hope Creek flows over the concrete bridge in the Korstian Division. Students from this year's class participate in the New Hope Creek Stream Watch, a citizen science effort to monitor water quality, to learn about aquatic habitat and species. John Kent, Stream Watch coordinator, points out the difference between mussels that are native to New Hope Creek and those like the Asian Clam (top left) that are exotic invaders.

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This will be the last LOG you receive unless you update your contact information and format preference by visiting: **WWW.NICHOLAS.DUKE.EDU/DUKE-FOREST-LOG**. New subscribers may also use this link to sign-up to receive the LOG. If you do not have internet access and wish to continue receiving the LOG, please call the Office at 919-613-8013.

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

DUKE FOREST STAFF:

Judson Edeburn, *Resource Manager*

Sara Childs, *Program Director*

Michael Burke, *Forestry Technician*

Beverly Burgess, *Administrative Assistant*

George Pendergraft, *Grounds and Maintenance Supervisor*

ADVISORY COMMITTEE:

Bill Chameides
Dean of the Nicholas School of the Environment - Chair

Emily Bernhardt
Associate Professor of Biogeochemistry

Norm Christensen
Research Professor and Founding Dean of the Nicholas School

Pat Halpin
Associate Professor of Marine Geospatial Ecology

Bill LeFevre
Executive Director, Sarah P. Duke Gardens

Ram Oren
Nicholas Professor of Earth System Science

Dan Richter
Professor of Soils and Forest Ecology

David Singleton
Associate University Counsel

David Stein
Senior Program Coordinator for Community Affairs

CONTACT INFORMATION:

Office of the Duke Forest
Room 412, North Building
Duke University, West Campus
PHONE: 919-613-8013
FAX: 919-613-8077
E-MAIL: dukeforest@duke.edu

WEBSITES:

www.dukeforest.duke.edu
dukeforestproject.wordpress.com
www.facebook.com/dukeforest

TO SUBSCRIBE to and/or UPDATE contact information for the LOG:

www.nicholas.duke.edu/duke-forest-log

From the Resource Manager

Hello to All:

We are wrapping up a very good year for the Duke Forest, and as usual, it has been a busy one. An outstanding staff, student assistants, and many dedicated volunteers have enabled several important projects to be conducted smoothly and efficiently. I want to sincerely thank all who have contributed so much to the Forest over the year.

A major trail relocation and rehabilitation project was undertaken in the Korstian Division. If you have visited the Rhododendron Bluffs area off of Whitfield Road over the years, you may have noticed substantial degradation of the trail down to the Bluffs and a decline in the Rhododendron population. In order to curb further erosion, improve conditions for the Rhododendrons, and provide a safer trail experience, Program Director Sara Childs initiated a project in this Significant Natural Heritage Area. Phase I is now complete, and we anticipate Phase II to be underway and completed in the next few months. This marks the first major trail work ever conducted on the Forest. An excellent description and chronology of the project can be found on our WordPress site: dukeforestproject.wordpress.com.

Another first for the Forest has been the creation of a 1-year management internship position, held this year by Nick Biemiller, a December 2012 graduate of Warren Wilson College. The position is designed to focus on a particular project with additional time spent learning about the various aspects of managing a teaching and research forest. This year's special project involves designing and conducting a recreational study, which has been done approximately every 10 years over the past several decades. In addition to determining the number of recreational users on the Forest, a questionnaire is being administered to collect information on the types and frequency of recreational use, problems that users encounter, and opportunities for improving recreational experiences while also protecting the Forest's resources. If you are a visitor to the Forest over the next ten months, you may see Nick or one of us at a Forest gate and be asked to complete a questionnaire. We will certainly appreciate your input.

Additionally, many of you are aware that the Duke Forest maintains a Forest Management Certificate based upon Forest Stewardship Council™ guidelines, a set of standards designed to assess forests for responsible management (FSC® C008350). I am very pleased to say that the 2012, and the recently completed 2013 audit, went extremely well and no outstanding issues, or 'non-conformities', remained at their completion.

In this issue of the LOG, Sara has summarized the management, academic, outreach, and volunteer projects undertaken during the past year. We are very happy to have had 179 volunteers who collectively put in over 600 hours of work in the Forest. Much of this time was spent on the trail project at the Rhododendron Bluffs. I should also highlight the 64 active research projects and instruction of over 600 students that demonstrates the Forest's enduring value for teaching and research.

Lastly, I would like to extend an invitation to this year's Annual Gathering - our opportunity to share an evening with friends of the Forest. It will be held November 14th at the New Hope Improvement Association Building on Whitfield Road. Our annual research tour will be December 13th. Check out the details for these and other upcoming events on our website. And please do update your contact information and mailing preferences for the LOG if you have yet to do so. It's an important part of our efforts to streamline costs and reduce waste.

Thanks for your continued support of the Duke Forest.

Judd Edeburn
Resource Manager

Phase I of the Korstian Trail Project involved a lot more than just trail building. New signs were installed; an observation platform was constructed; and fencing to protect sensitive areas was put in place. Many thanks go out to the volunteers, Duke Forest Staff, and Stewart Bryan of Native Trails that made this project possible.

Year in Review

July 2012 - June 2013

Management

Every year 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 recreation opportunities for the public. In the past fiscal year, these efforts involved over 250 acres. Activities included thinning of overstocked stands, removal of invasive species, commercial harvests, and road maintenance. With the help of numerous volunteers we completed Phase I of the Korstian Trail Project, which protects the Rhododendron Bluff area and improves the recreation experience. Our management operations, certified by the Rainforest Alliance to Forest Stewardship Council™ guidelines, ensure that the Duke Forest remains a healthy resource for years to come.

AT A GLANCE

2012 - 2013

Harvesting	**144 acres**
Clearcut	*20*
Commercial thinning	*27*
Seed tree harvest	*44*
Seed tree removal	*33*
Selection harvest	*20*
Pre-commercial Thinning	**48 acres**
Hardwood Control (Herbicide Application)	**41 acres**
Invasive Control (Herbicide Application and Manual Removal)	**25 acres**
Road Work	**6 miles**

An abandoned farm field planted in Loblolly Pine in 1931 and 1938 undergoes a final regeneration harvest. "Seed trees" are left in place to allow the area to seed in naturally with Loblolly Pine. The opening created by the harvest and the retention of dead snags benefits a variety of wildlife. Recent harvest areas are often a hotspot for bird watching, especially during the migration season.

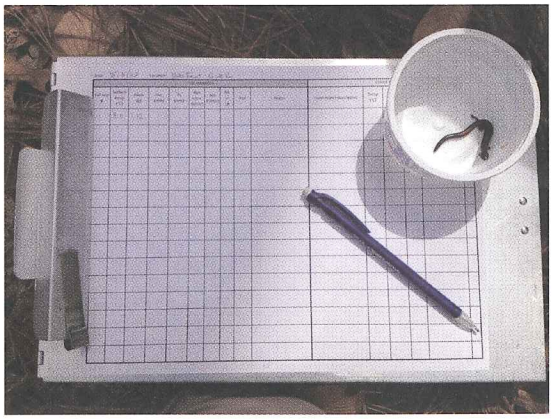
Research and Teaching

Duke Forest fulfills its primary mission by hosting a wide variety of researchers, educators, and students. Twenty-one new research projects came online this year, including research on the effects of urbanization on riparian forests and the ability of salamanders to adapt to climate change. Teachers and students from all levels of study, from K-12 to post-secondary, took advantage of learning opportunities at Duke Forest. NC School of Science and Math students used New Hope Creek to explore aquatic ecology; Duke undergrads participated in an "Into the Woods" class; and Nicholas School of the Environment graduate students developed their tree ID and forest measurement skills. Gigabytes of geospatial data maintained and shared by the Duke Forest also supported undergraduate and graduate group projects, as well as research.

AT A GLANCE

2012 - 2013

Number of research projects	**64**
Number of primary investigators	**48**
Number of research affiliations	**15**
Total research dollars (29 of 64 reporting)	**$3,786,458**
Number of teaching activities	**23**
Number of educators	**18**
Number of visits	**118**
Number of students	**608**



Brenna Forester, a Ph.D. student in Dr. Dean Urban's Landscape Ecology Laboratory - Nicholas School of the Environment, Duke University, studies Red-backed Salamanders (Plethodon cinereus) in the Duke Forest to understand their capacity for adapting to changing climate conditions, particularly elevated temperature and changes in moisture.

Year in Review

July 2012 - June 2013

Community Outreach

From hosting visiting professors from China to welcoming Duke Alumni from around the country, the Duke Forest had an exceptionally wide reach this year. With the help of local community member and geologist Bill Kaiser, the Duke Forest offered a special tour on the geology of the New Hope Creek area. Members of the public and the Duke Community also participated in the Forest's annual tours about flora and fauna, research, and management.

Volunteers

Over 150 individuals dedicated their time and energy to support projects on the Duke Forest. Much of this effort was focused on bridge building and trail closure for Phase I of the Korstian Trail Project. Local Boy Scout troops, Nicholas School students, and members of the community spent over 400 volunteer hours collecting and placing debris for closure and hammering in nails for bridges. Teachers from the Maureen Joy Charter School also contributed valuable time to help eradicate invasive plants from a Natural Heritage area, and Durham Academy High School students took time to sweep Mud Creek of trash and other debris.

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/events/index.html.**

AT A GLANCE

2012 - 2013 Outreach

Number of tours and activities	**18**
Number of participants	**501**
Total outreach hours	**43**

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/info.htm***

AT A GLANCE

2012 - 2013 Volunteers

Number of volunteer events	**15**
Number of participants	**179**
Total volunteer event hours	**47**

Project Updates

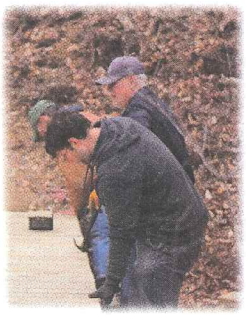
Korstian Trail Project

In April 2013, we officially completed Phase I of the Korstian Trail Project within the New Hope Creek Natural Heritage Area. With the help of 145 volunteers, we built 3 bridges, 2 boardwalks, and closed over 3,000 square feet of steep, eroding slope. We created a new trail to the popular Rhododendron Bluff overlook and formalized a high water route around New Hope Creek. In total, Stewart Bryan of Native Trails designed and built 2,070 feet of new pedestrian trail.

We are eager to continue work downstream but recognize that the long-term success of this project depends on the cooperation of our recreational community. The areas we have added signs to, fenced off, or placed debris on are critical spots in which we want to prevent further vegetation and soil loss and allow the ecosystem to recover. More information on Phase I (including a downloadable map of new trails) and upcoming Phase II can be found on our WordPress site: dukeforestproject.wordpress.com/korstian-trails-project.

Once blanketing this north facing slope, the Duke Forest's Catawba Rhododendron population is in severe decline due to a combination of natural and manmade causes. Phase I sought to minimize the latter by removing human and dog traffic from the main face of the slope.

Stewart Bryan of Native Trails built the new "maintainable" pedestrian trails by working with the land's natural contours to ensure that they properly shed water and resist widening. Phase II work will involve a mix of new trails and rehabilitation of existing trails.



Deer Herd Reduction Program

The 6th season of the Duke Forest's Deer Herd Reduction Program is currently underway. You have likely noticed that the weekday closure is in place and will be through December 13, 2013. We are working with the same groups of hunters and hope that their familiarity with the woods translates into increasing success. Last year, hunters took 75 deer, but the spotlight survey performed earlier this year showed that deer numbers were slightly up from 2011 and 2012 (but still down from 2010). We will continue to monitor this trend and remain confident that hunting is a necessary tool for reducing the negative impacts of overabundant deer on the Forest. You can do your part by obeying all closure signs and always staying on authorized roads and trails.

Recreation Study

Since the 1970s, a recreation study has been conducted on the Forest roughly once a decade. These studies have provided useful information about recreational use of the Duke Forest, but the methods have varied greatly. The current yearlong study (begun September 2013) is the first one to be designed and carried out in-house, and we have worked with Nicholas School faculty to establish clear, consistent, and defensible procedures. It consists of a visitor count and questionnaire. The information collected in this study will help inform management decisions by documenting patterns of recreation use and the experiences of visitors. While the Duke Forest is first a teaching and research laboratory, providing recreational opportunities for the community has always been important. So if you see us out in the woods collecting data, please take a few minutes to fill out a survey.