

# THE DUKE FOREST LOG

A Bulletin from the  
Office of the Duke Forest  
*Summer 2005*



## Happier Trails – Volunteers Give Forest Paths a Helping Hand

AIDED BY private donations and assistance from volunteers, foot trails across the Forest are undergoing some much-needed maintenance. These wooded paths provide researchers and educators with access routes into the forest interior while also providing enhanced hiking and nature viewing opportunities to recreational users.

Members from the Carolina Godiva Track Club and other members of the community recently upgraded a section of trail in the Durham Division. The volunteer crew spent part of a Saturday morning installing a footbridge over a swampy trail section, removing debris from around waterbars, and spreading finely crushed rock along eroding paths.

If you would like to volunteer for future activities or to donate to the Duke Forest Improvement Fund, visit our Web site ([www.dukeforest.duke.edu](http://www.dukeforest.duke.edu)) or call Bobbie Reeves, Duke Forest Volunteer Coordinator, at (919) 613-8013.



Volunteers and Duke Forest staff gather following a successful morning of trail repair work in the Durham Division.

## Save the Date – 2005 Annual Gathering, November 10th

PLEASE MAKE PLANS to join us on Thursday, November 10<sup>th</sup> at 6 PM for the 2005 Duke Forest Annual Gathering. We will highlight some of the research projects, teaching activities and forest management work that have occurred on the Forest over the past year and provide an opportunity for questions from the community. Clear skies permitting, there will also be the opportunity for astronomy viewing at the Duke University Teaching Observatory at the Couch Farm.

The Annual Gathering will take place at the New Hope Improvement Association building, which is located off of Whitfield Road in Orange County. For more details or to confirm your plans to attend, visit us on the Web at [www.dukeforest.duke.edu](http://www.dukeforest.duke.edu) or call the Office of the Duke Forest at (919) 613-8013.

## A New Forest is Born Timber Harvests Serve Many Purposes

EACH YEAR approximately 40 acres of Duke Forest are sustainably harvested. These harvests help to create and support research opportunities, enhance wildlife diversity by providing habitat variation, promote healthy forest stands and provide demonstration areas for class exercises. Timber sales from the harvests also provide the majority of the Forest's yearly operating revenue. Harvests are administered by the Duke Forest staff and are carried out by private contractors. Duke Forest management has been green-certified by the Forest Stewardship Council, <http://www.fscus.org>.

Areas recently harvested along Mount Sinai Road in the Korstian Division have used a forest regeneration method known as the *seed tree* system. With this regeneration technique, specially selected trees are left to serve as a natural seed source for the new forest.

**THE DUKE FOREST** comprises 7,040 acres of land in Durham, Orange and Alamance counties. The Forest has been managed for research and teaching purposes since 1931. Its six divisions are fully accessible through a network of roads and fire trails.

In addition to leading educational tours and field laboratory exercises, Duke Forest staff also are available to assist researchers in site establishment and management. Contact the Forest office for forest stand manipulations such as thinning and prescribed burning. Research field areas can be mowed, disked or planted using in-house equipment. Study areas can be located using our Global Positioning System (GPS) unit.

The Office of the Duke Forest maintains a comprehensive Geographic Information System (GIS) database, which is available for download from our Web site. Stand management histories and other paper records also are available from the Office of the Duke Forest.

### DUKE FOREST STAFF:

Judson Edeburn, *Resource Manager*  
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### TO SUBSCRIBE:

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# Research Spotlight

**DARREN DREWRY**, graduate student in Duke's Department of Civil and Environmental Engineering, is using a tethered sonde platform (a meteorological device attached to a tethered balloon)



to collect atmospheric profiles in the Blackwood Division. Measurements of temperature, humidity and CO<sub>2</sub> concentrations will be used to constrain estimates of land-to-atmosphere exchange at regional scales.

## ALSO IN THE BLACKWOOD DIVISION,

Chris Oishi, graduate student at the Nicholas School of the Environment and Earth Sciences, is studying transpiration in a mature hardwood stand to assess interannual variability in the water budget and how different species respond to varying degrees of water stress.



At the nearby FACTS-1 Research site, Chris is also using equipment developed by the U.S. Forest Service to compare soil CO<sub>2</sub> efflux

in elevated and ambient plots, which include fertilized and non-fertilized treatments.

<http://face.env.duke.edu>.

**JOE SEXTON**, graduate student at the Nicholas School of the Environment and Earth Sciences, is creating spatiotemporal maps of the Duke Forest's seral state over the past 20 years to study the ecological drivers of succession in Piedmont forests. Joe is using GPS-enabled mobile GIS



to locate preselected forest vegetation plots in the Durham and Korstian Divisions and to record data directly into GIS data files. These data will be used to calibrate and validate remote sensing models that allow seral states to be retrieved from a 20-year archive of satellite imagery.

<http://www.duke.edu/~jos2/triUrban.htm>

**FERNANDO MAESTRE**, visiting scholar in Duke's Department of Biology, is using soil and organic matter collected from the Durham Division to conduct an experiment in the Duke University Phytotron. Fernando has



been studying the interactive effects of atmospheric CO<sub>2</sub> concentrations, soil nutrient availability

and soil nutrient spatial distribution on the structure and function of plant assemblages in a model grassland.

**JEFF PIPPEN**, Research Associate at the Nicholas School of the Environment and Earth Sciences, has completed a butterfly



species survey on the Duke Forest. Jeff has developed a brochure and Web site detailing the Forest's species, their flight times and abundance,

along with general information on butterfly habitat and identification tips.

<http://www.duke.edu/web/butterflies/>

**MARIO VALLEJO-MARIN**, graduate student in Duke's Biology Department, is studying outplantings of horse nettle (*Solanum carolinense*) in the Durham Division. His research is examining the selection pressures acting on the proportion of two floral morphs, and the male and female fitness components for the species.

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