



Duke Forest

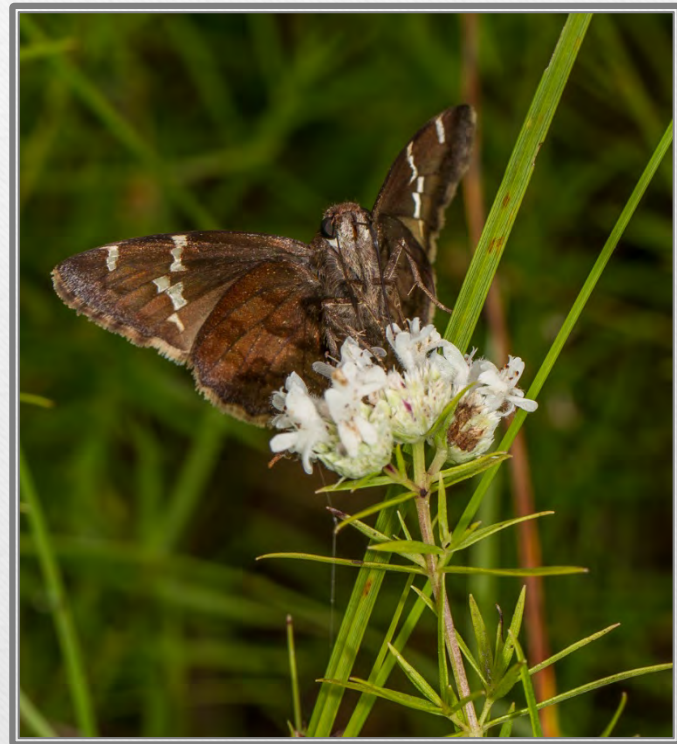
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Annual Gathering

November 9, 2017

# Agenda

- Introductions
- Presentations
  - *Duke Forest's Year in Review*
  - *Wildlife: Home in the Forest*
- Clarence Korstian Award
- Closing Remarks



Southern Cloudywing, *Thorybes bathyllus*

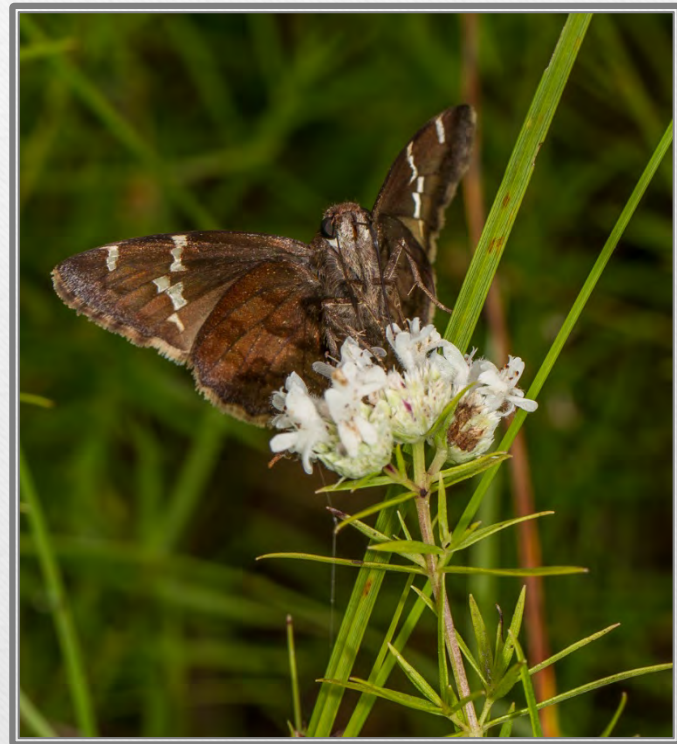




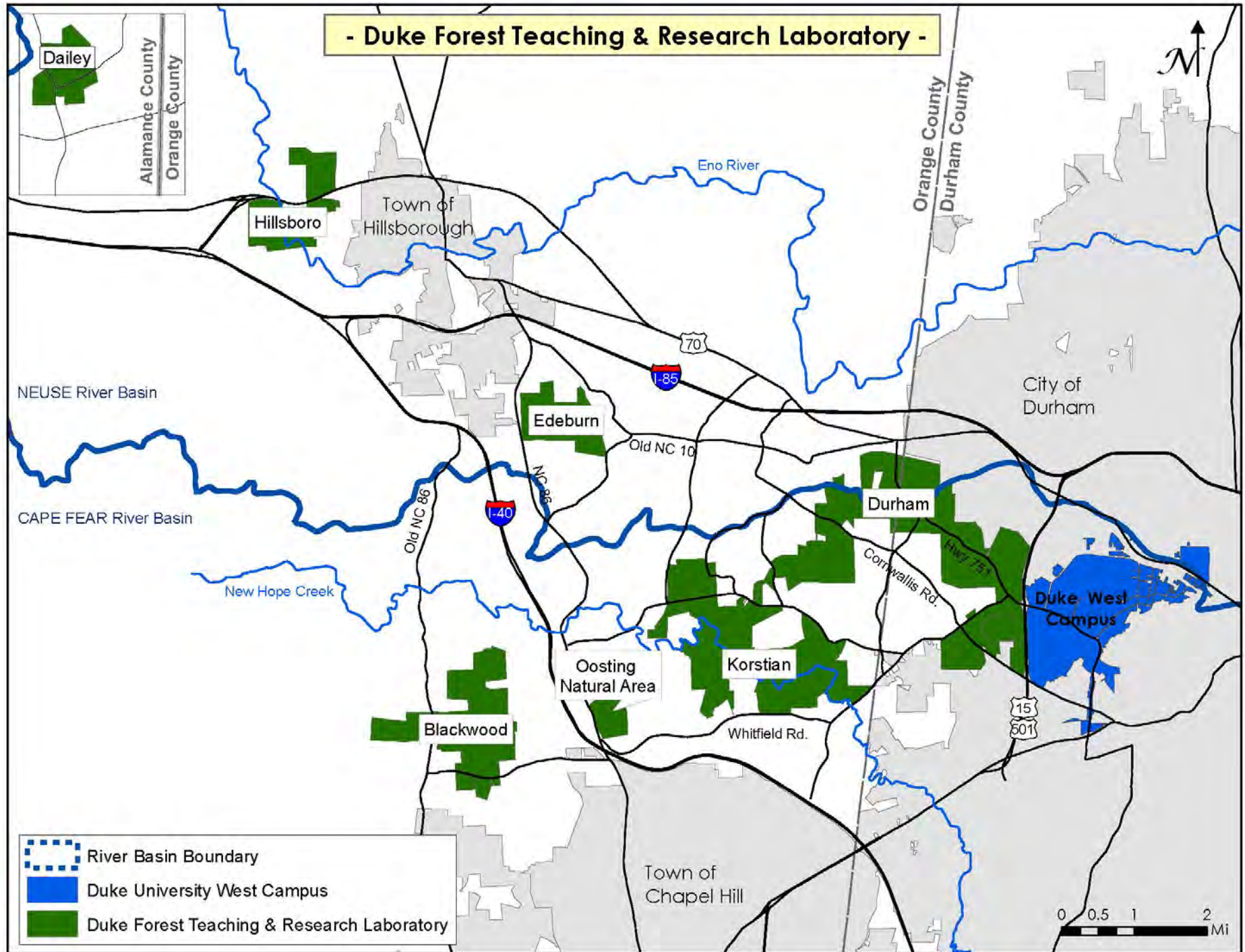


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# Duke Forest **MISSION**



- Facilitate research that addresses fundamental and applied questions concerning forested and aquatic ecosystems
- Aid in the instruction of students so that they will be informed citizens and effective stewards of our natural resources



# Duke Forest MANAGEMENT

- Promoting the teaching and research mission
- Sustainably managing resources for timber, water quality, and wildlife
- Protecting rare species, unique ecosystems, historic features
- Providing education and outreach opportunities
- Offering recreational and aesthetic amenities



Downy Rattlesnake Plantain, *Goodyera pubescens*



# Duke Forest

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## Year in Review

2016 - 2017



Sundrops (*Oenothera fruticosa*)



# Duke Forest **RESEARCH**

- 48 projects
- 33 researchers
- 14 institutions
- \$2 million



PVC pipes mark transects installed by Duke Ph.D. student, Rebecca Dalton, to understand shifts in flowering phenology in spring ephemerals and its effects on population dynamics.



# PI: Emily Bernhardt

## Duke Biology Professor

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- Stream PULSE
- Korstian – New Hope Creek, Durham – Mud Creek, Edeburn – Stony Creek
- Part of a massive effort that includes nearly 500 streams and rivers nationwide.
- Better understand role of streams and rivers in nutrient cycling (carbon and nitrogen) and modulation of climate change effects







## PI: John Walker, Environmental Protection Agency

Air Quality Research - Measurement and modeling of air-surface exchange of reactive nitrogen and carbon in a mixed hardwood forest to assess National Ambient Air Quality Standards and develop deposition budgets of nutrients.



# Duke Forest **TEACHING**

- 28 activities
- 23 educators
- 118 visits
- 1,375 students







## ED: Dr. Dave Ellum and Duke Forest staff

Undergraduates from Warren Wilson College spent 2 days in the Duke Forest learning about forest management, including silviculture and natural resource protection.





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## ED: Brian Schneider and Duke Forest staff

Students from a 2-year forestry degree program at Haywood Community College visit the Duke Forest every year to learn about silviculture, timber management, and resource stewardship.



# Duke Forest MANAGEMENT & STEWARDSHIP

Stand Improvements	181 acres
<i>Hardwood control</i>	59
<i>Invasive control</i>	27
<i>Pre-commercial thinning</i>	75
<i>Site preparation</i>	16
<i>Site restoration</i>	4

Harvests	209 acres
Regeneration	
<i>Patch cutting</i>	3
<i>Seed tree</i>	27
<i>Selection</i>	28
<i>Shelterwood</i>	48
Intermediate	
<i>Commercial thinning</i>	76
<i>Selection</i>	18
Other harvests	
<i>Seed tree removal</i>	9

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## Pre-commercial thinning

The first “tending” in a regenerated pine stand is the reduction of tree stem density to  $\sim 400$  trees/acre ( $10' \times 10'$  spacing). This promotes vigorous, healthy tree growth.



# Duke Forest MANAGEMENT & STEWARDSHIP

## Road & Trail Maintenance

**63 miles**

<i>Road grading &amp; repair</i>	3
<i>Road mowing</i>	52
<i>Trail blazing</i>	4
<i>Trail hazard mitigation</i>	1
<i>Trail trimming</i>	4







## Korstian Division – Culvert Replacements

Two major culverts replaced along tributaries to New Hope Creek. Many original roads and culverts were installed by the CCC back in the 1930s. Unfortunately, we were unable to preserve the hand-set stone retaining walls.





## Duke Forest **EDUCATION & OUTREACH**

- 24 activities
- 637 people
- 76 hours





## Duke Forest **VOLUNTEERS**

- 3 events
- 13 people
- 10 hours



# Duke Forest

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## Project Updates



Land snail among flowering Stonecrop, *Sedum ternatum*.





# Duke Forest **Five-Year Strategic Plan: 2017 - 2022**

Stewardship for Long-Term Sustainability

Research and Teaching

Community Engagement



# Duke Forest Five-Year Strategic Plan:

## Stewardship for Long-Term Sustainability

Steward the natural, financial, and human resources of the Duke Forest to ensure its long-term sustainability as a major University asset for research, teaching, and community outreach.

- Diversify revenue sources
- Conserve and restore resources
- Maintain stable land base



Yellow Passionflower, *Passiflora lutea*

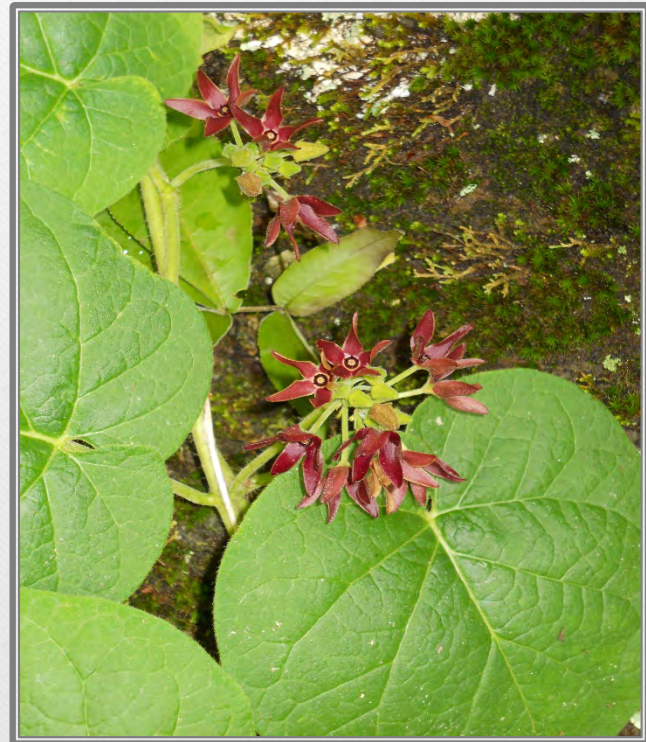


# Duke Forest **Five-Year Strategic Plan:**

## **Research and Teaching**

Stimulate substantial contributions to scientific knowledge and interpretation through use of the forest in research and teaching, especially at the frontiers of our understanding and appreciation of the natural world.

- Promote across new disciplines, technologies, and audiences
- Strengthen recognition as a major research and teaching destination



Milkvine, *Matelea* spp.



# Duke Forest **Five-Year Strategic Plan:**

## **Community Engagement**

Engage with the University and public communities to expand the forest's role as a stage for academic exploration and to share vital insights about the interaction between humans and the environment, putting that knowledge in the service of society.

- Bolster staff capacity
- Connect communities with science



Coral Honeysuckle, *Lonicera sempervirens*



# Deer Management Program

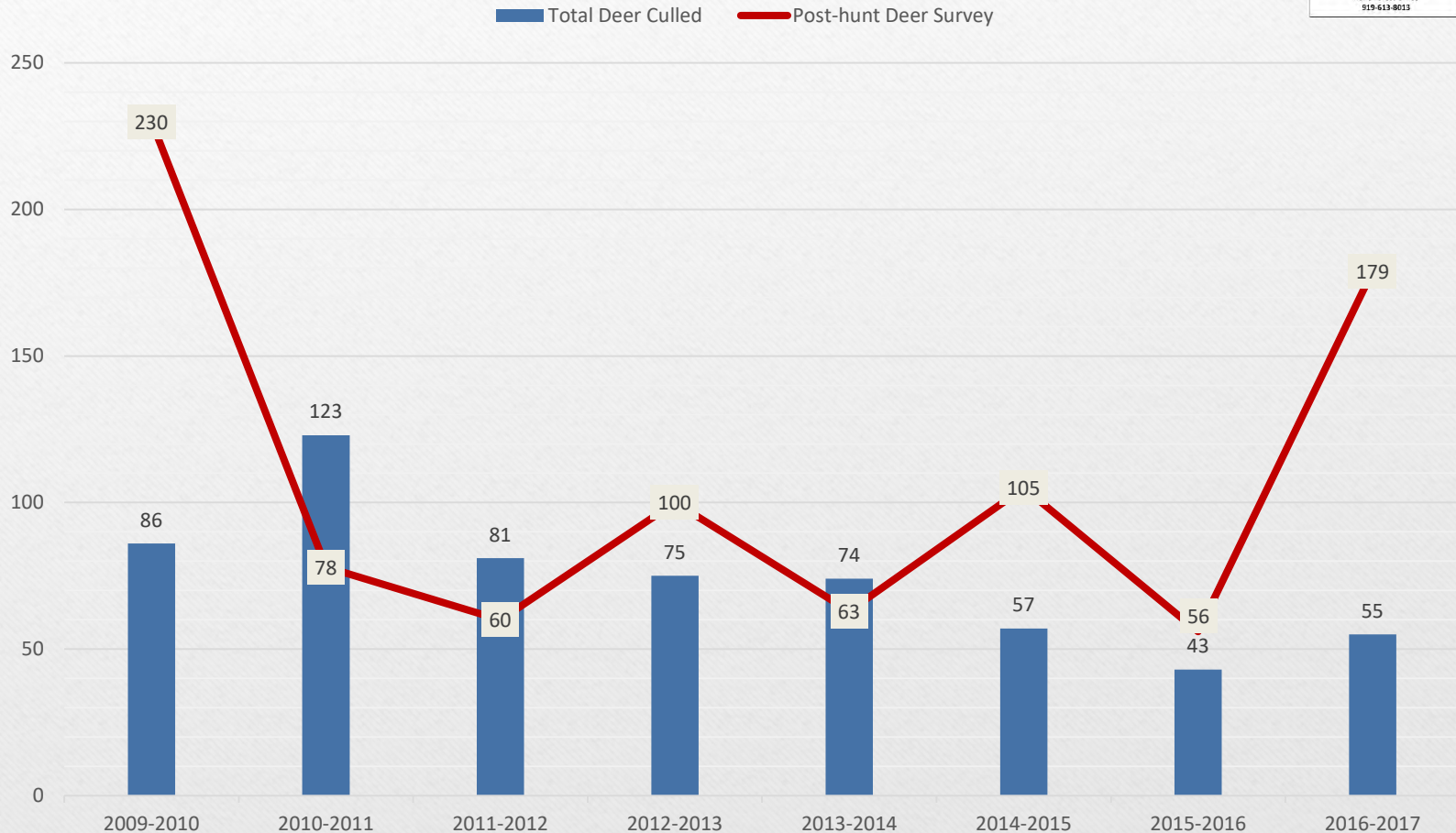
## Harvet and Spotlight Data

**FOREST  
CLOSED**

For the Deer Herd Reduction Program  
MONDAY through FRIDAY  
SEP 25 – DEC 15 2017

**DO NOT ENTER**

Duke Forest Office  
919-613-8013





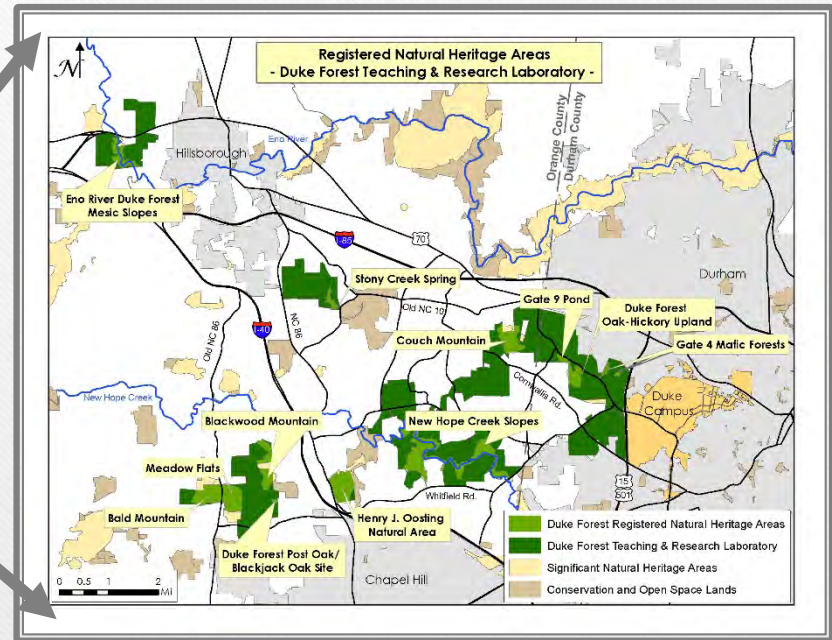
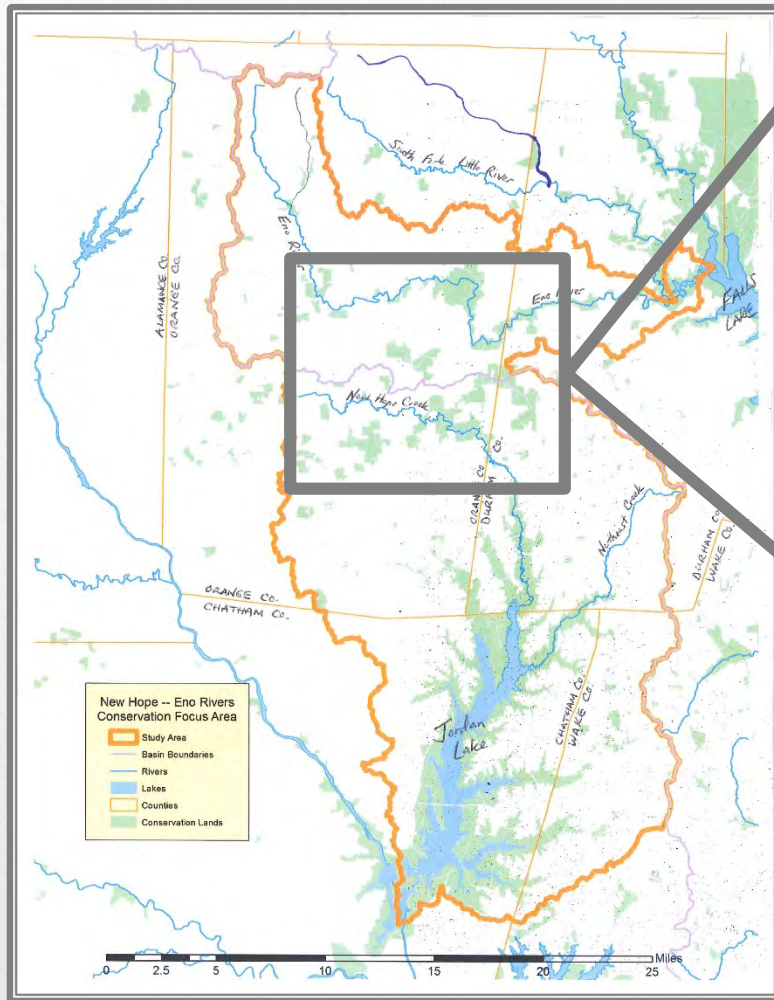
# Shepherd Nature Trail Restoration



*This project was funded through the Duke Forest Improvement Fund and by the Durham County Matching Grants Program for Recreation and Open Space.*



# Landscape Conservation



A collaborative effort to identify high-priority landscape corridors that connect a network of critical wildlife habitats within the Jordan Lake watershed and across the “land bridge” between New Hope Creek (Cape Fear River Basin) and the Eno River (Neuse River Basin).





Rosepink, *Sabatia angularis*



# Upcoming Events

- Management Tour
  - Saturday, December 9, 2017
- Pine Cone Pacer 5K (9<sup>th</sup>)
  - Saturday, April 14, 2018

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- *For details and to register, go to our website or call 613-8013*
  - *Check the website frequently for additional events or sign up for our Event Listserv*







[www.dukeforest.duke.edu](http://www.dukeforest.duke.edu)

[www.facebook.com/dukeforest](https://www.facebook.com/dukeforest)





# Wildlife

*Home in the Forest*

November 9, 2017