

# A Brief Look at Ev-Henwood Preserve

*Roger D. Shew*

*Departments of Earth and Ocean Sciences and  
Environmental Sciences*

A photograph showing a field of tall, dry, yellowish-brown grasses in the foreground. In the background, there is a line of trees, including several green pine trees and some bare deciduous trees, under a clear blue sky.

**Old Field Succession**



**Old Gus  
6' diameter  
cypress**

A photograph of a dense forest. The ground is covered in a thick layer of brown, fallen leaves. Several tall, thin tree trunks are visible, and the canopy is filled with green leaves, with some sunlight filtering through.

**Upland Forest**





- 1947 opened w/ 238 students near NH High School
- 1958 became part of the NC College System
- 1961 ground breaking for campus on College Rd. (1<sup>st</sup> three buildings were Hoggard, Alderman, and James)
- 1963 became 4 year college
- 1969 became the University of North Carolina at Wilmington (part of the UNC University System)
- 2800 students in 1976; >14,000 in 2016

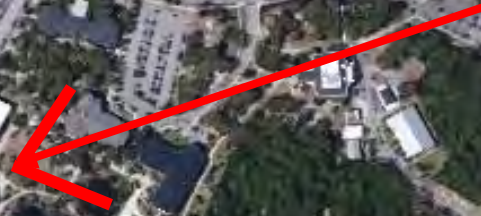


Randall

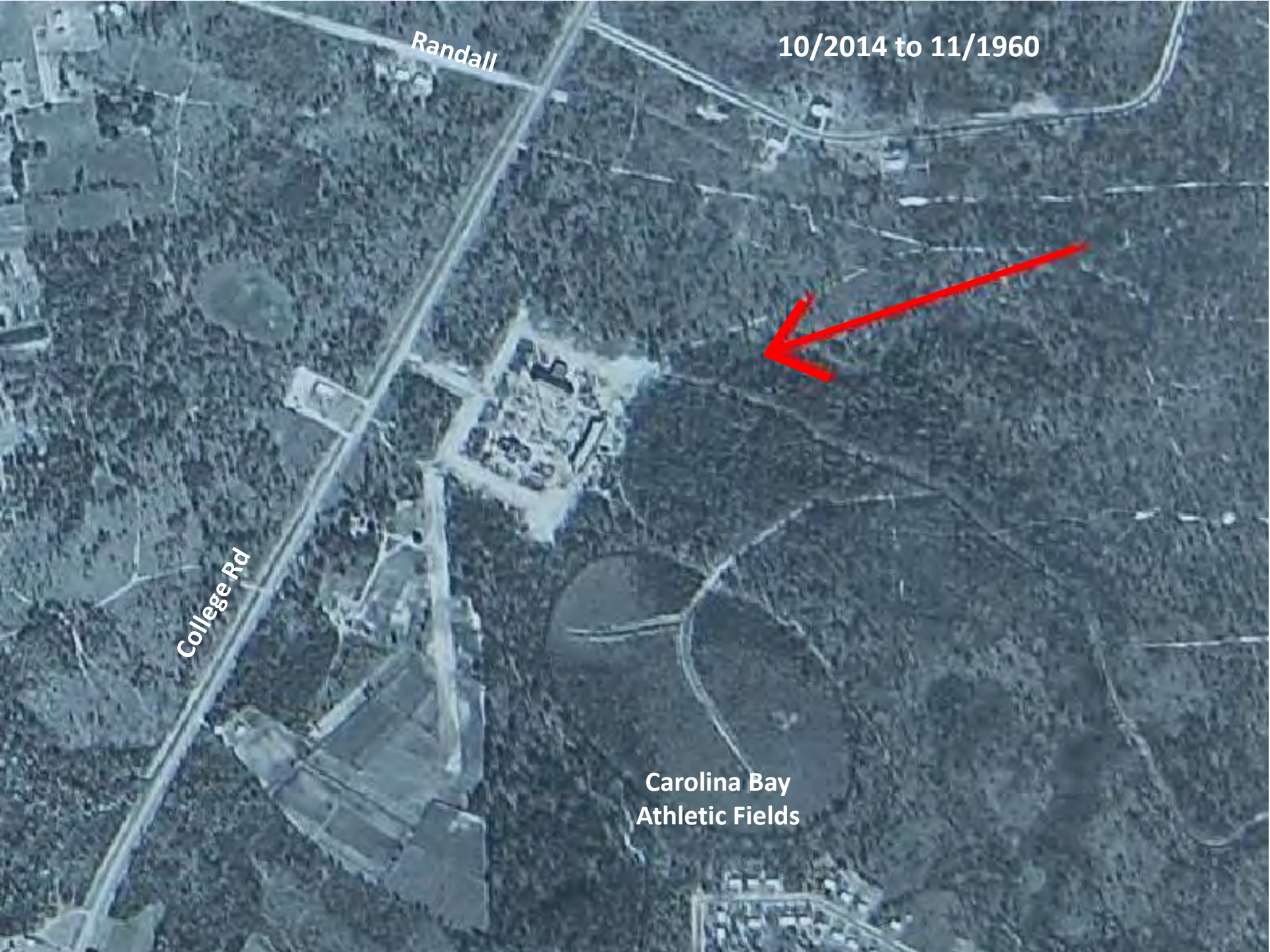
10/2014 to 11/1960

College Rd.

Carolina Bay  
Athletic Fields







Randall

10/2014 to 11/1960

College Rd



Carolina Bay  
Athletic Fields





# UNCW Main Campus Outline

132

Longleaf (mown areas)

Rock Garden

Pocket Forest

Bluethenthal Preserve

Chancellor's Walk

Longleaf Pine Xeric Sandhill

Wetland

Mixed Pine/Hardwoods

Garden





Inkberry



Litter



**Eastern half of Burn Unit Area 4. Note the increasing litter and increase in shrubs. The litter is the fine fuel load and the shrubs, like inkberry, begin to shade out the herbaceous layer.**





1/20/2011

Forest photo point (same view) to show the before, after, and recovery of the forest from the controlled burn



2/20/2011



3/20/2011

UNCW  
Prescribed  
Burn



*Pteridium aquilinum* FACU  
Northern Bracken Fern

5/20/2011

Shew, 2011





**Setting the Black Line Above; Fire slowly moves upwind creating a buffer (lower left). Ribbons of fire are then set that run back toward the burned area. Lines/ribbons are set ~50 – 75 feet . Narrow fire breaks are effective barriers.**



**March 2023**



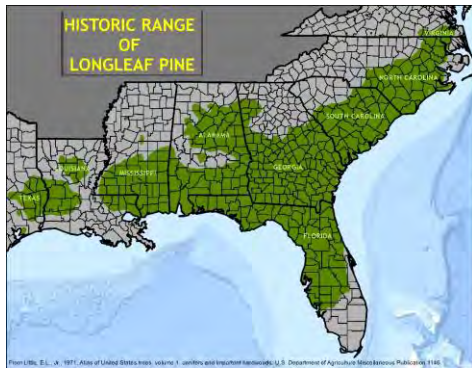
# Tar Kiln Nature Trail

*“We find ourselves on the entrance of a vast plain which extends west sixty or seventy miles. This plain is mostly a forest of ‘long-leaved pine’.....”* These are the words of William Bartram in 1789. But by the late 1900s this extensive Coastal Plain forest of longleaf pines was decimated and reduced from an original 90 million acres to <3 million acres.

*Most of the loss was related to logging and the naval stores industry. There has also been a large conversion of the forest to other pines such as loblolly for use in the forest industry. Logging and naval stores were major economic drivers for NC, particularly for southeastern NC in the 1700s and 1800s.*

*The major threats to longleaf plant communities today are the absence of fire (longleaf ecosystems are fire-dependent) in the landscape and urbanization. There is good news, however. There are now over 5 million acres of longleaf pine because of restoration programs and proper management since 2010.*

*The Tar Kiln Trail highlights our longleaf pine forest including the naval stores history, importance of fire in the ecosystem, and longleaf life cycle, but it also describes other aspects of the ecosystem such as soils, too.*



Historic extent of longleaf in green trip.



Extensive logging

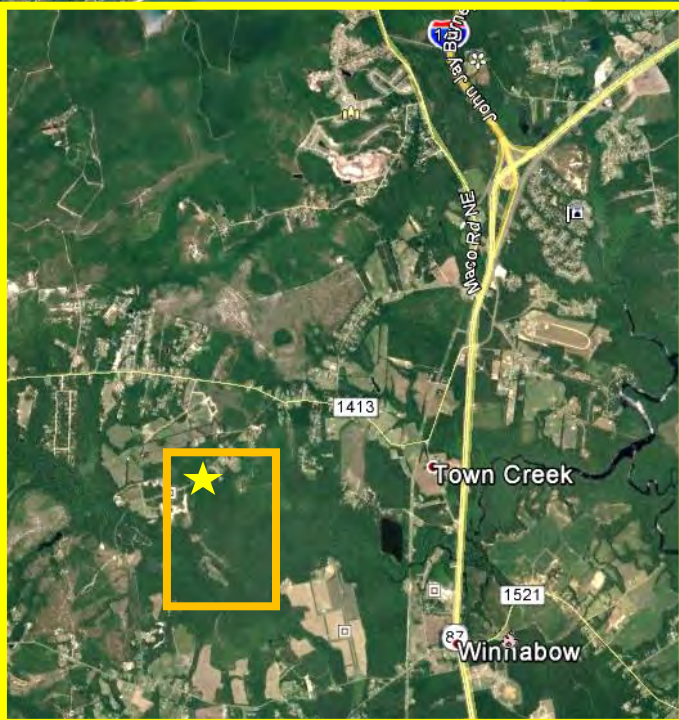
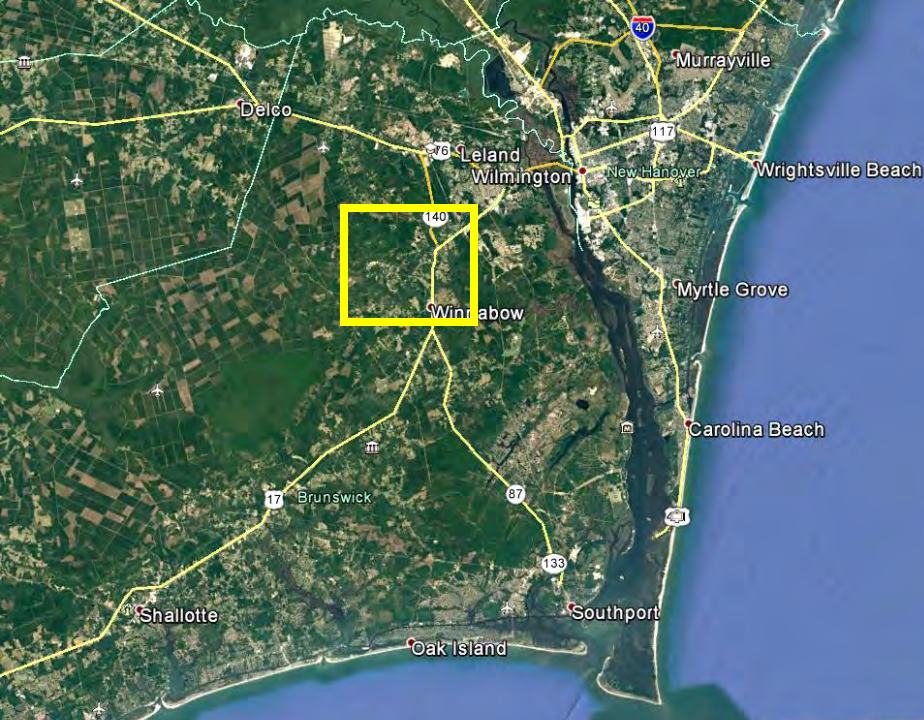


Notched trees; Naval Stores



Trail Map. The loop is 4,400 feet round trip.





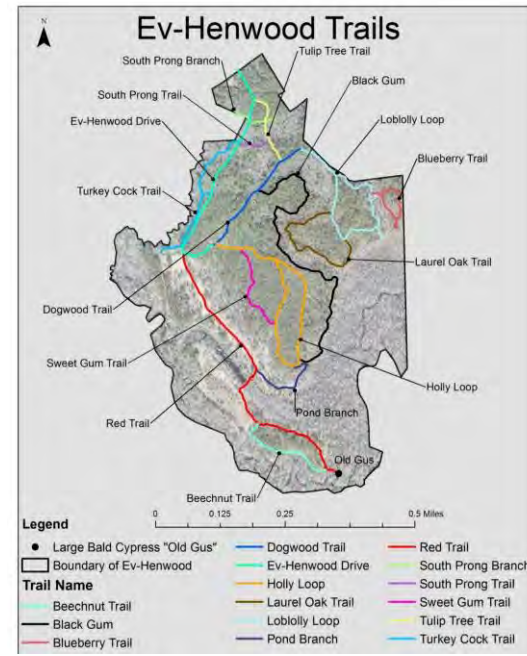
**Location of Ev-Henwood Preserve  
Brunswick County  
25 minutes from UNCW**





### Characteristics:

- Upland wooded area dominated by pines, oaks, hickories, w/ areas of beech. The lowland/floodplain contains cypress, gum, tupelo, etc. There is an area of fields maintained to illustrate old field succession and a small amount of acreage planted in longleaf pines
- Historical/archaeological significance: ?used by Sioux-speaking native Americans, crossroads for N-S commerce, occupied since 1790 by Henry family and others, used for naval stores
- Nature trails are present as well as numerous other trails
- Part of N.C. Coastal Plain Birding Trail



**Ev-Henwood 174 acres**

**UNCW administered with ~1/3 of site including an Easement with the Coastal Land Trust**

### Uses:

**Classes, Labs, Birding, Field trips with multiple organizations including Scouts, OLLI, Native Plant Society, Audubon, Sierra Club, Research by Many Others, and Enjoying Nature**





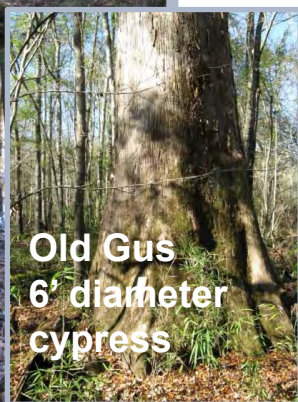
**Old Field Succession**



**Longleaf Pine Restoration**



**Bottomland/Wetland**



**Old Gus  
6' diameter  
cypress**



## **Variety at Ev-Henwood Preserve**



**Upland Forest**

### **Goals:**

- Manage the Preserve for ecosystem health
- Re-establish past ecosystems (longleaf/grasses, old field succession)
- Provide educational/recreational opportunities for schools and public



# Secondary Succession and Habitat Chart

White-tailed deer; Bobcat; Fox; Turkey

Black bear

Brown thrasher; Cardinal

Gray squirrel

Ruffed grouse

Rabbit; Field sparrow; Bobwhite

Bluebird

Cottonrat

Mourning dove; Killdeer

Age in years	1	2	3-20	25-100	150+
Community type	Bare field	Grassland	Grass-shrub	Pine forest	Old hickory forest
Stage	Early		Mid		Late

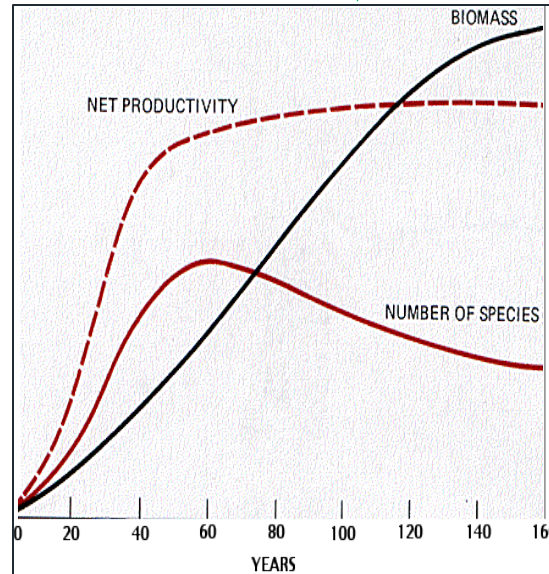
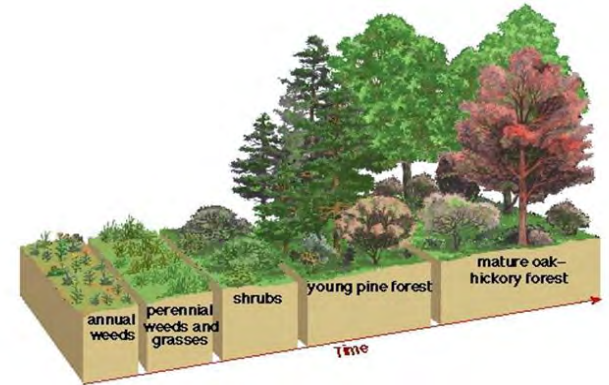
Stressful Environment

Modification

Stable Environment

Old Field Succession – gradual replacement of one community with another until a climax, stable community/ecosystem is reached.

There is a gradual change in structure of the ecosystem with changes in productivity and biodiversity.







2012



2015







5/2014





12/2017





Three weeks after controlled burn - 3/2019





6/2020



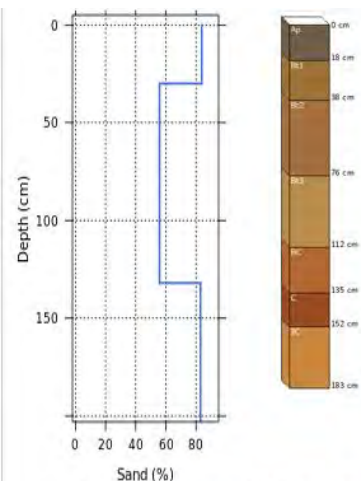


**Longleaf Pine and Wiregrass Planting**



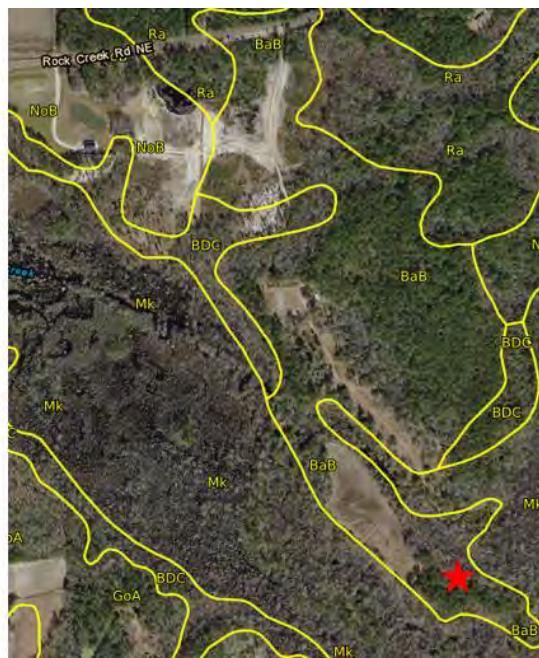
2/2015





**BDC - Marvyn (Ultisol)**

highly weathered leached red or reddish-yellow acid soil with a clay-rich B horizon (subsoil), occurring in warm, humid climates.



Upland soils are moderately to well drained. Areas have transitioned from field to forest. How long ago?

Roger's tree!  
American Beech  
(*Fagus grandifolia*)





## Town Creek – Blackwater River

- Little sediment, tannins from swamp/organics
- Classification: C; Sw
- Sw or swamp water allows lower DO (4.0 vs. 5.0 mg/l) and lower pH (~4.5 vs >6.0)

Bottomland hardwoods (wetlands) surround Town Creek. Critical for habitat, flood control, biodiversity, nutrient and sediment uptake, carbon storage

Wetlands are defined by the soils, vegetation, and hydrology; all of which are wet and inter-related.

Soil: Hydric soils are defined as soils that are saturated or flooded long enough during the growing season to develop anaerobic conditions that favor the growth of hydrophytic vegetation.

Vegetation: Hydrophytic or capable of growing and reproducing in anaerobic conditions (Obligate and Facultative Wet Plants)

Hydrology: Permanently or periodically inundated w/ water and the soil is saturated during part or all of growing season



Town Creek and adjacent wetlands  
Muckalee Soil



"Old Gus": 6' diameter cypress





Other Wildlife in the Bottomlands







### Wild Turkey (*Meleagris gallopavo*)

Decline was primarily due to unregulated and heavy market hunting, rapid deforestation and habitat destruction throughout the state. This decline continued into the 1960s. Turkeys are once again common in North Carolina, thanks to a restoration program implemented by the N.C. Wildlife Resources Commission. Total harvest in 2013 was >24,000.



### White-Tailed Deer (*Odocoileus virginianus*)

1638 deer harvested in Brunswick County and >167,000 in NC in 2013

### Raccoon (*Procyon lotor*)



### Gray Fox (*Urocyon cinereoargenteus*)



### Opossum (*Didelphis virginiana*)





**PREFERRED FOREST SUCCESSIONAL STAGES USED BY SELECTED WILDLIFE SPECIES**

SPECIES	GRASS AND FORB	SHRUB AND BALSAMIC	POLE THAW	NATURE FOREST
<b>Amphibians</b>				
American toad	■	■	■	■
Gray tree frog		■	■	■
Red-back salamander			■	■
Slimy salamander			■	■
Red-spotted newt			■	■
Wood frog		■	■	■
<b>Reptiles</b>				
Eastern box turtle	■	■	■	■
Eastern garter snake	■	■	■	■
Northern redbelly snake			■	■
Smooth green snake	■	■		
Wood turtle	■	■	■	■
Black rat snake	■	■	■	■
<b>Birds</b>				
American woodcock	■	■		
Black-capped chickadee		■	■	■
Chipping sparrow	■	■		
Eastern meadowlark	■			
Grasshopper sparrow	■			
Great-horned owl	■			■
Ovenbird				■
Pileated woodpecker				■
Red-eyed vireo			■	■
Red-tailed hawk	■			■
Ruffed grouse	■	■		■
Rufous-sided towhee		■		
Song sparrow		■		
Wild turkey	■			■
<b>Mammals</b>				
Black bear				■
Cottontail rabbit	■	■		
Gray squirrel				■
Meadow vole	■			
Red fox	■			■
White-tailed deer	■	■		■

## A Variety of Habitats Provide Optimal Biodiversity

### VERTICAL AND STRUCTURAL DIVERSITY

As a forest changes through succession, its structure also changes. Vertical structure is important because in a forest with a well-developed overstory, understory, shrub, and herbaceous strata, a diverse array of plants and animals can coexist. Maintaining vertical structure guarantees that a large variety of wildlife will be present. Many wildlife species, particularly birds, divide the habitat vertically





# Coastal Black Bear Project

We are currently studying black bear presence (and absence) in eastern North Carolina.

To do this, we set up equipment to collect hair samples left by bears that may visit this area.

Equipment was set up in May 2024 and will be removed in August 2024. We visit the sites weekly to collect hair samples during this time.

If you see one of these sites (pictured to the right), please do not disturb!



**NC STATE UNIVERSITY**



**MISSISSIPPI STATE UNIVERSITY**  
FOREST AND WILDLIFE RESEARCH CENTER



**If you have questions, please visit [CoastalBlackBearProject.weebly.com](https://CoastalBlackBearProject.weebly.com)  
or email us at: [CoastalBlackBearProject@ncsu.edu](mailto:CoastalBlackBearProject@ncsu.edu)**

## 3 month study

### Two sites in Ev-Henwood Preserve

Mid-1960s, there were fewer than 1,000 black bears in North Carolina. They were found only in the most remote areas. 1970s, the North Carolina Wildlife Resources Commission began a management program that included the establishment of sanctuaries encompassing over 500,000 secluded acres. Since then, the population has grown to more than 25,000 animals statewide



# Regional Bat Study

Assessment of the Occurrence of different bat species including the Endangered Northern Long-eared Bat and the soon to be listed Tricolored Bat.

Both were found at Ev-Henwood in this year during two visits in April and September

## 1<sup>st</sup> assessment at Ev-Henwood

Northern Long-eared Bats are at risk from impacts of white-nose syndrome (fungus), which has killed millions of bats.

Tricolored bat (*Perimyotis subflavus*) with White-nose (photo from NCWR)



Photo courtesy of Gary Jordan USFW

Northern Long-eared Bat  
(*Myotis septentrionalis*)  
At Ev-Henwood



# Campus Natural Areas as Outdoor Classrooms: Conservation, Restoration, and Applied Learnings for Student and Community Engagement



Roger D. Shew (Depts. of Earth and Ocean Sciences and Environmental Science)  
Contributions from Chris Randall (Landscape Services) and Multiple of my Environmental Sustainability and Methods Classes  
University of North Carolina at Wilmington, Wilmington N.C. 28403



Upland



Transition



Wetland and Stream



Old Field Succession

## Ev-Henwood Preserve Description

Upland wooded area dominated by oaks, hickories, and loblolly pines. There is a thin transitional/slope down to wetlands and a small stream. The wetlands are dominated by cypress and gum trees. The upland wooded areas were once used as agricultural fields and before that the area contained longleaf pines that were harvested for wood and naval stores. A small amount of field area that was overgrown is being restored for studies of old field succession. Longleaf pines and wiregrass are being planted on a small part of the 174 acre preserve to re-establish this fire-dependent ecosystem and to highlight the former importance of longleaf pines for wood products and naval stores. The preserve is part of the NC Coastal Plain birding trail. Numerous trails and nature trails are present throughout the property. A signature 6 ft (2m) diameter cypress is present along Town Creek.



Site  
Maps

The 174 acres is divided into upland forest (55%), wetlands (35%), fields and ponds (10%).

Note the vegetation differences shown in the various images. The map on the left is in winter; wetland trees lost leaves.

1/3 of the 174 acres has a joint easement with the NC Coastal Land Trust.



## PRESERVE USES

- Outdoor Classroom: Soils, Ecology, Botany, Zoology, Hydrology, Conservation Management, Forestry, Natural History
- Community Outreach: Environmental Mgmt., Nature Walks, Birding
- Service: Habitat Restoration (longleaf pine/wiregrass ecosystem; old field succession), Trail Maintenance





# Goals for Ev-Henwood Preserve

- **Maintain in as natural condition as possible while also ensuring multiple educational opportunities for schools and communities**
- **Monitor, manage, reduce damages to site. Hurricanes, ice storm, and human impacts**
- **Restore a small amount of acreage to historic longleaf pine ecosystem; tar kiln and historical accounts indicate importance of longleaf and naval stores to the area**
- **Re-establish fields for old field succession illustration and studies (classic ecological study topic)**
- **Inventory of plants and animals; monitor water quality**
- **Provide new write-up for the preserve incorporating the maps and layers – use for community outreach, modules for education, and for school system use**
- **Complete overlays/GIS map of trails. Sites within the preserve will be added including data layers for plants and descriptions of soils and for use in conservation management. Basis for summary and management of “other pieces”**





# A Brief Look at Ev-Henwood Preserve

*Roger D. Shew*

*Departments of Earth and Ocean Sciences and  
Environmental Sciences*

A photograph of a field with tall, dry, yellowish-brown grass in the foreground. In the background, there is a line of trees, including several green pine trees and some bare deciduous trees, under a clear blue sky.

**Old Field Succession**

A close-up photograph of a large, thick tree trunk, identified as an old cypress tree. The trunk is covered in moss and has a rough, textured bark. The background shows more trees and foliage.

**Old Gus  
6' diameter  
cypress**

