

# Identifying and Prioritizing Important Natural Resources in North Carolina: The Conservation Planning Tool



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# The mission of the NC Natural Heritage Program

To inventory, catalogue, and support the conservation of the rarest and the most outstanding elements of the natural diversity of our state.



[www.ncnhp.org](http://www.ncnhp.org)

# We track Rare Species

*Natural Heritage Element Occurrences (NHEOs)*

## Plants

Vascular & non-vascular,  
terrestrial & aquatic

(894 taxa)

## Animals

Vertebrate & invertebrate,  
terrestrial & aquatic

(643 taxa)





# We track Natural Communities

*Natural Heritage Element Occurrences (NHEOs)*



Based on the North Carolina Classification of Natural Communities, 3<sup>rd</sup> approximation (Schafale and Weakley 1990)

Ca. 120 community types are currently tracked

Special animal assemblages and habitats are also tracked



# We delineate conservation sites and assign significance to them

## *Significant Natural Heritage Areas (SNHAs)*



An area of **land or water** identified as being important for conservation of the state's biodiversity

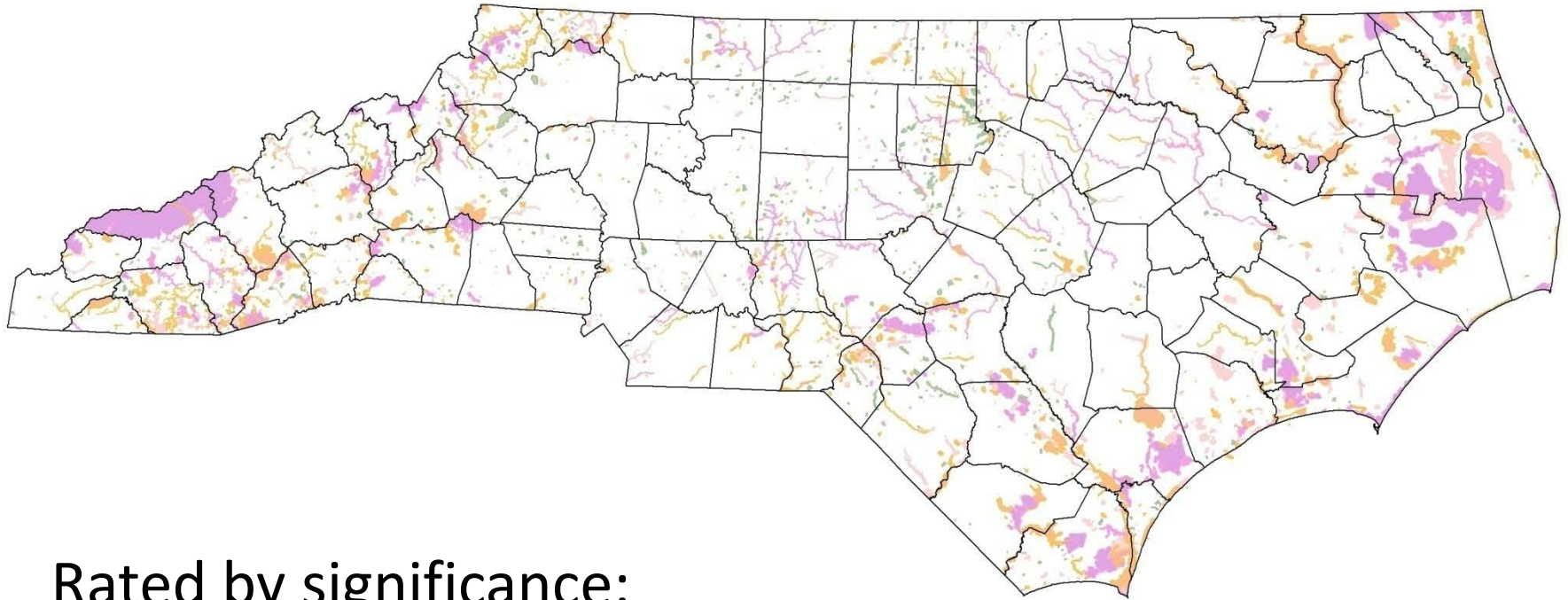
SNHAs contain one or more Natural Heritage elements: high-quality or rare natural communities, rare species, and special animal habitats

# Significant Natural Heritage Areas (SNHAs)

- Identified by ground surveys
- Can range in size from one to thousands of acres.
- Significant Natural Heritage Areas are identified by the NHP, but protection comes from landowner.



# Significant Natural Heritage Areas (SNHAs)



Rated by significance:  
National, State, Regional and County



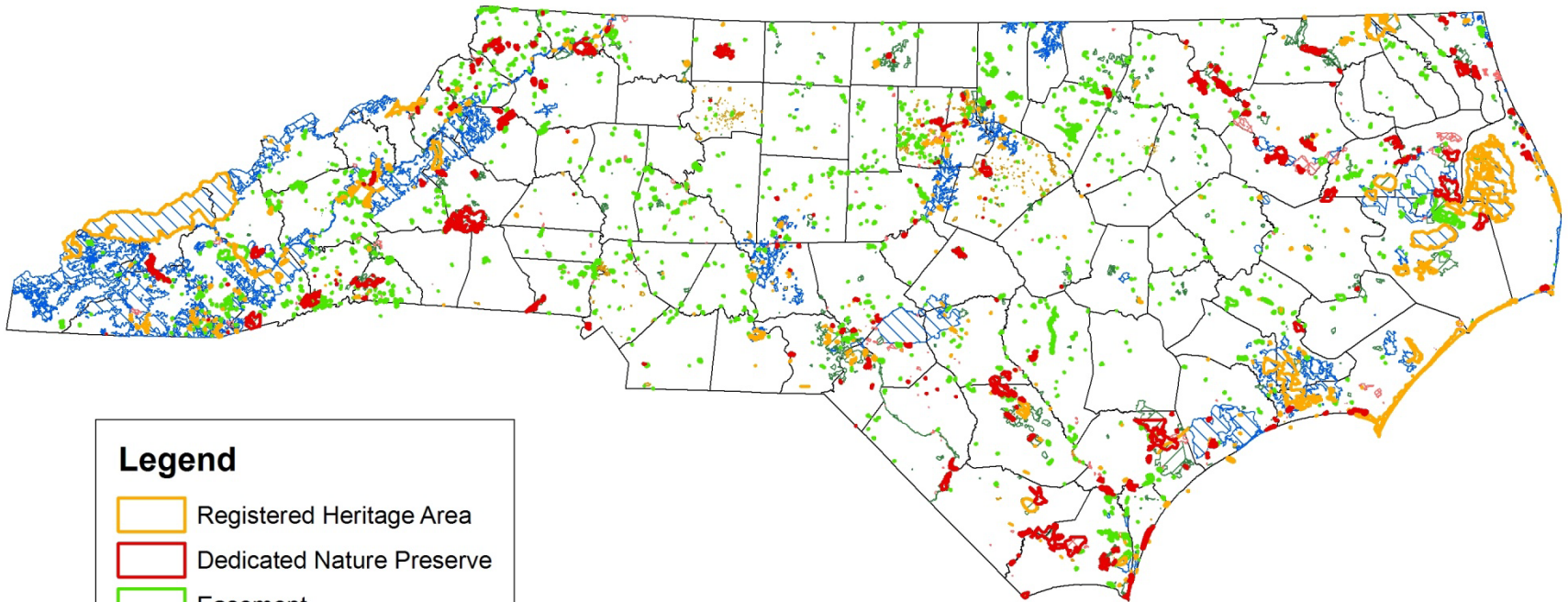
# We conduct and publish County Natural Area Inventories

- A systematic search for Significant Natural Heritage Areas (SNHAs), including natural communities and locations of rare and endangered species
- Scope of the inventory is limited to one county





# Lands Managed for Conservation (MAREAs)



## Legend

- Registered Heritage Area
- Dedicated Nature Preserve
- Easement
- Federal
- State
- Local
- Private
- Unknown



# High Priority Natural Landscapes in North Carolina



Landscape Habitat Indicator Guilds (LHIGs) are mapped and ranked based on empirical data and spatially show core wildlife habitat areas and connectivity.





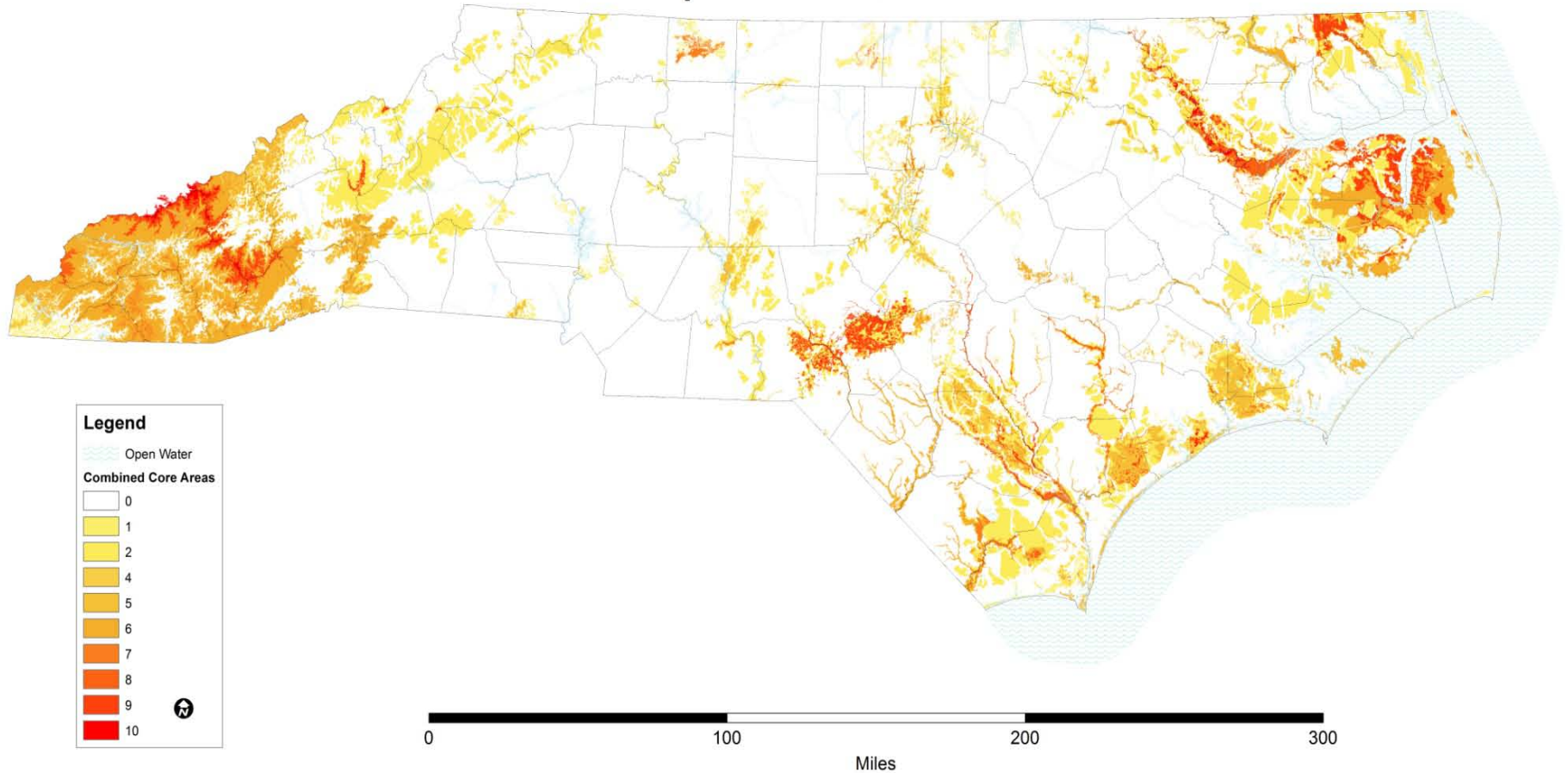
Umstead State Park  
Four Lane and Divided Highways  
US  
NC  
SR, RMP, RST

0 1 2 3 4 5 Miles





## Landscape Habitat Indicator Guilds



Scores for core habitat areas are based on the combination of guilds present within a 30m x 30m pixel, and consider the rarity and quality of the guilds within those areas





# One NC *Naturally*

Working together through conservation to  
map a healthy and prosperous future

[www.onencnaturally.org](http://www.onencnaturally.org)



# NC Conservation Planning Tool (CPT)

*Providing a framework for decisions about future growth  
and important natural resources*



- ***Identify, evaluate, and prioritize***  
an interconnected network of essential ecosystem  
resources and functions essential for conservation  
statewide
- ***Coordinate*** conservation efforts
- ***Inform*** planning and funding decisions
- ***Guide*** conservation efforts



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Features

- Progress Updates
- Newsletter
- Listserv signup
- Conservation Planning Tool
- Climate Change
- Commissions and Councils
- Sustainable Communities
- Sustainable Development
- For Kids

## OneNC Naturally

### Conservation Planning Tool

The Conservation Planning Tool (CPT) consists of assessments and maps that identify, evaluate, and prioritize important natural resources required to maintain healthy and sustainable ecosystems statewide. Six assessments and maps are included in the CPT: Biodiversity/Wildlife Habitat, Forestry Lands, Farmland, Open Space and Conservation Lands, Marine/Estuarine, and Water Services.

This planning tool illustrates the locations and conservation values of significant natural resources throughout North Carolina, and has been applied by local governments, state agencies, regional councils of governments, funding programs, and conservation organizations to support land use, conservation, mitigation and transportation planning and decision-making.

Focus Areas

- Forever Natural
- Working Lands
- Working Waters

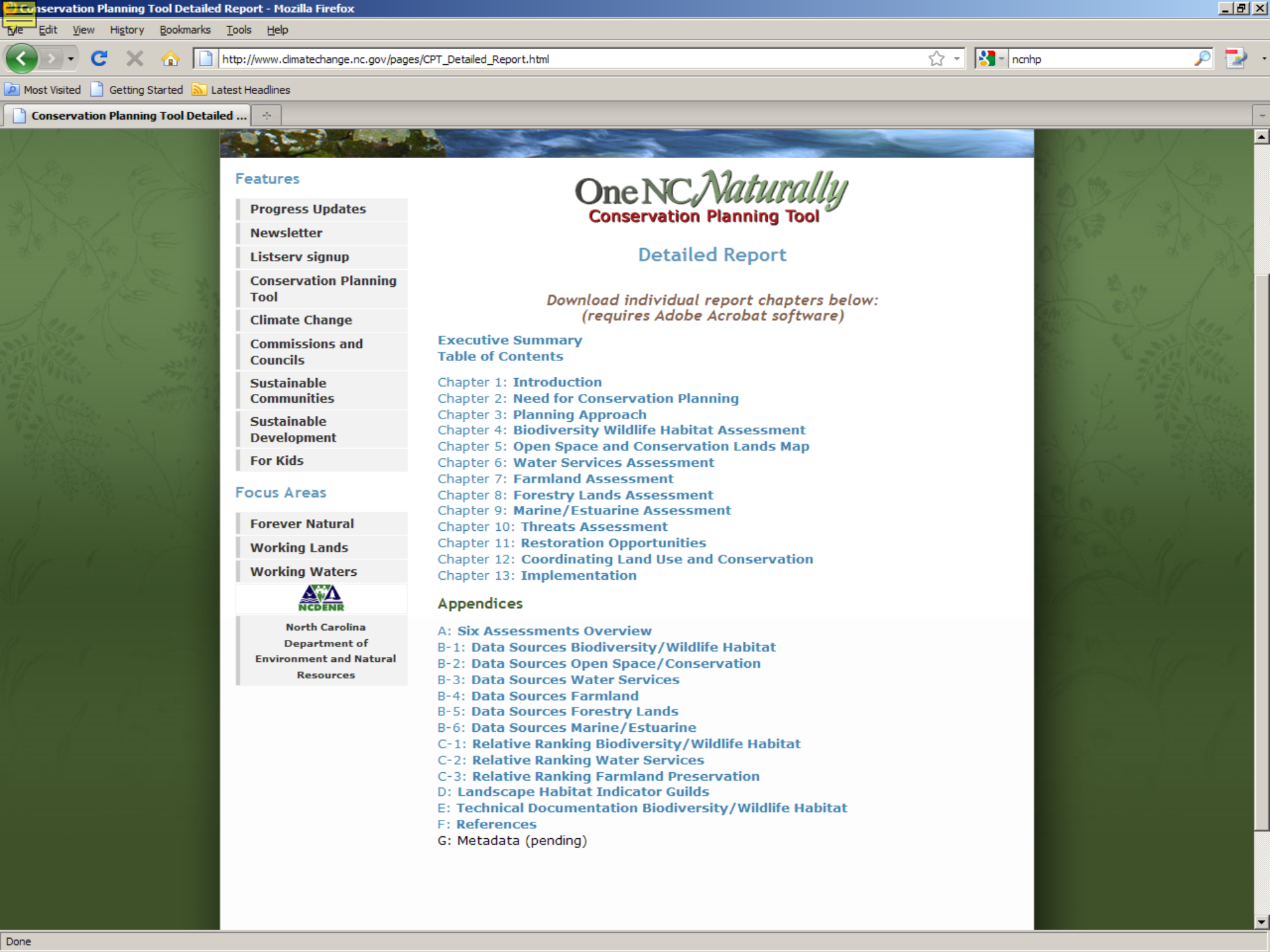


- Interactive Map Viewer
- Assessment Overview
- Data Download for GIS Professionals
- Detailed Report
- Printable PDF Maps
- Proactive Planning slideshow
- Other Planning Efforts
- Printable Brochure



Working together through conservation to map a healthy and prosperous future



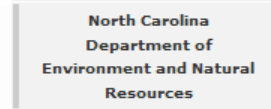


### Features

- Progress Updates
- Newsletter
- Listserv signup
- Conservation Planning Tool
- Climate Change
- Commissions and Councils
- Sustainable Communities
- Sustainable Development
- For Kids

### Focus Areas

- Forever Natural
- Working Lands
- Working Waters



North Carolina  
Department of  
Environment and Natural  
Resources

# One NC Naturally Conservation Planning Tool

## Detailed Report

Download individual report chapters below:  
(requires Adobe Acrobat software)

### Executive Summary Table of Contents

- Chapter 1: **Introduction**
- Chapter 2: **Need for Conservation Planning**
- Chapter 3: **Planning Approach**
- Chapter 4: **Biodiversity Wildlife Habitat Assessment**
- Chapter 5: **Open Space and Conservation Lands Map**
- Chapter 6: **Water Services Assessment**
- Chapter 7: **Farmland Assessment**
- Chapter 8: **Forestry Lands Assessment**
- Chapter 9: **Marine/Estuarine Assessment**
- Chapter 10: **Threats Assessment**
- Chapter 11: **Restoration Opportunities**
- Chapter 12: **Coordinating Land Use and Conservation**
- Chapter 13: **Implementation**

### Appendices

- A: **Six Assessments Overview**
- B-1: **Data Sources Biodiversity/Wildlife Habitat**
- B-2: **Data Sources Open Space/Conservation**
- B-3: **Data Sources Water Services**
- B-4: **Data Sources Farmland**
- B-5: **Data Sources Forestry Lands**
- B-6: **Data Sources Marine/Estuarine**
- C-1: **Relative Ranking Biodiversity/Wildlife Habitat**
- C-2: **Relative Ranking Water Services**
- C-3: **Relative Ranking Farmland Preservation**
- D: **Landscape Habitat Indicator Guilds**
- E: **Technical Documentation Biodiversity/Wildlife Habitat**
- F: **References**
- G: **Metadata (pending)**

# Biodiversity/Wildlife Habitat Assessment

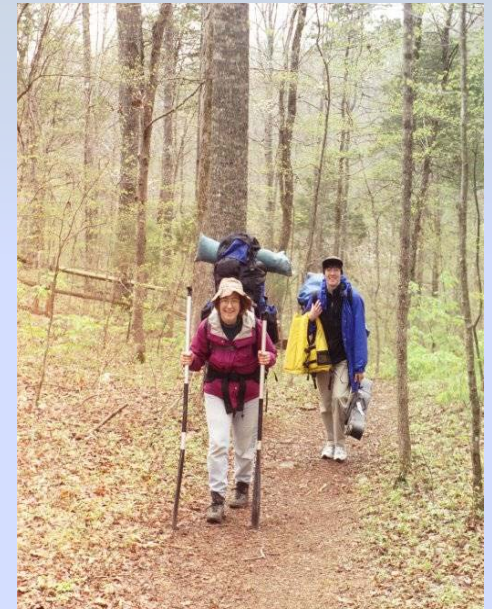
- Prioritizes aquatic and terrestrial species and habitats
- Considers landscape function and connectivity – core areas and connectors
- Includes land and water resources important for ecosystem processes





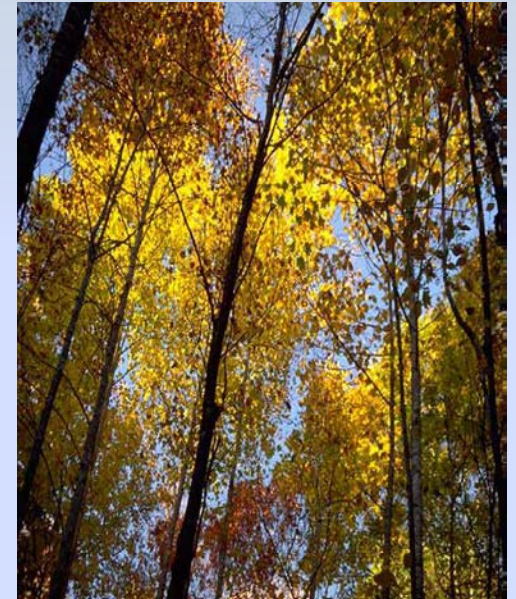
# Open Space and Conservation Lands Map

- Shows lands that are in permanent conservation and actively managed for conservation.
- Includes both existing and planned open space and conservation lands.
  - public and private lands, conservation easements, parks, trails, other recreation areas



# Forestry Lands Assessment

- Prioritizes high value forestry lands - important for sustaining the forest products sector of our economy and providing ecosystem services.
- Considers threats to forestry lands by assessing risk from pests, disease, wildfire, and development.





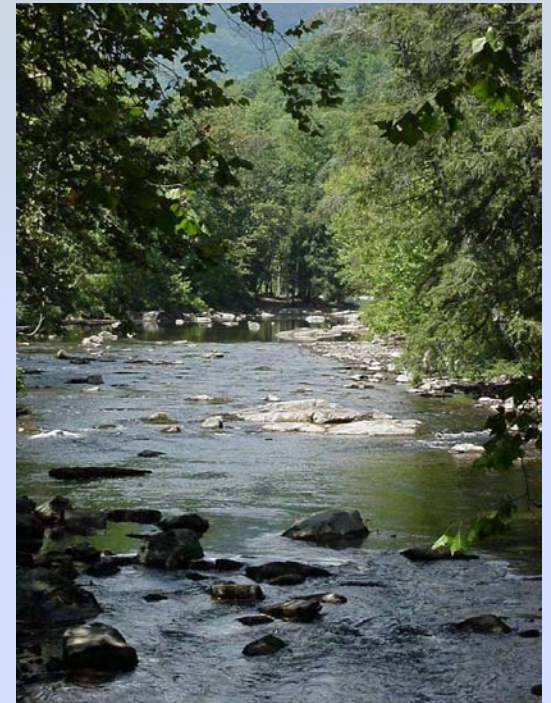
# Farmland Assessment

- Prioritizes viable and threatened agriculture lands.
- Considers agriculture infrastructure, existing farm operations, productivity and community compatibility.



# Water Services Assessment

- Prioritizes lands that are most critical to protect water resources for North Carolina's residents.
- Considers water quality, water quantity, and water consumption.

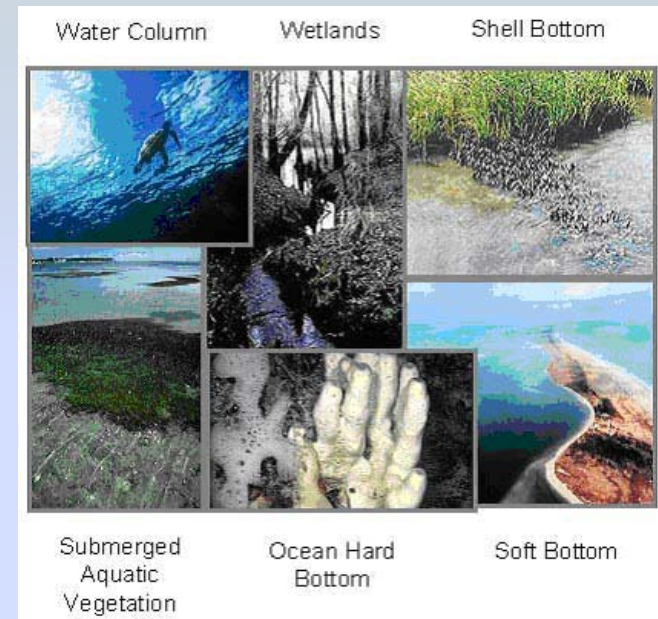




# Marine and Estuarine Assessment

*(in progress)*

- Considers priority areas in the ***Coastal Habitat Protection Plan*** (CHPP).
- Includes important fish habitats, spawning and nursery areas, and water quality.



# Guiding Principles for data used in the CPT Assessments



- Resource rarity and distinctiveness
- Resource function
- Data precision, accuracy, and completeness

## Essential Ecosystem Resources & Functions

### Biodiversity / Wildlife

- Terrestrial
- SNHAs
  - EOs
  - LHI Guilds
  - IBAs

- Aquatic
- ASNHAs
  - EOs
  - Riparian Buffers
  - Wetlands
  - ORWs
  - HQWs
  - Priority watersheds
  - Stream BioClass
  - SAVs
  - Fish nursery areas
  - Shellfish production
  - Anadromous fish spawning areas

### Water Services

- Drinking water classifications
- Future water supplies
- ORWs
- HQWs
- UWLs
- Benthos
- Fish communities
- Trout waters
- Wetlands
- Riparian buffers
- 100 year floodplain
- Groundwater recharge areas
- SWAP susceptibility
- Shellfish sanitation
- Recreational waters
- Designated rivers

### Open Space & Conservation Lands

- Existing Federal Lands
- Existing State Lands
  - Parks
  - Trails
  - Nature areas
  - Recreation areas
  - Cultural sites
  - Boat access
  - Game lands
- Planned Parks
- Planned Trails
- Land trust properties and easements
- NCEEP easements
- CREP priority watersheds

### Marine / Estuarine (in progress)

- SAV
- Shell bottom
- Hard bottom
- Soft bottom
- Riparian wetlands
- Oyster beds
- Crab sanctuaries
- Fish nursery areas
- Shellfish harvesting waters
- Anadromous fish spawning areas
- Shellfish density
- Water quality

### Farmland

- Viable Aq Land
- Feed mills
  - Tractor supply
  - Fertilizer dealers
  - Pesticide dealers
  - Farmers markets
  - Livestock markets
  - Processing facilities
  - Produce packers
  - Soil productivity
  - VADs
  - Military bases
  - Conservation lands
  - Preserved farms
  - Co. cash receipts
  - Co. w/ Farm plans
  - Animal operations

- Threatened Aq Land
- Sewer lines
  - Water lines
  - Urban areas

### Forestry

- High Value Forest Land
- Soil productivity
  - Forest patch size
  - Haul distance
  - Water supply watersheds
  - Adj. to cons. Land
  - Riparian buffers
  - SNHAs
  - Percent slope
  - Wetlands
- Threatened Forests
- Forest pest and disease susceptibility
  - Wildfire susceptibility
  - Development pressure

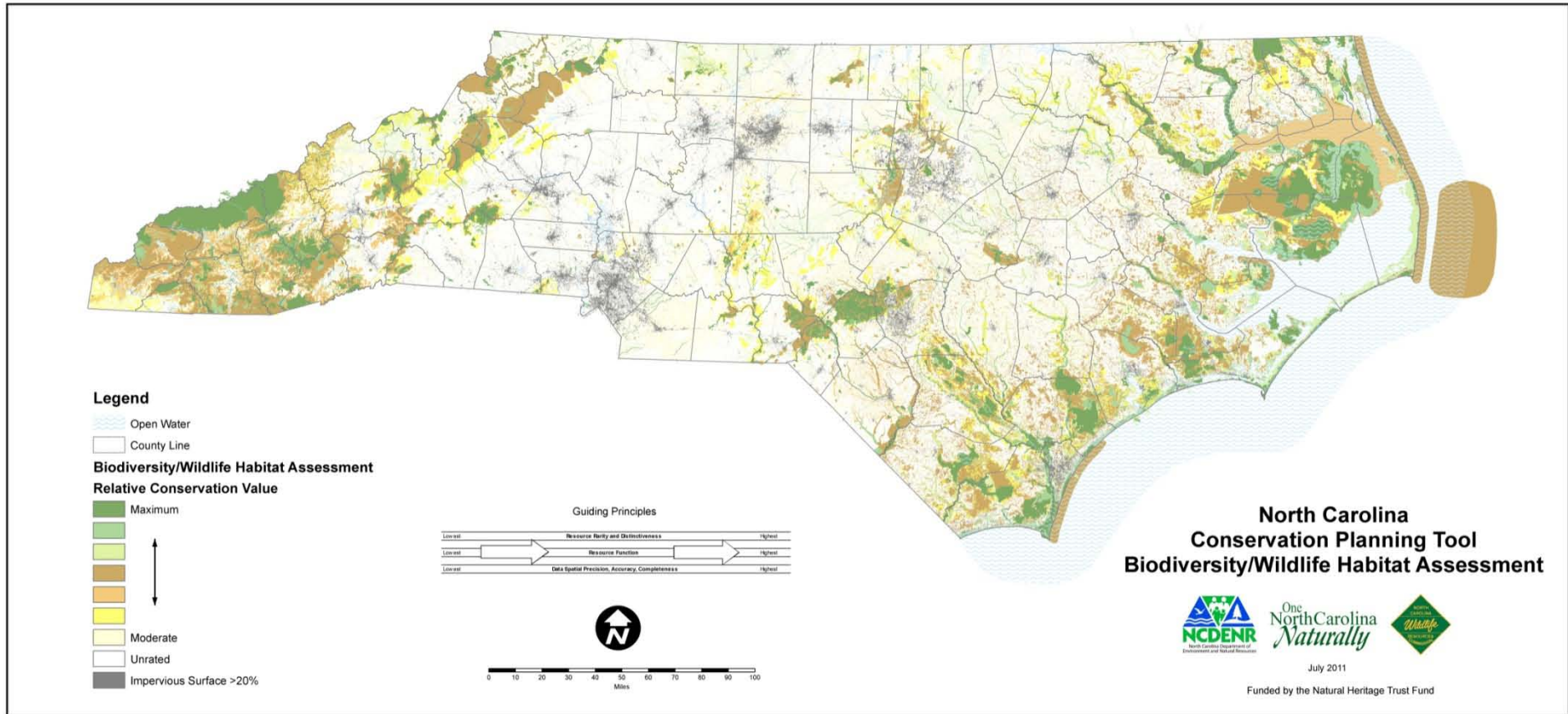
## North Carolina Conservation Planning Tool



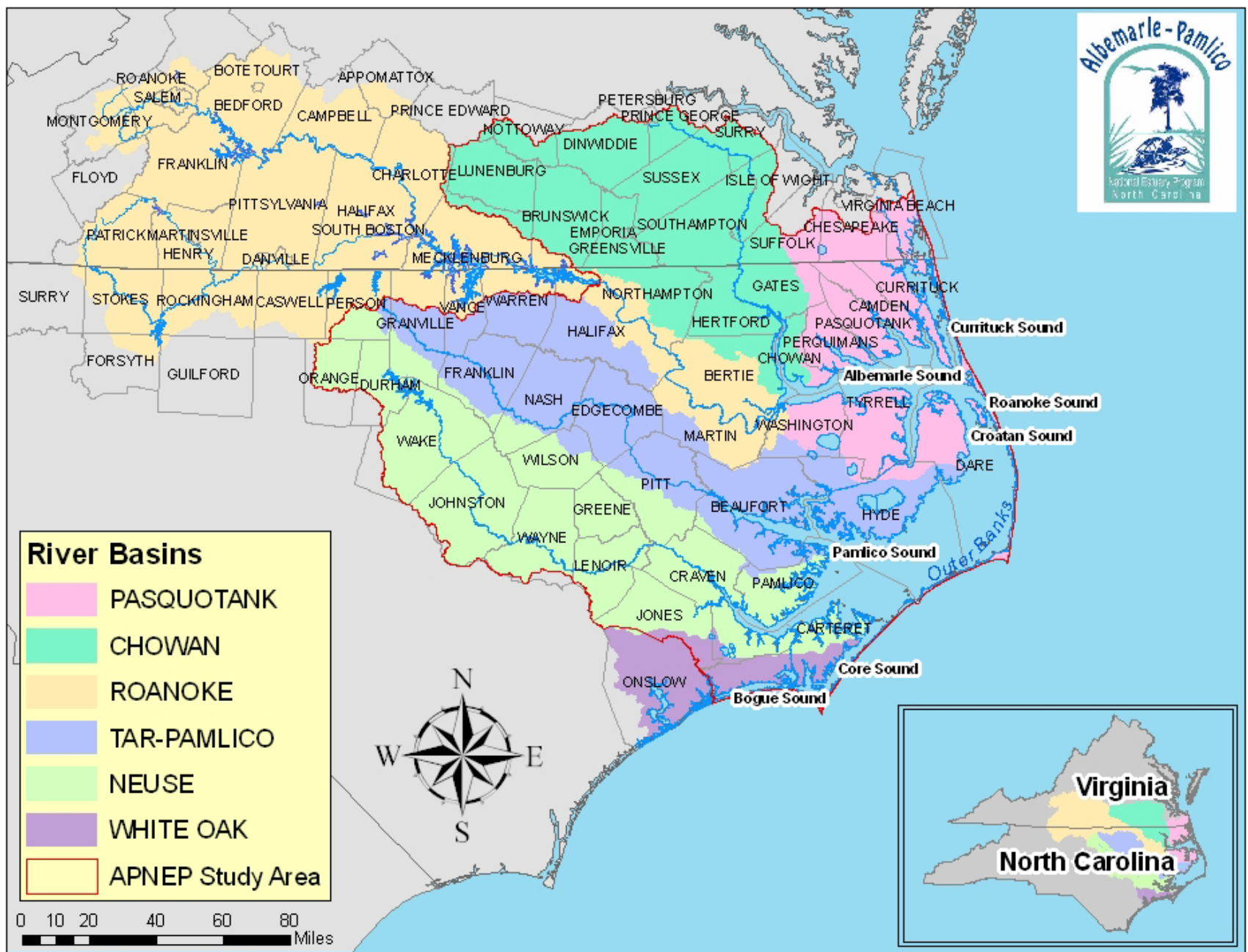
**Identify Tool results for  
the Biodiversity/Wildlife Habitat Assessment**

<b>Category Name</b>	<b>Value</b>	<b>Individual Input Layers</b>	<b>Source for Input Layers</b>
NHP	10	Significant Natural Heritage Areas – National or State Significance	<i>NC Natural Heritage Program</i>
NHP	8	Significant Natural Heritage Areas – Regional Significance	
NHP	6	Significant Natural Heritage Areas - Local Significance	
NHP	5	Element Occurrences – High ranking	
NHP	4	Element Occurrences – Other	
Wetlands	7	Coastal Region Evaluation of Wetland Systems (CREWS) – Exceptional ranking	<i>NC Division of Coastal Management</i>
Wetlands	6	Coastal Region Evaluation of Wetland Systems (CREWS) – Substantial ranking	
Wetlands	5	National Wetlands Inventory	<i>US Fish and Wildlife Service</i>
Wetlands	2	Coastal Region Evaluation of Wetland Systems (CREWS) – Beneficial ranking	<i>NC Division of Coastal Management</i>
Guilds	1-10	Landscape Habitat Indicator Guilds	<i>NC Natural Heritage Program</i>
DWQ	10	Outstanding Resource Waters	<i>NC Division of Water Quality</i>
DWQ	9	Stream BioClass - Excellent	
DWQ	8	High Quality Waters	
DWQ	7	Stream BioClass - Good	
DWQ	1	All other streams	
FishHabitat	9	Wild Brook Trout	<i>NC Wildlife Resources Commission</i>
FishHabitat	8	Anadromous Fish Spawning Areas	<i>NC Division of Marine Fisheries</i>
FishNursery	8	Fish Nursery Areas	<i>NC Division of Marine Fisheries</i>
Watersheds	7	Stream buffer tributaries to Threatened & Endangered Species	<i>NC Natural Heritage Program</i>
Watersheds	3	Priority Watersheds	<i>NC Natural Heritage Program, NC Wildlife Resources Commission, The Nature Conservancy</i>
Marine	8	Oyster Sanctuaries	<i>NC. Division of Marine Fisheries</i>
Marine	6	Submerged Aquatic Vegetation	
Hardbottom	8	Open Shellfish /Shellbottom	<i>NC Division of Marine Fisheries</i>
Hardbottom	7	Hard Bottom	
Hardbottom	5	Closed Shellfish /Shellbottom	
IBA	6	Important Bird Area	<i>Audubon North Carolina</i>
Impervious	99	Impervious Surface above 20%	<i>US Environmental Protection Agency</i>

# NCCPT Biodiversity/Wildlife Habitat



- Raster-based GIS analysis
- Maximum score (10 point scale)
- Relative ranking
- Existing data & professional judgment



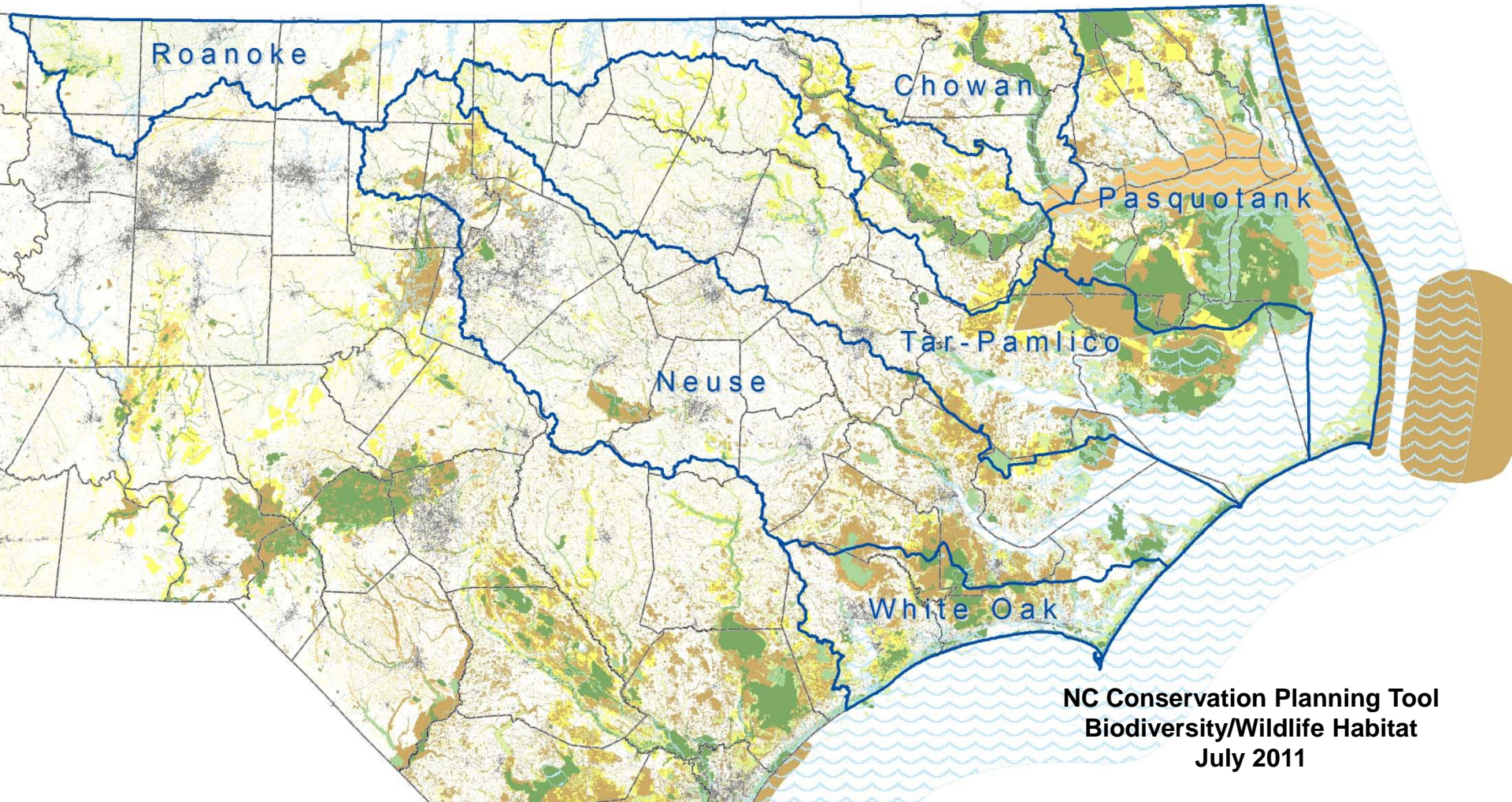
**River Basins**

- PASQUOTANK
- CHOWAN
- ROANOKE
- TAR-PAMLICO
- NEUSE
- WHITE OAK
- APNEP Study Area





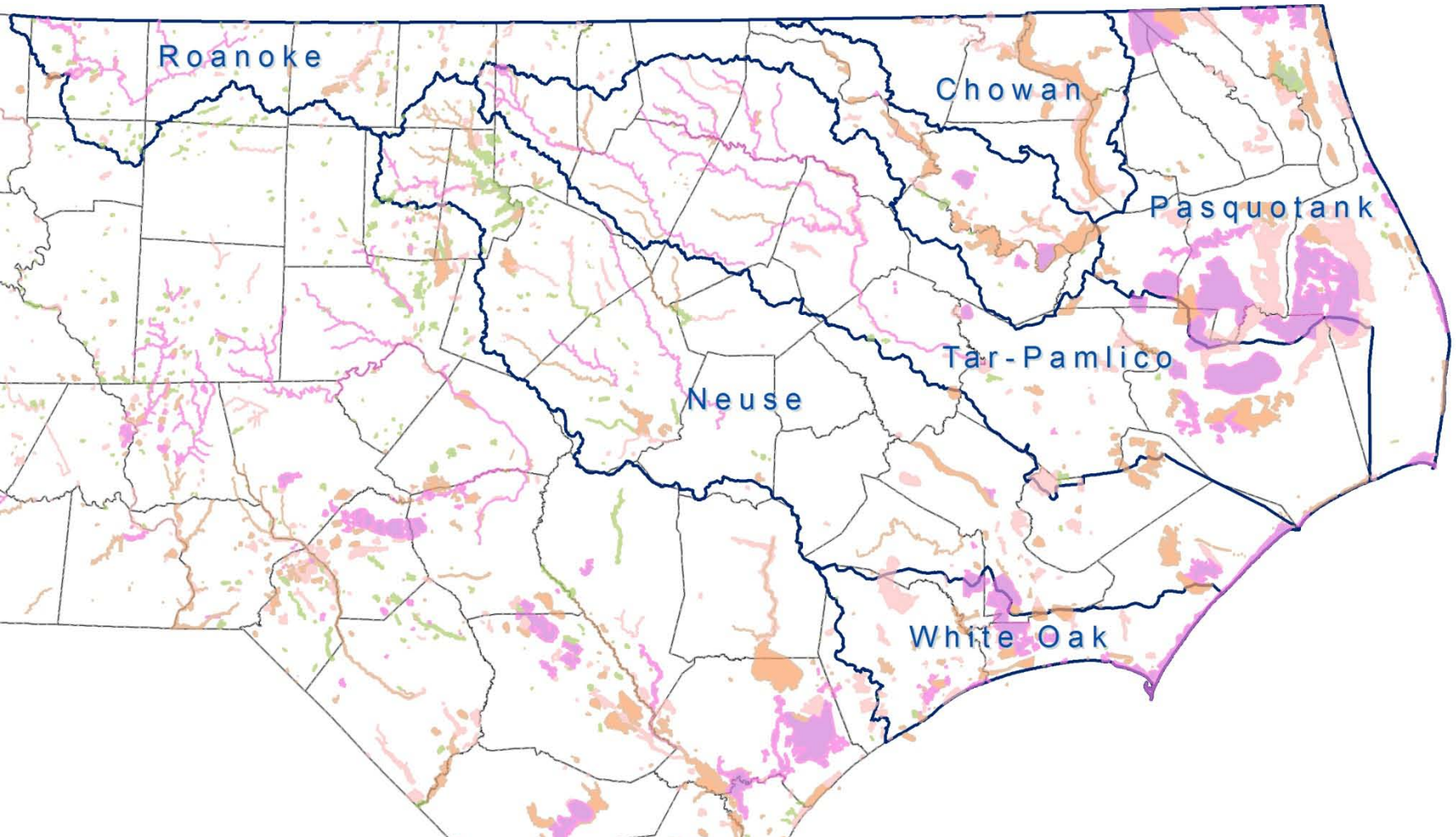
# Watersheds that drain to the sounds in NC are rich in biodiversity and wildlife habitat conservation value



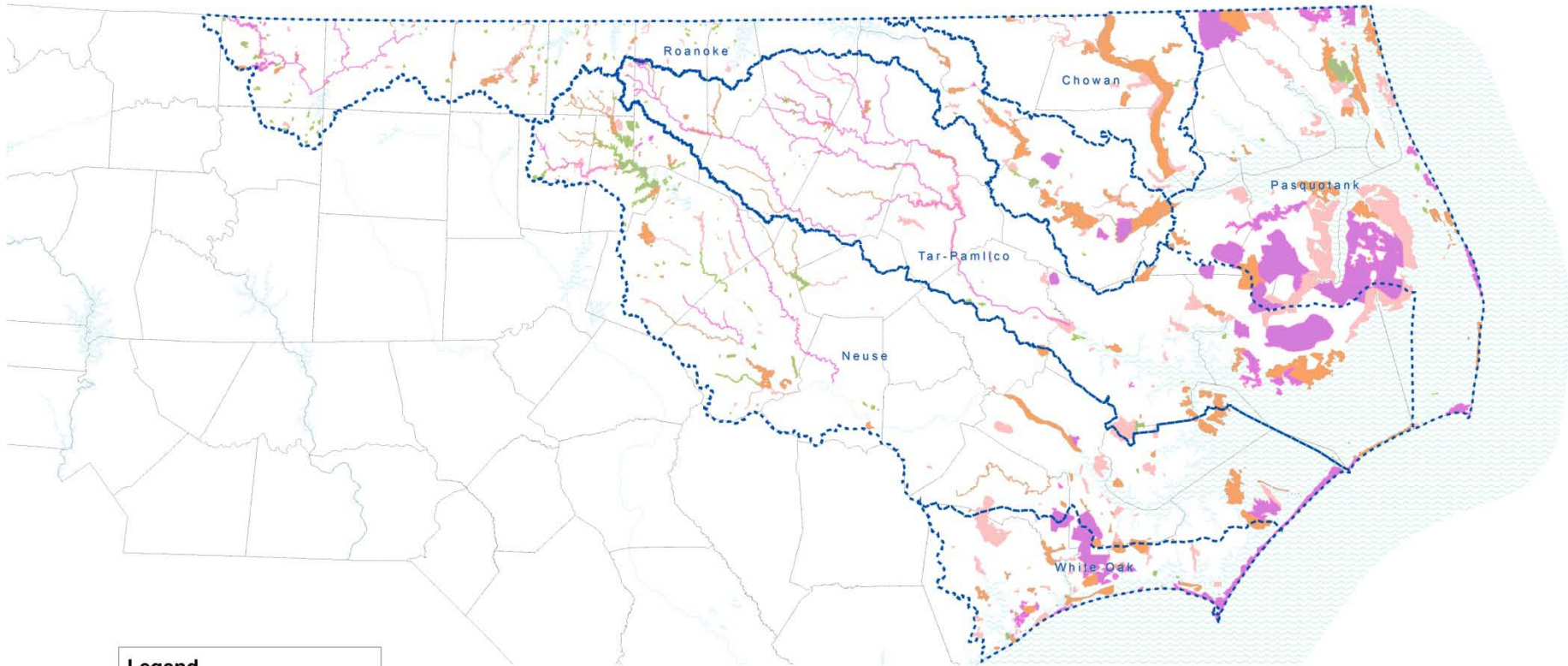
NC Conservation Planning Tool  
Biodiversity/Wildlife Habitat  
July 2011



# Significant Natural Heritage Areas (SNHAs) are prominent in these watersheds



# Significant Natural Heritage Areas (SNHAs) within river basins that drain to the NC sounds



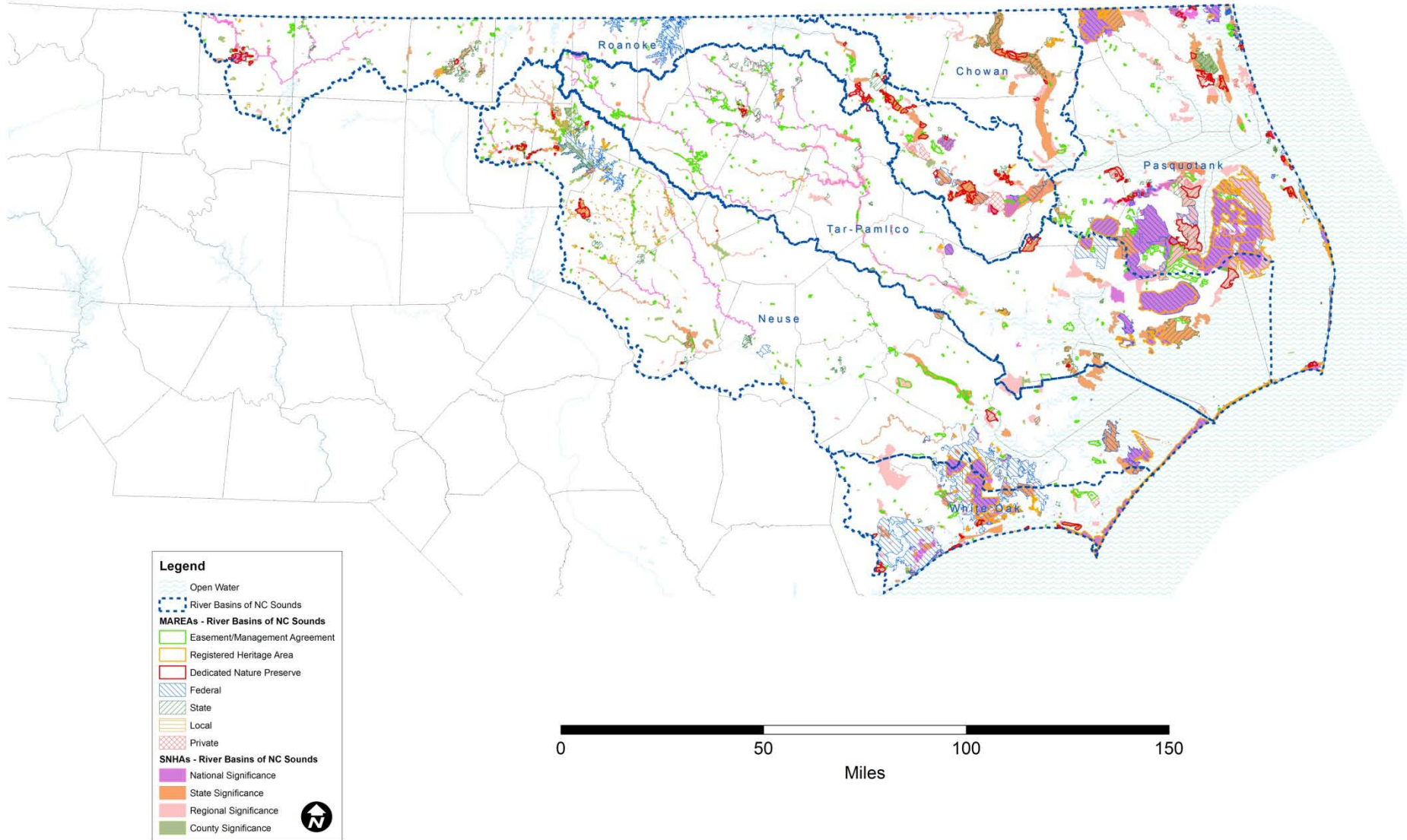
**Legend**

- Open Water
- River Basins of NC Sounds
- SNHAs - River Basins of NC Sounds**
  - National Significance
  - State Significance
  - Regional Significance
  - County Significance

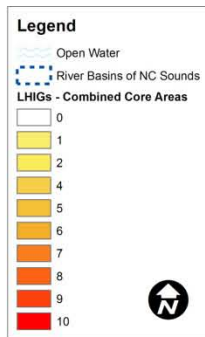
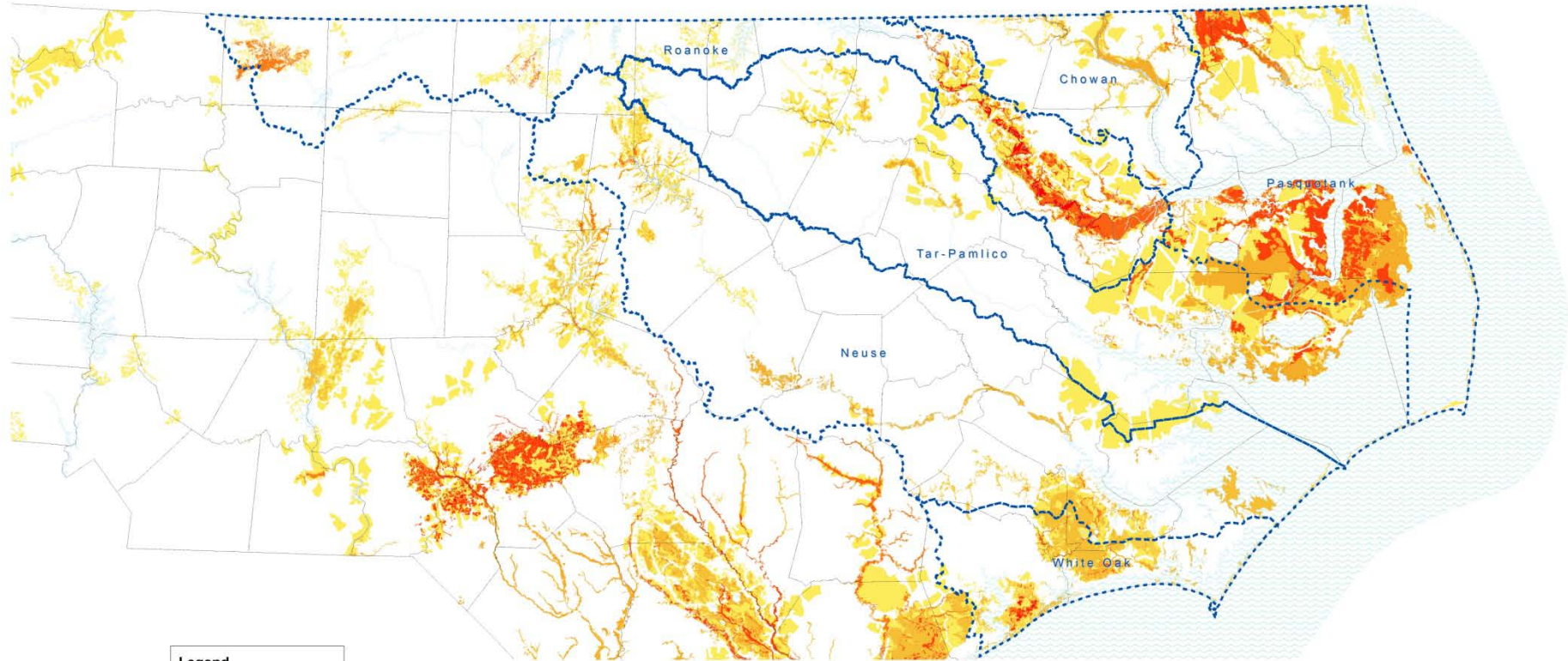




# SNHAs and Lands Managed for Conservation (MAREAs) within river basins that drain to the NC sounds

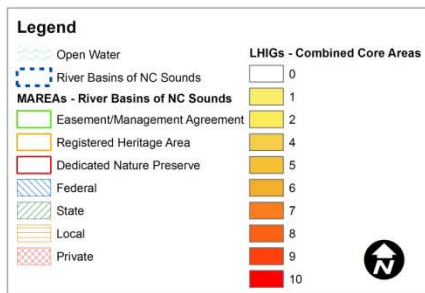
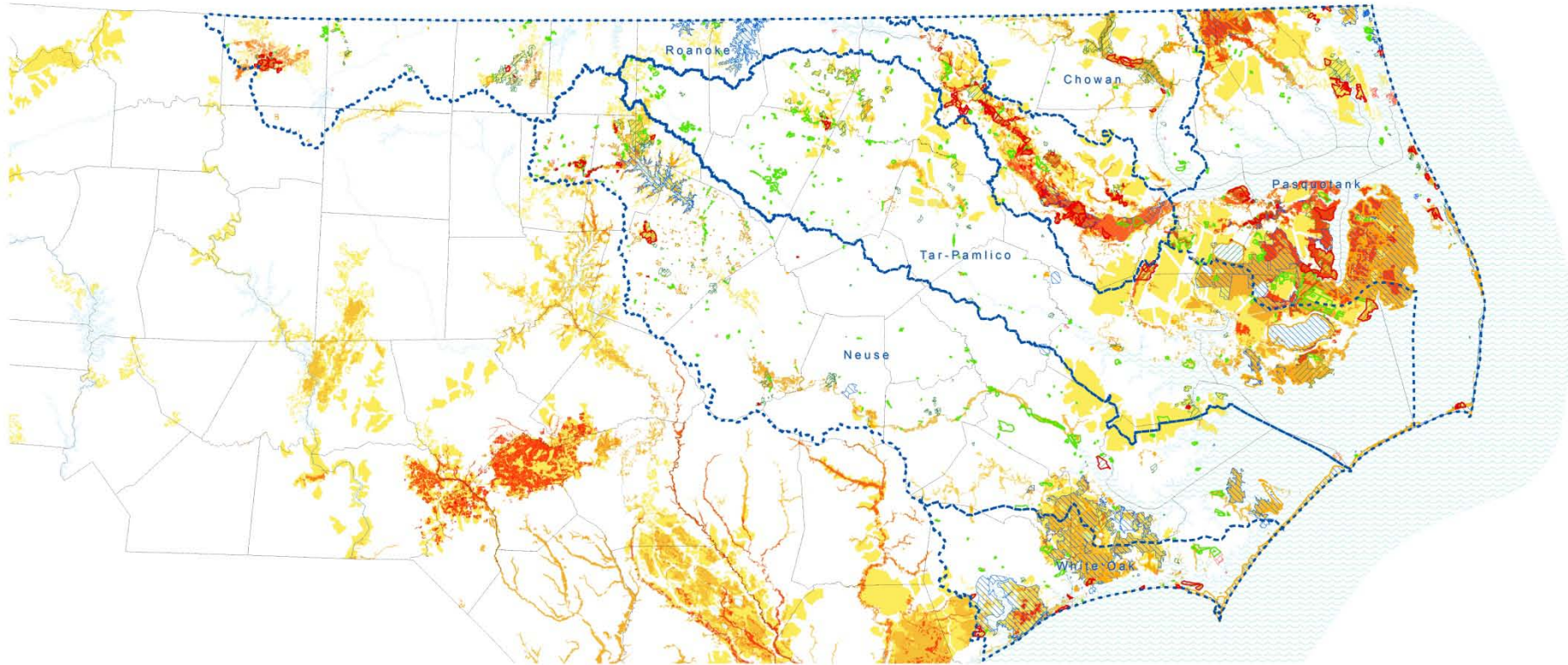


# Landscape Habitat Indicator Guilds (LHIGs) within river basins that drain to the NC sounds



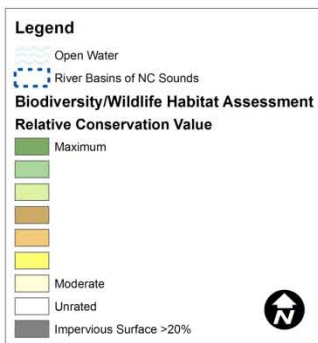
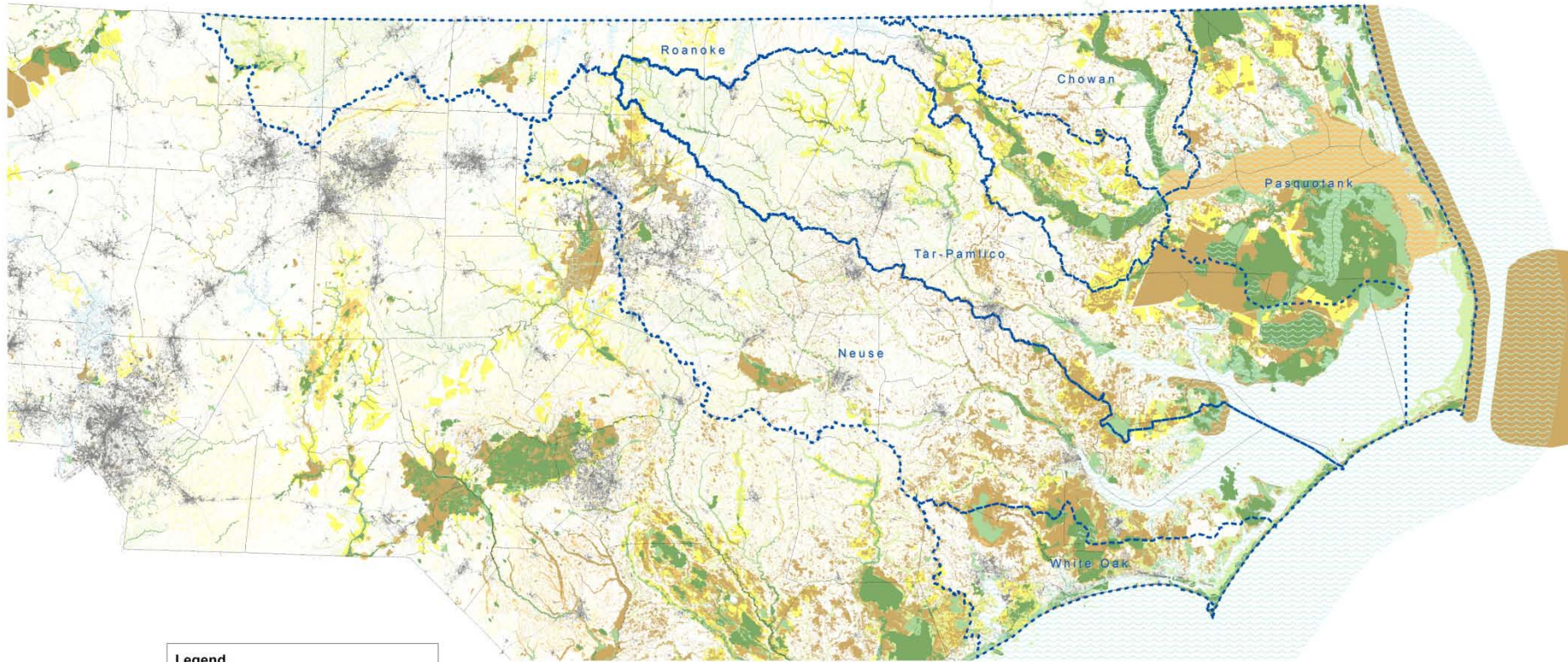


# LHIGs and Lands Managed for Conservation (MAREAs) within river basins that drain to the NC sounds





# Biodiversity/Wildlife Habitat priorities within river basins that drain to the NC sounds



# Some examples of the application and use of the NCCPT

- Local land use and conservation planning
- Watershed planning
- Transportation planning
- Parks, recreation, and greenway planning
- Identification of preservation and restoration sites for mitigation
- Grant applications
- Land acquisition





North Carolina Department of Environment & Natural Resources

# North Carolina Natural Heritage Program



One North Carolina Naturally

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Yellow Pitcher Plant,  
*Sarracenia flava*

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- [heritage data](#)
- [partners](#)
- [site conservation](#)

## One NC Naturally Conservation Planning Tool





# Contact Information



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[www.ncnhp.org](http://www.ncnhp.org)

[www.onencnaturally.org](http://www.onencnaturally.org)



A photograph of a dense forest with tall, thin trees. In the foreground, there is a body of water that perfectly reflects the trees and the sky above. The trees have light-colored bark and green foliage. The overall scene is serene and natural.

Questions?