

# Strategic Habitat Areas (SHAs) for Coastal and Marine Fisheries Northeastern NC (Region 1)

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*January 23, 2009*

# Coastal Habitat Protection Plan (CHPP) Implementation 2007-09





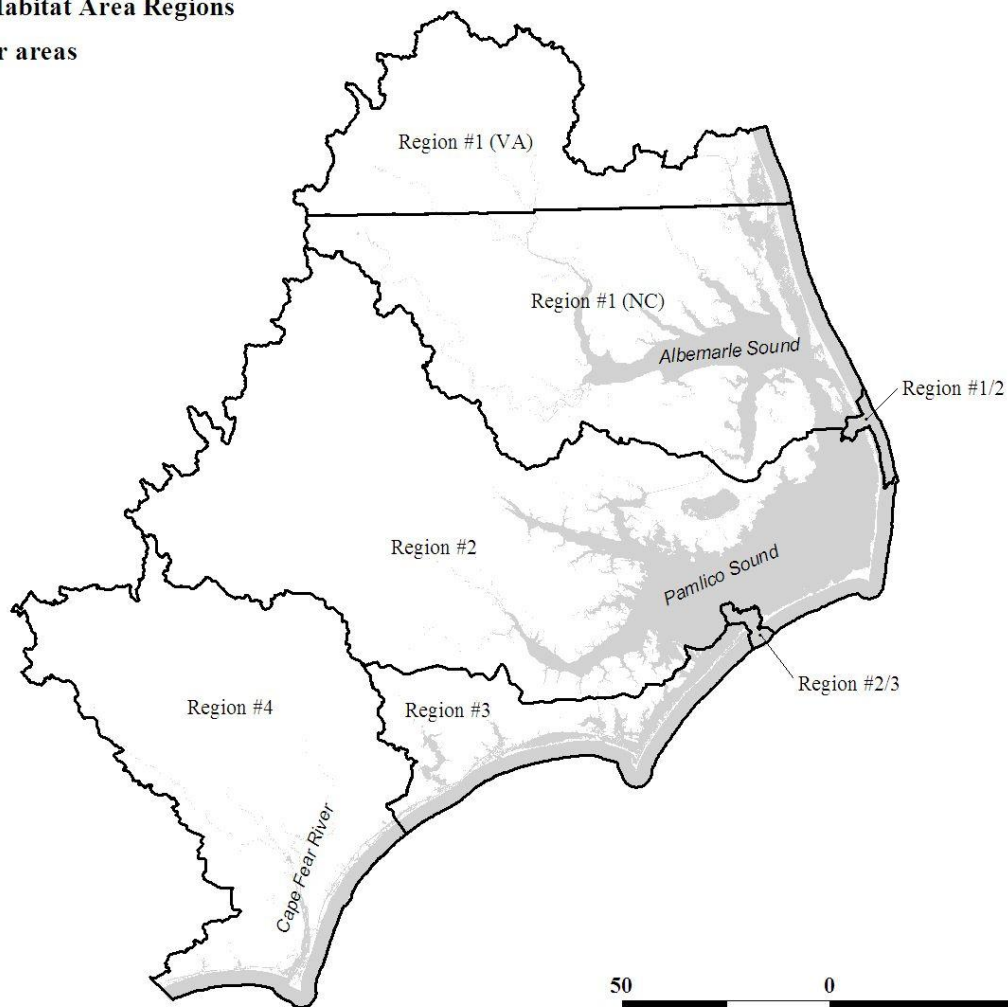
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CHPP recommendation 2.2: Identify and designate Strategic Habitat Areas using ecologically based criteria, analyze existing rules, and enact measures needed to protect SHAs,.....

- Conduct SHA evaluation and designation process for Albemarle Sound area.
- Timeframe: Start late 2007; complete by late 2008.
- **Status: Have completed draft selections. Pending public workshop.**

# Regional Boundaries

-  Strategic Habitat Area Regions
-  Open water areas



# Strategic Habitat Areas (SHAs) Defined

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Street et al. 2005 (Coastal Habitat Protection Plan), pg. 481:

*“Specific locations of individual fish habitats or systems of fish habitats that have been identified to provide exceptional habitat functions or that are particularly at risk due to imminent threats, vulnerability, or rarity.”*

# “fish functions” of a SHA Network

*herring, striped bass, shad*

Anadromous fish  
spawning and nursery  
areas

☑ Anadromous Fish  
Spawning Areas

*blue crab, red drum, seatrout*

Estuarine and inlet  
spawning and nursery

☑ Crab spawning  
Sanctuaries

*spot, croaker, flounder*

Marine spawning,  
low-high salinity nursery

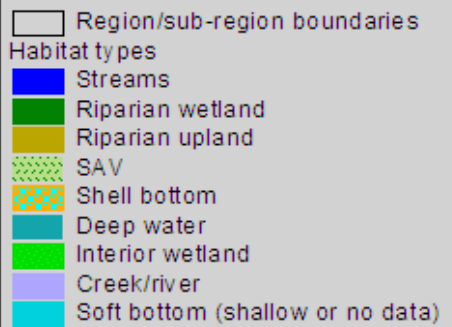
☑ Primary & Secondary  
Nursery Area

*gag, black seabass, bluefish*

Marine spawning,  
high salinity nursery



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# “target representation levels”

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Target levels - based on functional importance, rarity, sensitivity, vulnerability, and/or historical losses of habitat.

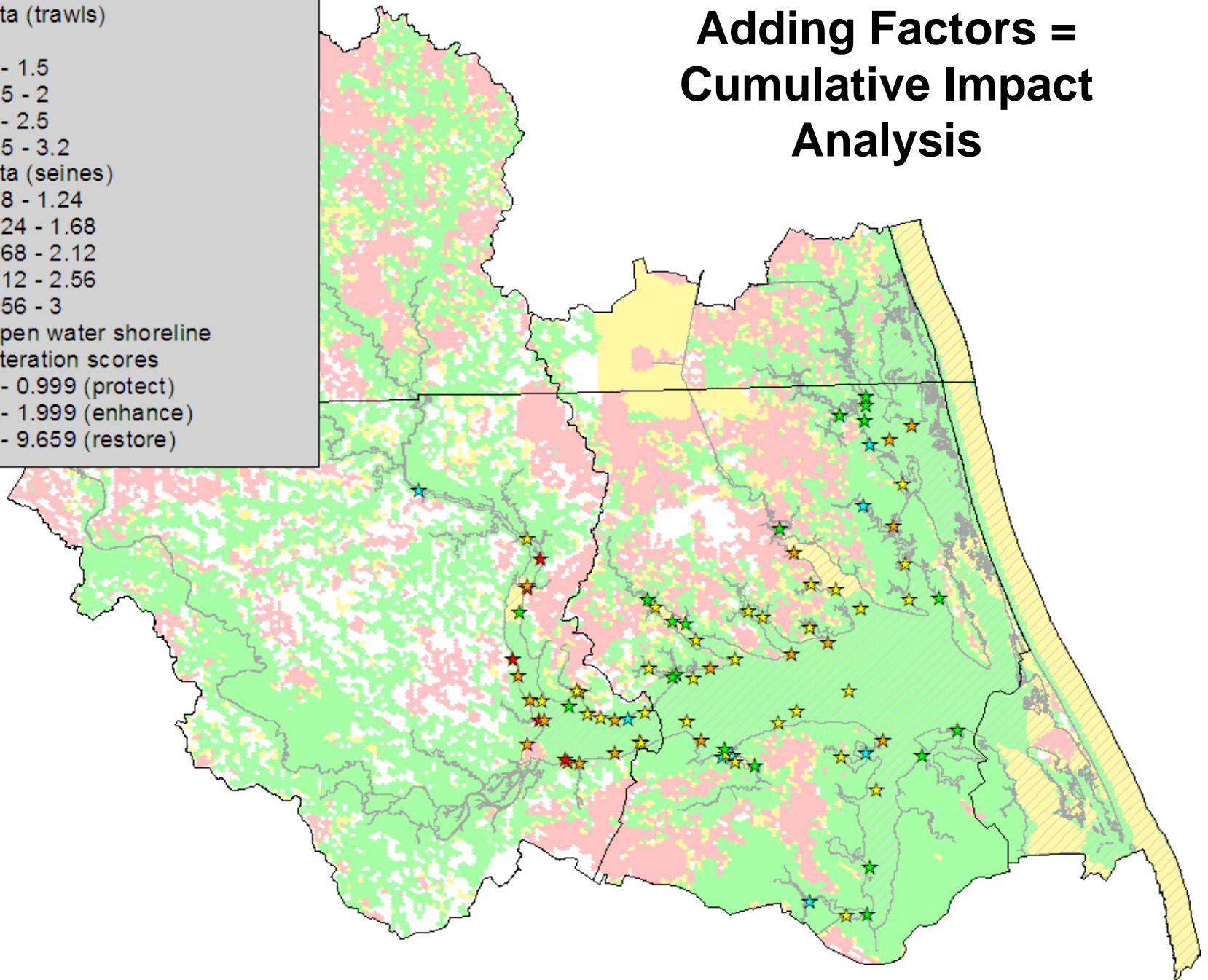
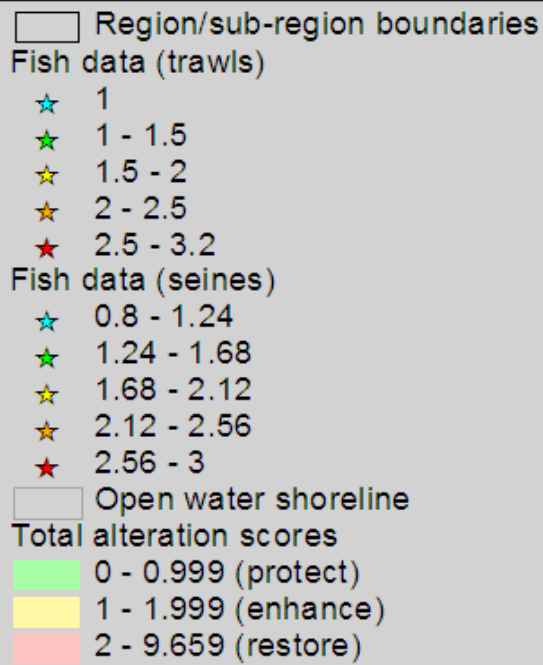
## High representation (100-60%)

- Riverine hard bottom
- High salinity SAV
- Low salinity SAV
- Intertidal & subtidal shell bottom (hi density)
- Ocean hard bottom

## Moderate rep. (20-15%)

- Freshwater forested wetlands (wet, mostly wet)
- Freshwater marsh (wet, mostly wet)
- Wetland edge
- Salt/brackish marsh
- Intertidal & subtidal shell bottom (low density)
- Freshwater, estuarine, and marine soft bottom (0-3 ft)
- Intertidal soft bottom
- Low elevation streams

# Adding Factors = Cumulative Impact Analysis



# Two Stage Selection Process

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## Stage 1

### Site Selection Tool (MARXAN)

#### provided initial SHA network:

- Well established tool for locating Marine Protected Areas.
- Selects among array of 125 acre hexagons containing natural resources targets.
- Selections meet target representation levels in the smallest area with the lowest alteration.

## Stage 2

### Regional expert panel modified MARXAN results:

- Connected historically important AFSAs through similar habitat
- Expanded selections to include adjacent vulnerable or rare habitat (SAV, oyster sanctuaries)
- Included areas with excellent fish data
- Omitted overrepresented or hardy habitats (deep soft bottom)
- Omitted areas with relatively high alteration level
- Ensured that representation levels continue to be met.

**Maurice Crawford**  
Assistant Professor, ECSU

**Jeffrey A Buckel**  
Associate Professor, NCSU

**Wayne Howell**  
U.S. Department of Agriculture,  
Natural Resources Conservation  
Service

**Jeff DeBlieu**  
Preserve Director - The Nature  
Conservancy at Nags Head Woods

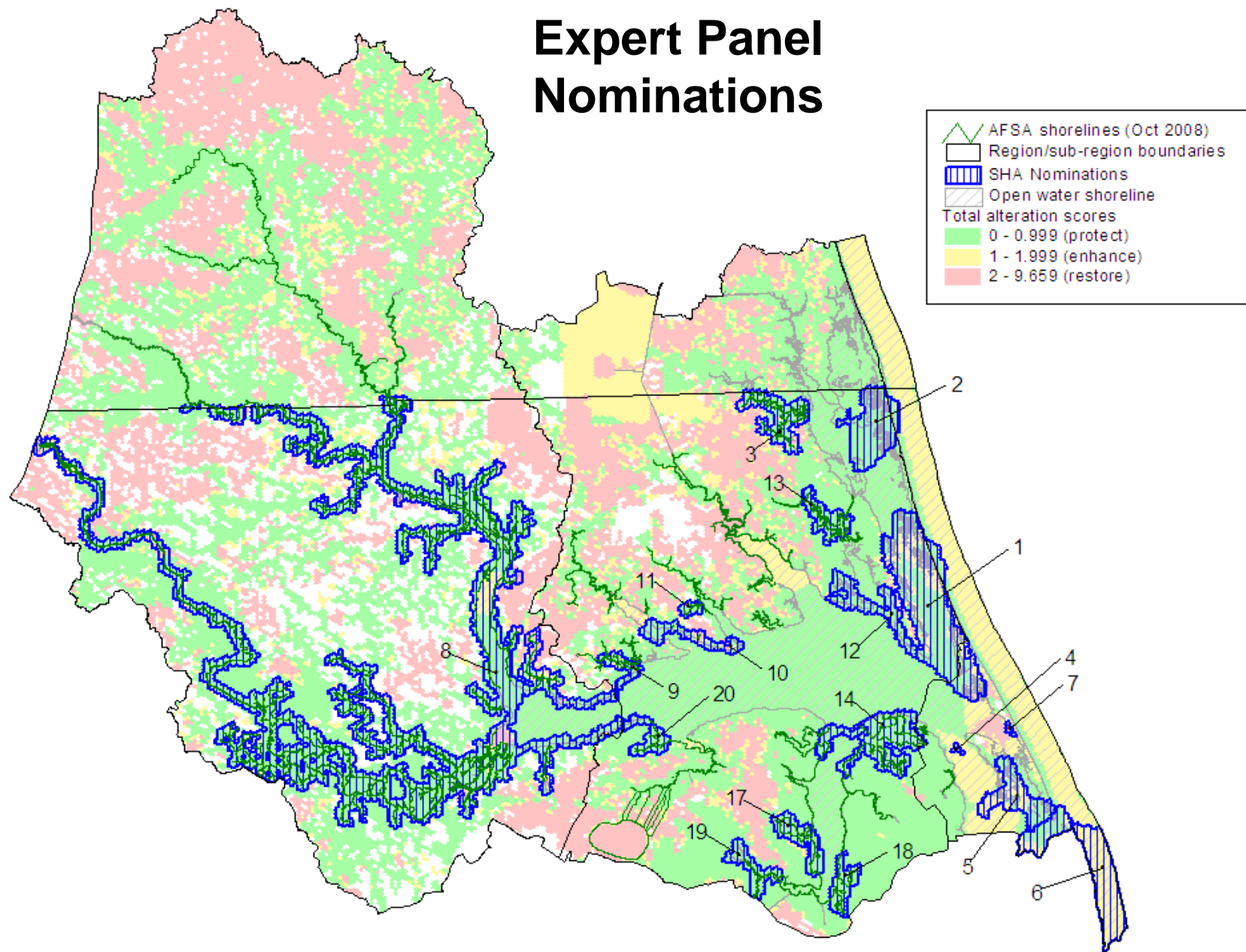
**Chad Thomas**  
Coastal Fisheries Research Coordinator  
NCWRC - Division of Inland Fisheries

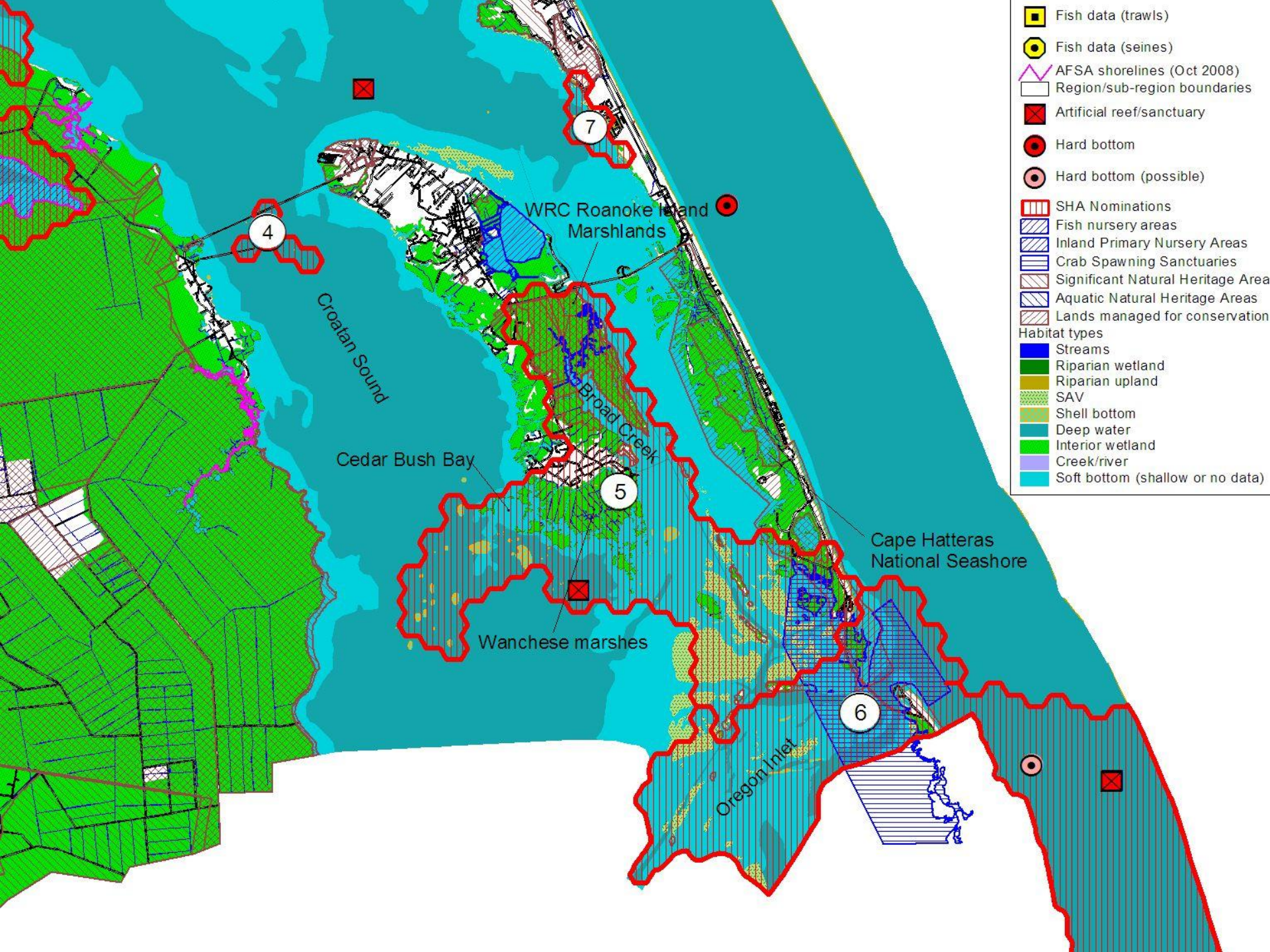
**D. Reide Corbett**  
Associate Professor, ECU  
Dept. of Geological Sciences  
Coastal Resources Management

**John McCord**  
Education Programs Coordinator  
UNC Coastal Studies Institute

**Mike Wicker**  
U.S. Fish and Wildlife Service

# Expert Panel Nominations

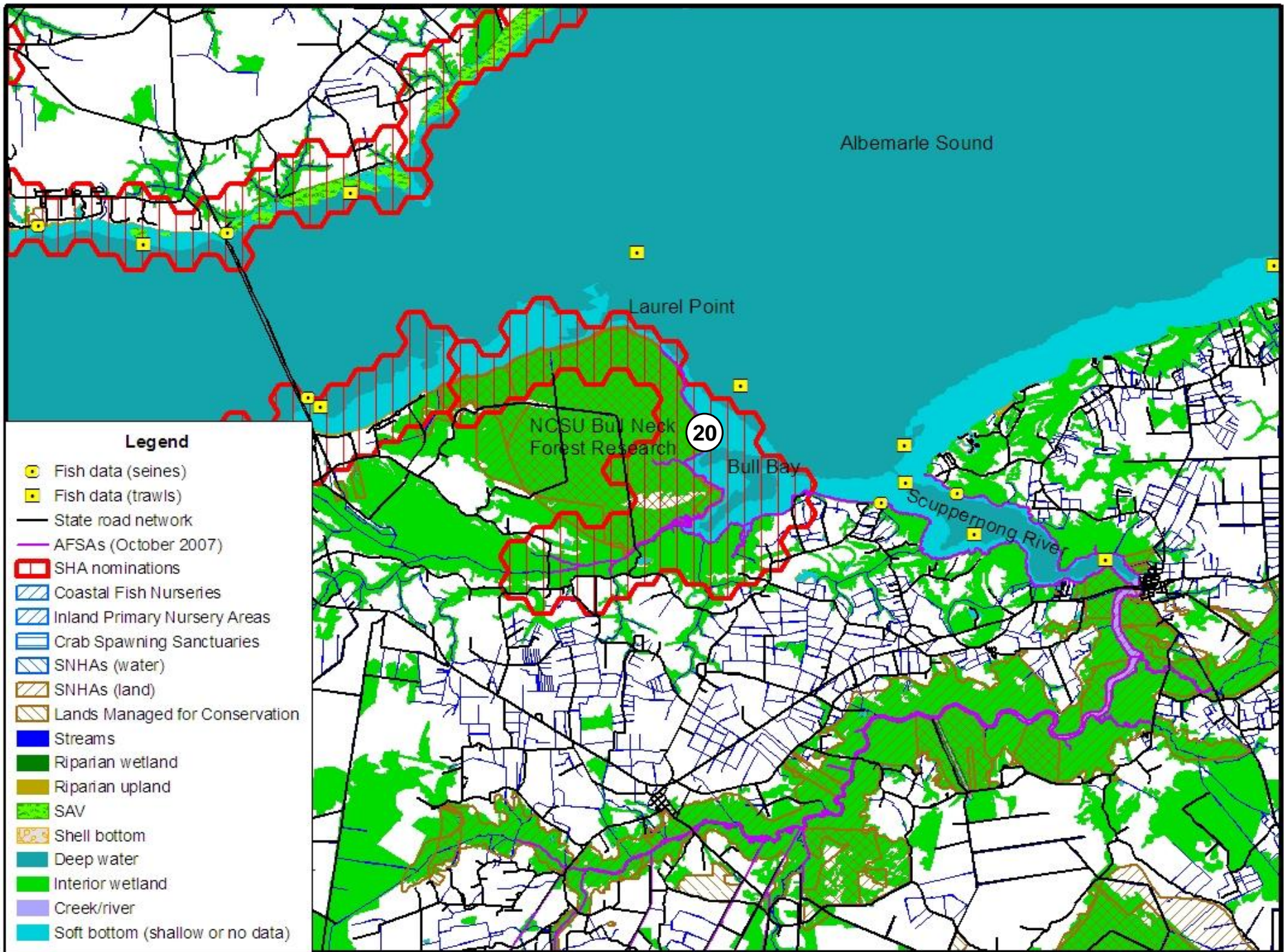






-  Fish data (trawls)
  -  Fish data (seines)
  -  AFSA shorelines (Oct 2008)
  -  Region/sub-region boundaries
  -  Artificial reef/sanctuary
  -  Hard bottom
  -  Hard bottom (possible)
  -  SHA Nominations
  -  Fish nursery areas
  -  Inland Primary Nursery Areas
  -  Crab Spawning Sanctuaries
  -  Significant Natural Heritage Area
  -  Aquatic Natural Heritage Areas
  -  Lands managed for conservation
- Habitat types
-  Streams
  -  Riparian wetland
  -  Riparian upland
  -  SAV
  -  Shell bottom
  -  Deep water
  -  Interior wetland
  -  Creek/river
  -  Soft bottom (shallow or no data)





Albemarle Sound

Laurel Point

20

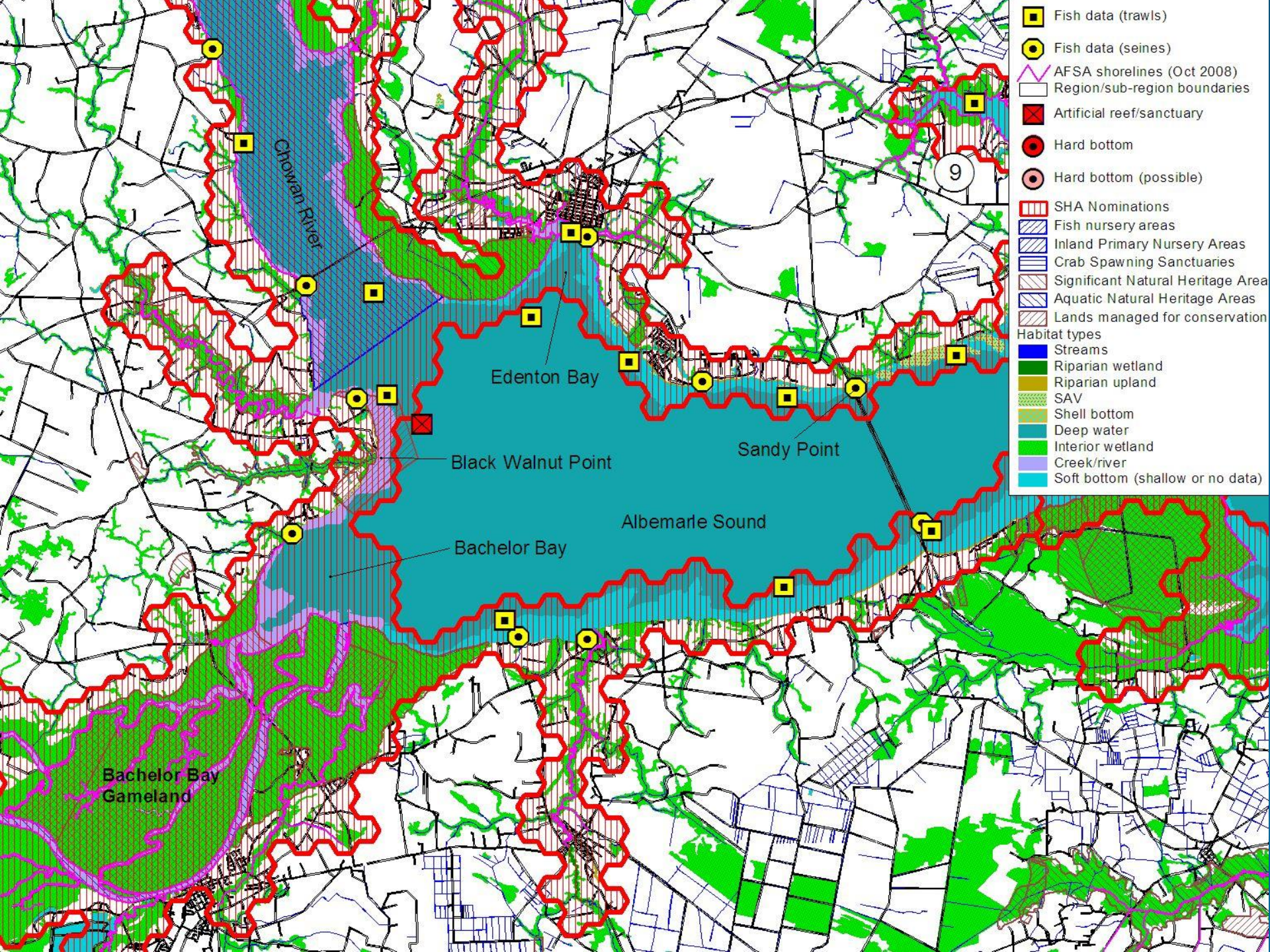
Bull Bay

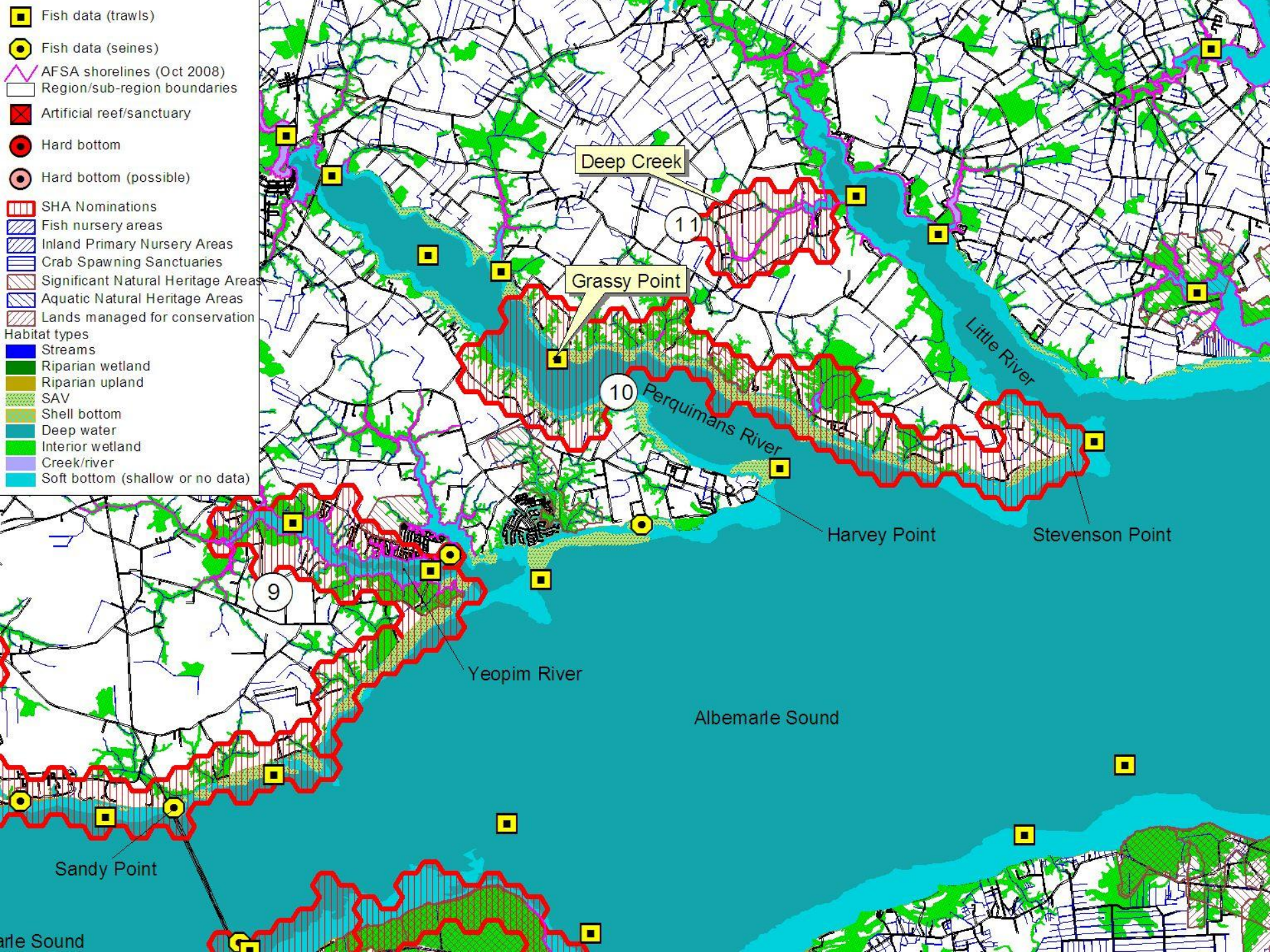
NCSU Bull Neck Forest Research

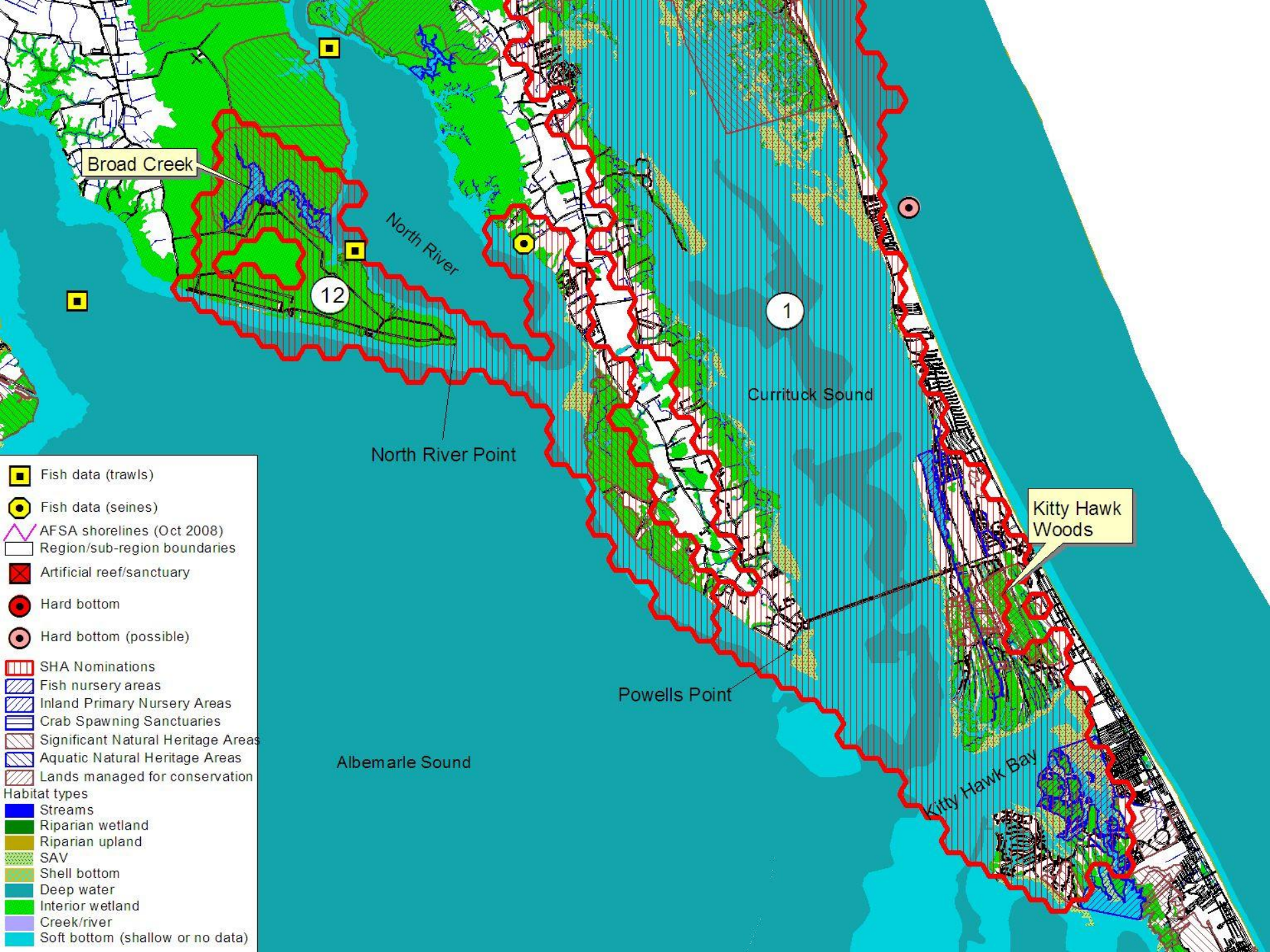
Scuppermong River

**Legend**

-  Fish data (seines)
-  Fish data (trawls)
-  State road network
-  AFSAs (October 2007)
-  SHA nominations
-  Coastal Fish Nurseries
-  Inland Primary Nursery Areas
-  Crab Spawning Sanctuaries
-  SNHAs (water)
-  SNHAs (land)
-  Lands Managed for Conservation
-  Streams
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-  Riparian upland
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Broad Creek

North River

12

1

Currituck Sound
























North River Point

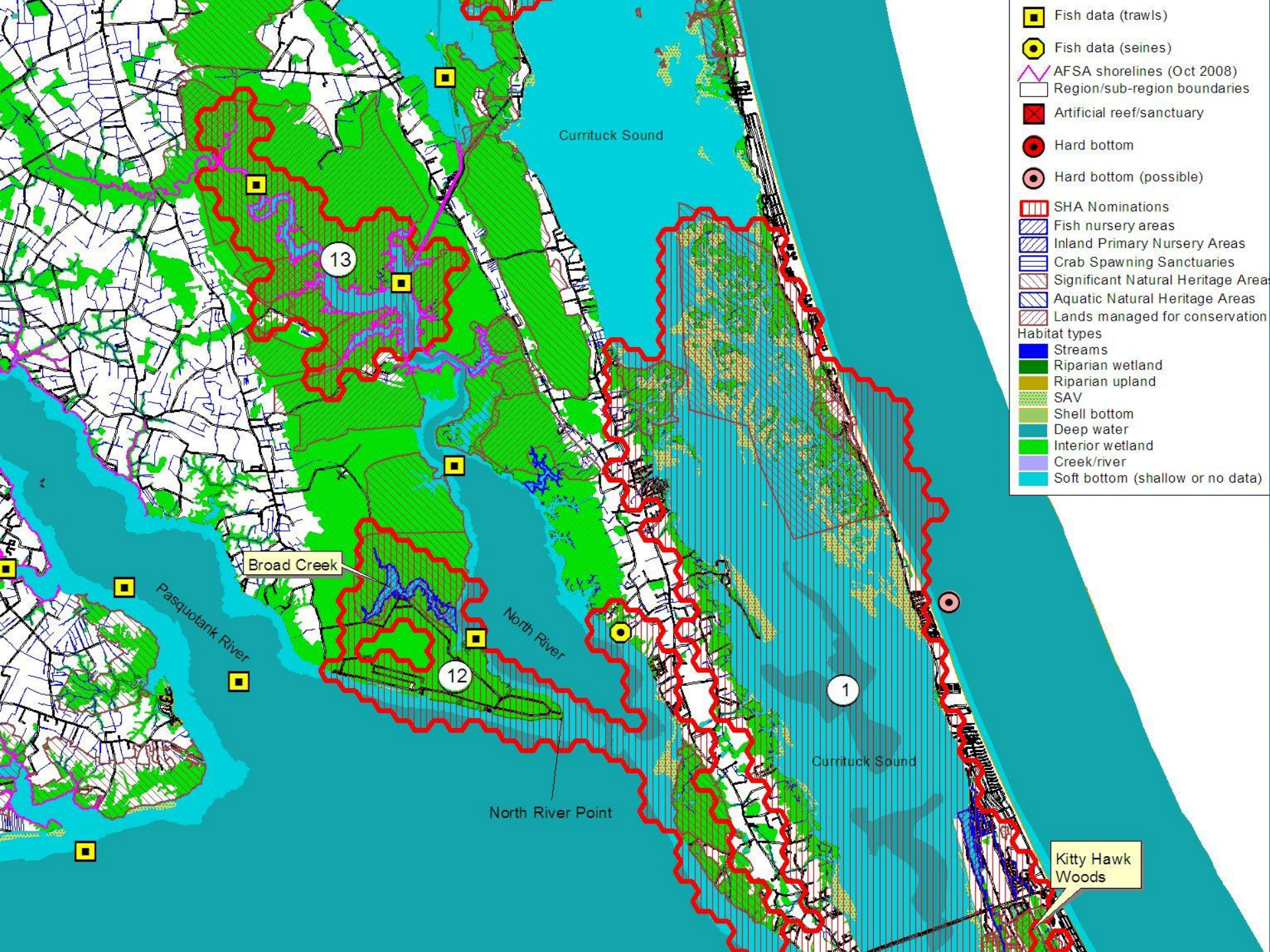
Powells Point

Kitty Hawk Woods

Kitty Hawk Bay

Albemarle Sound

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Broad Creek

Pasquotank River

North River

North River Point

Kitty Hawk Woods

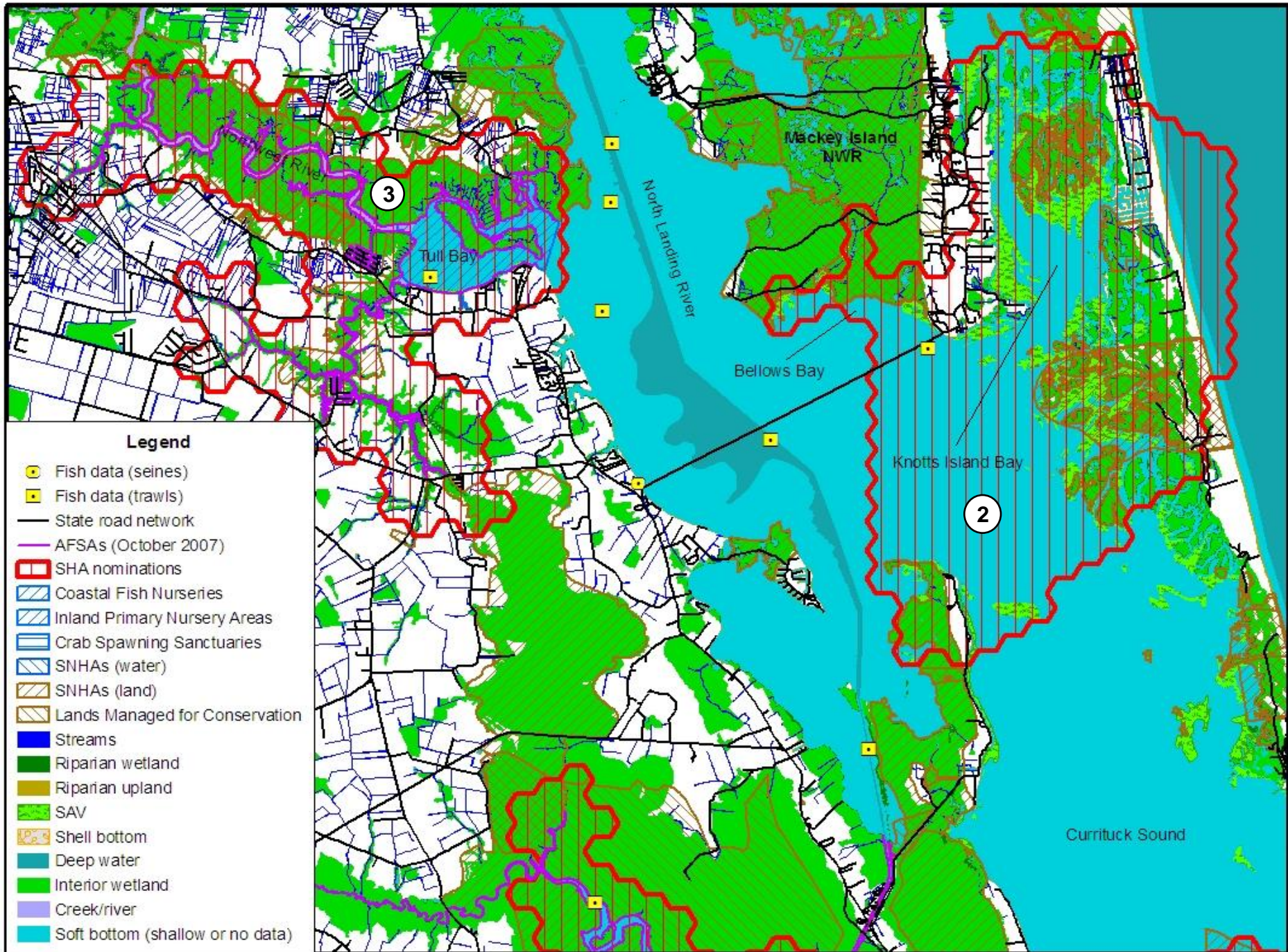
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Currituck Sound

Currituck Sound



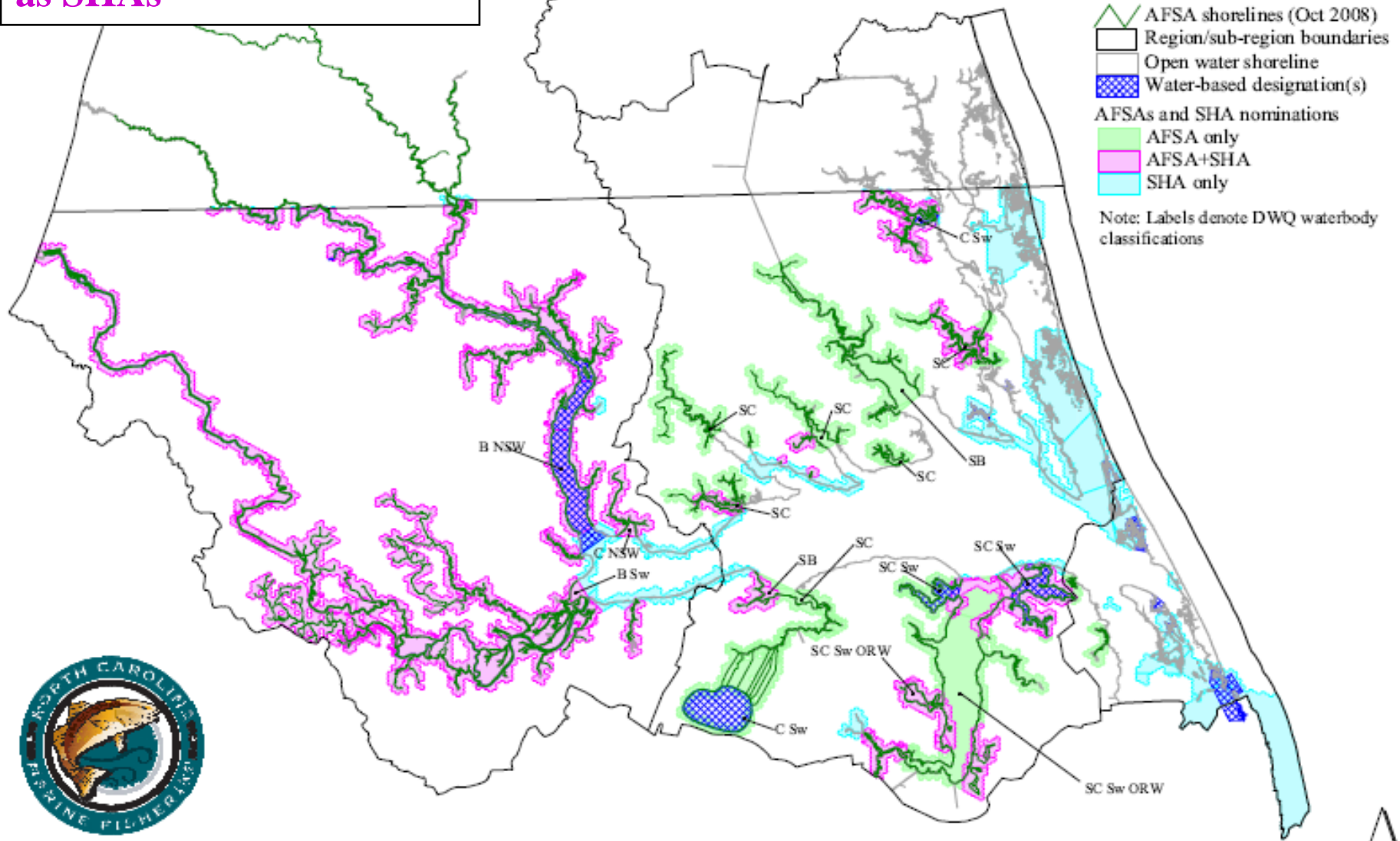
# “additional protections” for SHAs

- Site specific based on area function, and type/severity of alteration
- Non-regulatory. Focus on:
  - Incorporating SHAs into conservation planning with WRC, DENR, APNEP, local land use plans, and permit reviews
  - Prioritizing funding for enhancement and restoration of fish passage, hydrology, habitats
  - Land acquisition/ conservation easements adjacent to SHAs
  - Pursuing funding from agricultural cost share programs to implement BMPs in/near SHAs

The screenshot displays the North Carolina Department of Environment and Natural Resources website. The header includes the logo "One North Carolina Naturally" and navigation links for "NCGov.com", "DENR Home", "Contact Us", "About Us", and "Home". A sidebar on the left contains a menu with items: "Conservation Toolkit", "Planning for Conservation", "Decision Support Tool", "Sustainable Development", "Regional Efforts", "Preserving One Million Acres", and "Conservation Resources". The main content area features a green banner for the "Interactive Map Viewer: North Carolina's Conservation Lands". Below this, a section titled "Using the Interactive Map Viewer" explains that users can customize the map by turning layers on and off to reveal features like habitats and water bodies. It includes two dropdown menus for "Choose a Region Type" and "Choose a Target Region", and two buttons: "View Statewide Map" and "View Regional Map". A "Map Viewer Quick Tips" section is partially visible at the bottom.

**75% of all AFSAs in  
Region 1 were nominated  
as SHAs**

# Region 1 Anadromous Fish Spawning Areas and Strategic Habitat Areas Nominations



- AFSA shorelines (Oct 2008)
- Region/sub-region boundaries
- Open water shoreline
- Water-based designation(s)
- AFSAs and SHA nominations
  - AFSA only
  - AFSA+SHA
  - SHA only
- Note: Labels denote DWQ waterbody classifications

