



Coastal Habitat Protection Plan: Success and Future

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1) **WETLANDS** border vital nursery areas and serve as the primary buffer between water and land-based impacts.



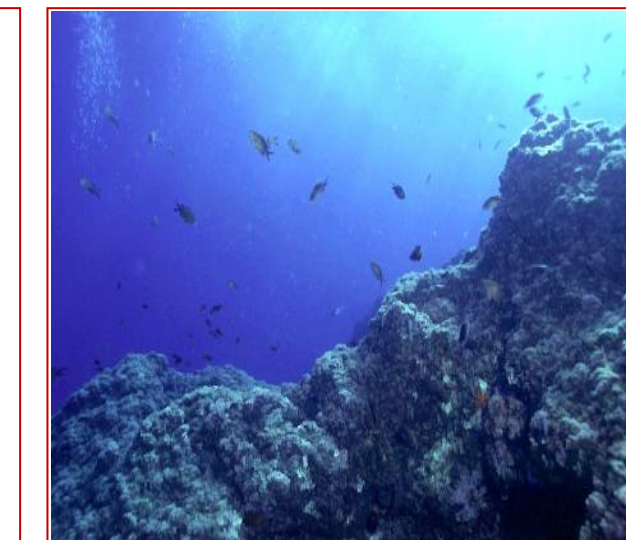
2) **SOFT BOTTOM** acts as a storage reservoir for nutrients, sediment, and chemicals, and provides crucial foraging areas for fish.



3) **SHELL BOTTOM** is important as a fish spawning and nursery area, as well as protecting nearby shorelines and sea grass beds from erosion.



4) **SUBMERGED AQUATIC VEGETATION** is an underwater garden for juvenile fish and small invertebrates and a barometer of water quality.



5) **HARD BOTTOM**, often covered by living organisms, supports a temperate-subtropical reef fish community and snapper-groupers fishery.



6) **WATER COLUMN** is the basic habitat and the medium through which all other fish habitats are connected.

Introduction

The 1997 Fisheries Reform Act required the North Carolina Department of Environment and Natural Resources develop a Coastal Habitat Protection Plan (CHPP), with a goal of long-term enhancement of coastal fisheries. The CHPP was adopted in 2004 and updated in 2010. The plan describes NC's coastal fisheries habitats, the latest scientific information on habitat needs, ecosystem and fisheries benefits, threats, and status. Management and research recommendations are provided for the associated state agencies, commissions and interested parties to implement. The plan has fostered interagency cooperation between the states resource commissions (Marine Fisheries Commission (MFC), Coastal Resource Commission (CRC), Environmental Management Commission (EMC), and Wildlife Resource Commission (WRC)). The 2010 CHPP provided updated explanations of new threats, including sea level rise, invasive species, energy development, and endocrine disrupting chemicals. The Albemarle-Pamlico National Estuary, which covers over half of NC's coast, has benefited from coastwide CHPP implementation. The APNEP and CHPP programs work together in a complimentary manner on ecosystem protection.

The table below lists the threat sources identified in the CHPP, with severity of impact shown by color, with red indicating a major impact to that habitat, orange indicating a moderate impact, and yellow, a minor impact.

Threat category	Source and/or impact	Water column	Shell bottom	SAV	Wetlands	Soft bottom	Hard bottom
Physical threats/hydrologic modifications	Boating activity						
	Channelization						
	Dredging (navigation channels, boat basins)						
	Fishing gear impacts						
	Infrastructure						
	Jetties and groins						
	Mining						
Water quality degradation-sources	Obstructions (dams, culverts, locks)						
	Shoreline stabilization						
	Upland development						
	Water withdrawals						
	Land use and non-point sources						
Water quality degradation-causes	Water dependent development (marinas and docks)						
	Point sources						
	Marine debris						
	Microbial contamination						
	Nutrients and eutrophication						
	Saline discharge						
	Suspended sediment and turbidity						
Disease and microbial stressors	Toxic chemicals						
	Non-native, invasive or nuisance species						
	Sea-level rise/climate change						

CHPP Major Accomplishments (2005-2010)

Unlike many other environmental planning documents, the recommendations of the CHPP are required by law to be implemented by the Marine Fisheries, Coastal Resources, and Environmental Management Commissions. A CHPP Steering Committee, consisting of representatives of these commissions and their staff meet quarterly to discuss and resolve complex issues and assess progress. Other agencies have voluntarily joined the Steering Committee, including Wildlife Resources Commission. To date, major accomplishments include:

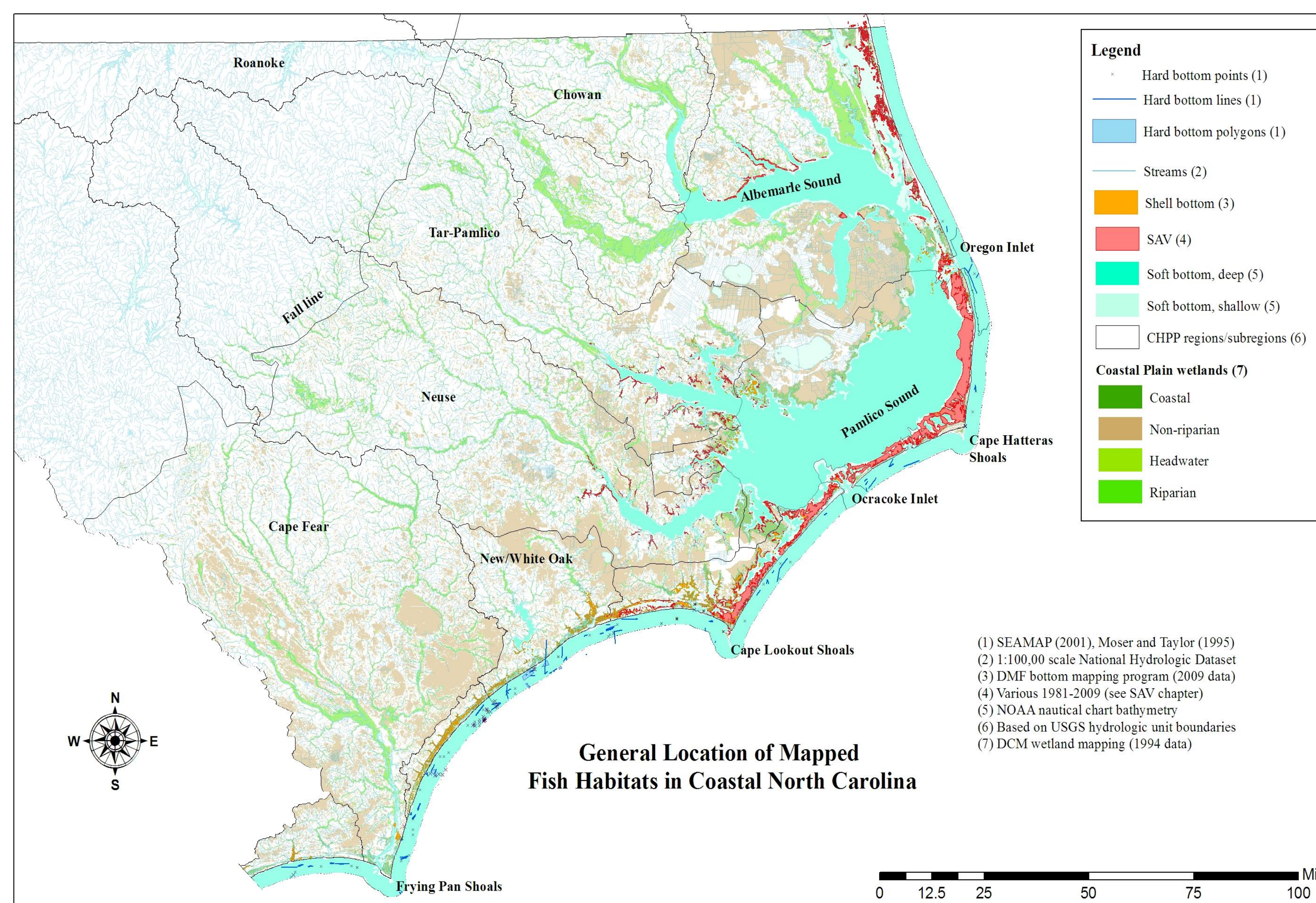
- Habitat mapping-** SAV along the entire coast was mapped using 2007-2008 imagery due to a multi-agency effort. Shallow shell bottom mapping was accelerated and the estuarine shoreline and water dependent structures are being mapped.
- Oyster reef restoration-** Funding was secured for new positions and materials to accelerate sanctuary development and monitoring, construction of a shellfish hatchery, and creation of shell recycling program. However, budget cuts reduced some of these advancements in 2011.
- Stormwater runoff -** Coastal stormwater rules were implemented based in part on recommendations of the CHPP and coordination among many agencies. These rules reduced the built upon area to less than 12% of the lot area (not including wetlands) to qualify for a low-density development stormwater permit. They also require treatment and no discharges of the first 1.5 inches of rainfall.
- Compliance monitoring-** Additional permit compliance positions were obtained for the divisions of Water Quality, Coastal Management, and Forestry. Compliance and monitoring are important aspects of habitat protection.
- Beach nourishment management-** Sediment criteria rules and a Beach and Inlet Management Plan were adopted to minimize habitat impacts from beach nourishment.
- Anadromous Fish Spawning Areas (AFSA)-** The NCMFC identified and designated areas that were critical for anadromous fish as spawning areas. These areas are high priorities for protection and restoration.



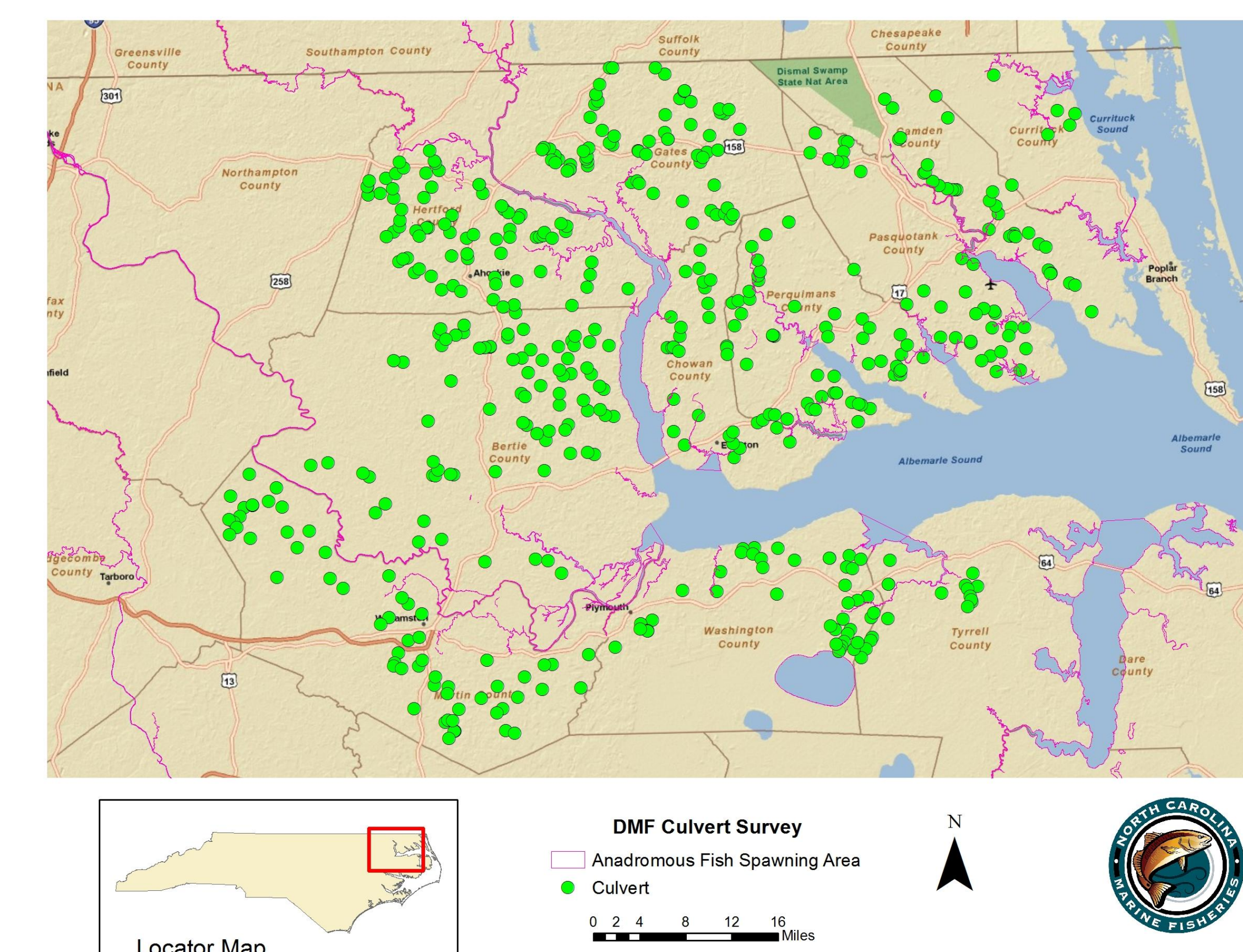
Future Needs

With North Carolina's population growing 15-25% in the past 10 years, and over 50% of North Carolina watersheds draining to coastal river basins, there will continue to be a need to manage land and water based activities carefully to prevent coastal habitat loss and degradation. Some of the implementation actions required in the 2010 CHPP include:

- Continue mapping of all fish habitat.
- Establish and monitor indicators for all six CHPP habitats.
- Continue identification of a network of high quality Strategic Habitat Areas throughout the coast.
- Compile a prioritized list of physical impediments to anadromous fish spawning migration routes requiring removal or modification and begin restoring fish passage (Figure 1).
- Investigate the cumulative impacts of various threats to coastal fishery habitats.
- Conduct spawning area surveys for river herring, other anadromous fish species, red drum, and blue crab.
- Modify shoreline stabilization rules in a manner that reduces impacts to wetland shorelines and nursery areas.
- Develop a CRC sea level rise policy and education strategy.
- Initiate research on impacts of endocrine-disrupting chemicals to blue crabs and oysters.
- Improve wastewater/stormwater management at coastal marinas.



The coastal habitats of North Carolina have been mapped over time through partnerships of federal and state agencies. Although mapping recommendations (shoreline structures, intertidal oysters and SAV) from the 2005 CHPP have been fulfilled they are not included in this map. The 2010 CHPP recommends the mapping of subtidal oysters.



The map above depicts the results of the DMF Culvert Survey identifying impediments to river herring migration due to culverts. Data from this survey will be used to prioritize sites most in need of restoration of fish passage.