North Carolina Coastal Habitat Protection Plan

APNEP CONFERENCE NOVEMBER 2004

Eastern North Carolina's Economy

- **Based on a healthy and productive environment**
  - **Tourism**
  - **Retirement**
  - **Commercial fishing**
  - **Recreational fishing**
  - **Agriculture**
  - **Forestry**

History

Numerous problems in North Carolina coastal fisheries during late 1980s - early 1990s

- Major fish kills
- Oyster diseases
- Red tide
- Sea turtle and marine mammal mortalities
- Commercial & sport fishing competition & conflicts
- Interagency conflicts
- Political issues

History

- **Fisheries Moratorium Act (1994)**
  - Proposed by DMF Director, MFC Chair
  - Moratorium on new fishing licenses
  - Steering Committee, managed by Sea Grant,
    to "oversee study of the fishery resource"
  - Effective July 1994 – June 1998

- **Study report (1996) addressed five areas**
  - Licenses, fishing gear, enforcement, organization, and habitat
    - *prepare Coastal Habitat Protection Plans*

- **Fisheries Reform Act passed August 1997**

History

- **CHPP builds on earlier studies**
  - **Albemarle-Pamlico Estuarine Study: 1994**
  - **Coastal Futures Committee Report: 1994**
  - **Blue Ribbon Advisory Council on Oysters: 1995**
  - **Fisheries Moratorium Steering Committee: 1996**
  - **Estuarine Shoreline Stakeholders Report: 1999**
- **All cited land use, stormwater runoff, habitat loss, fishing gear effects as majors issues affecting coastal habitat**

Coastal Habitat Protection Plan goal

"...long-term enhancement of coastal fisheries associated with each habitat" (G.S. 143B-279.8)

CHPP and Science

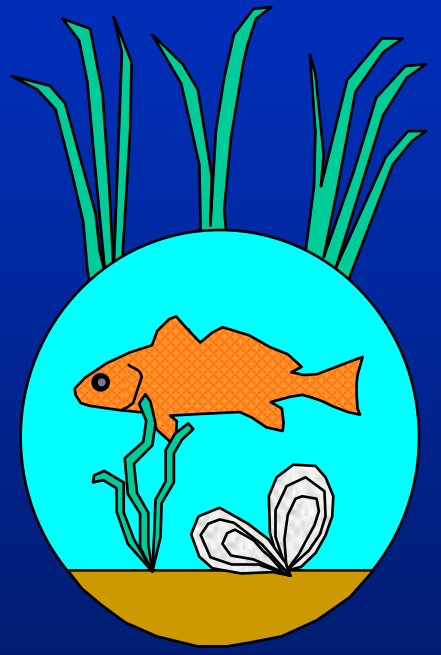
- CHPP is a scientific document
- Began drafting in 1999
- > 50 scientists met to provide guidance in February 2000. Many continued to contribute information.
- Drafts reviewed and edited by dozens of scientists
- Reviewed by Intercommission Review Committee (Two members each from EMC, CRC, MFC)

CHPP Requirements
[G.S. 143B-279.8.]

- Describe and classify biological systems in the habitat
- Evaluate the function, value to coastal fisheries, and trends in habitat
- Identify existing and potential threats to the habitat and impact on coastal fishing
- Recommend actions to protect and restore the habitats

Fish Habitat Defined

Freshwater, estuarine and marine areas that support any of the various life stages of commercial and recreationally important fish species,
as well as those forage species important in the food chain



Six Interdependent Fish Habitats Support North Carolina's Coastal Fisheries

1) Coastal **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.

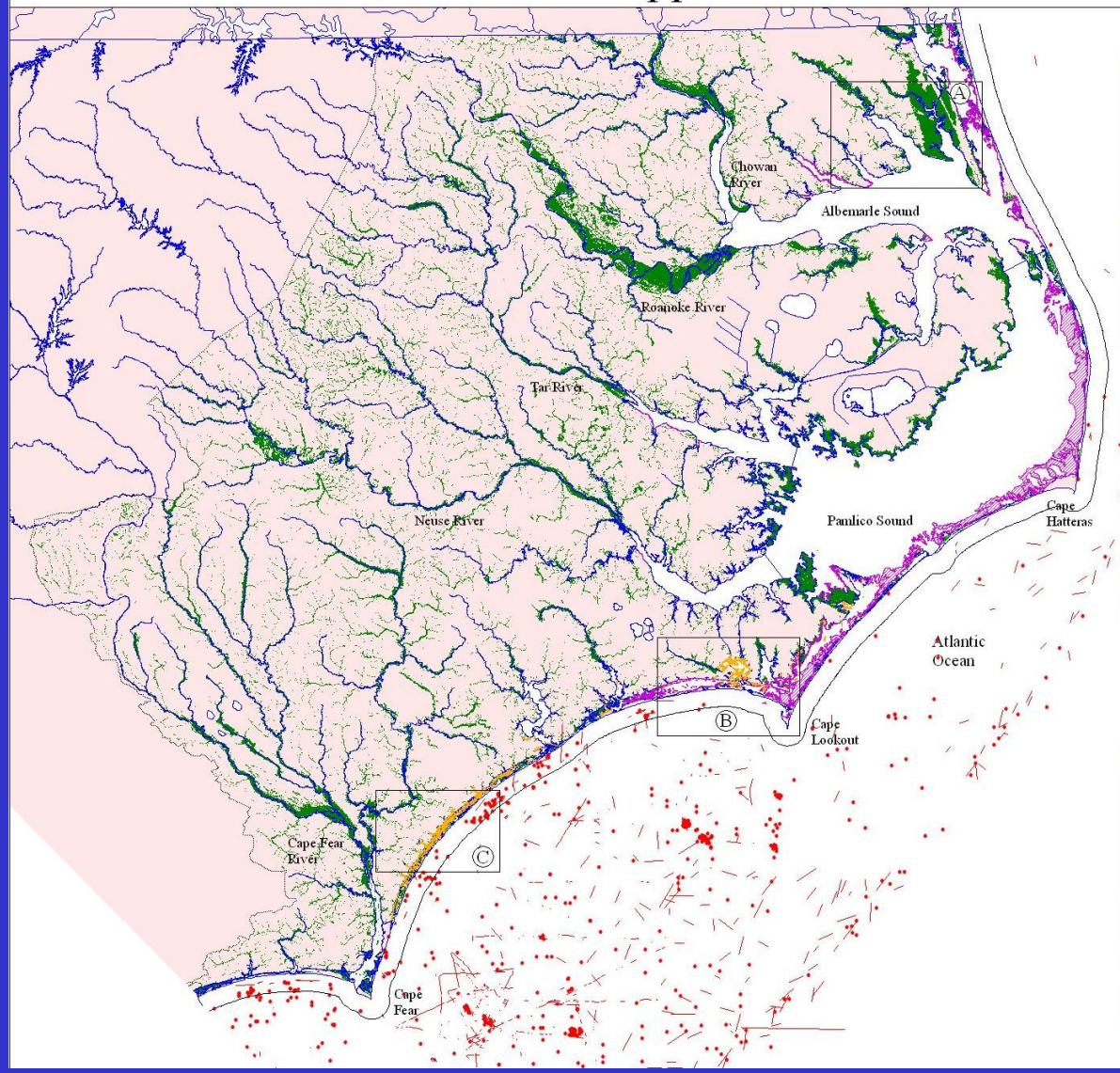
3) SHELL BOTTOM is especially important as a fish spawning and nursery area, as well as protecting nearby shorelines and sea grass beds from erosion.

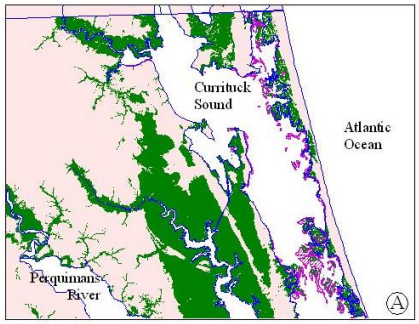
4) SUBMERGED AQUATIC VEGETATION is an underwater garden for juvenile fish and small invertebrates and a barometer of water quality.

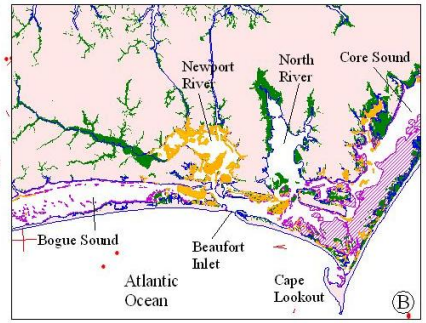
5) The complex structure of **HARD BOTTOM,** often covered by living organisms, supports a temperate-subtropical reef fish community and snapper–grouper fishery.

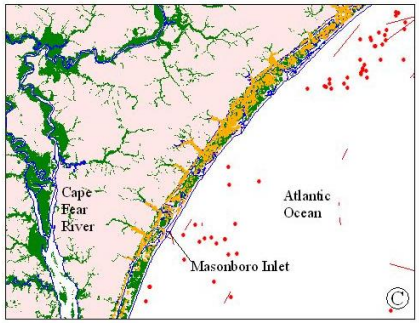
6) The **WATER COLUMN** is the basic habitat and the medium through which all other fish habitats are connected.

General Location of Mapped Fish Habitats in Coastal North Carolina









HABITATS

- Rivers, Creeks and Streams
- Shell Bottom
- Riparian Wetlands
- Submerged Aquatic Vegetation
- Hardbottom

N

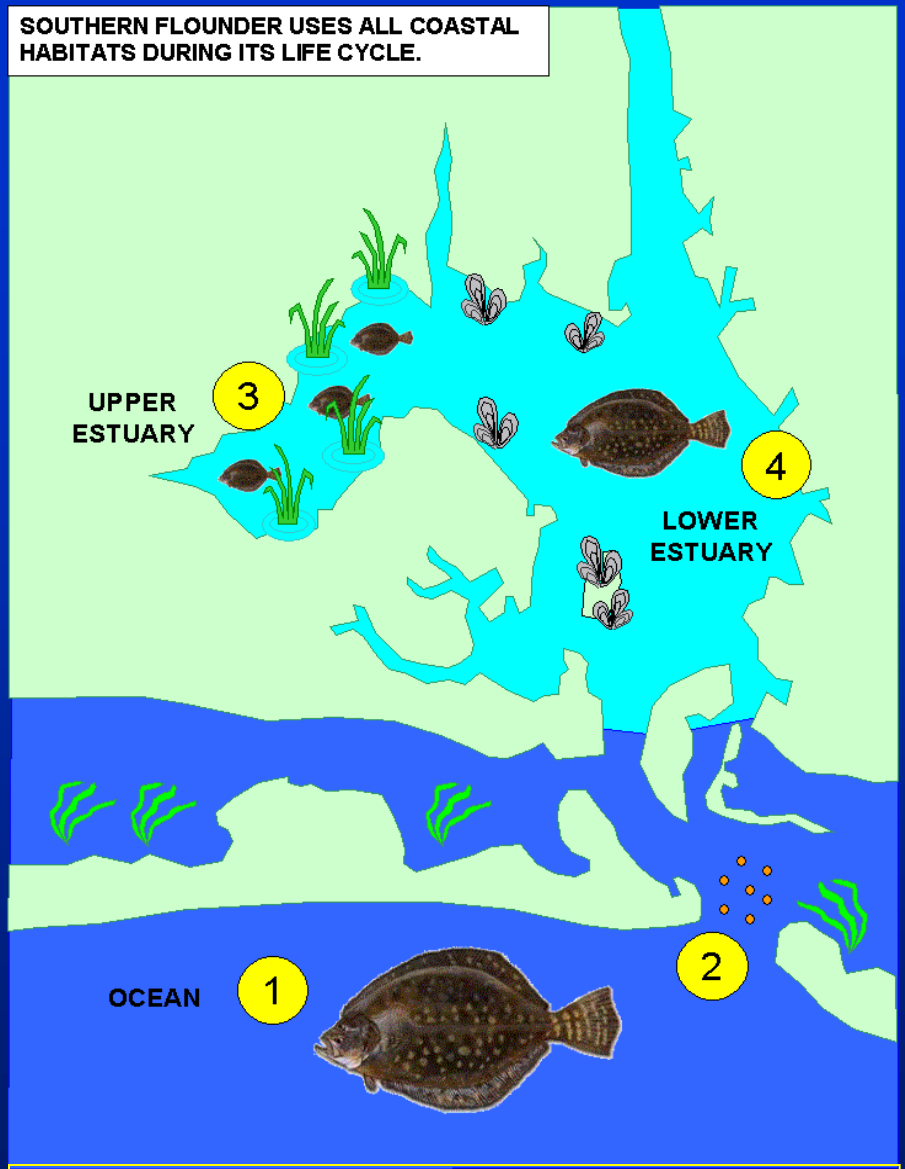
10 0 10 Kilometers

10 0 10 Miles

Coastal Habitat Protection Plan

NCDENR

Map information were collected from various federal, state, and private organizations. Every effort has been made to ensure the quality and accuracy of this information.



Most fish associate with **different habitats** at different life stages

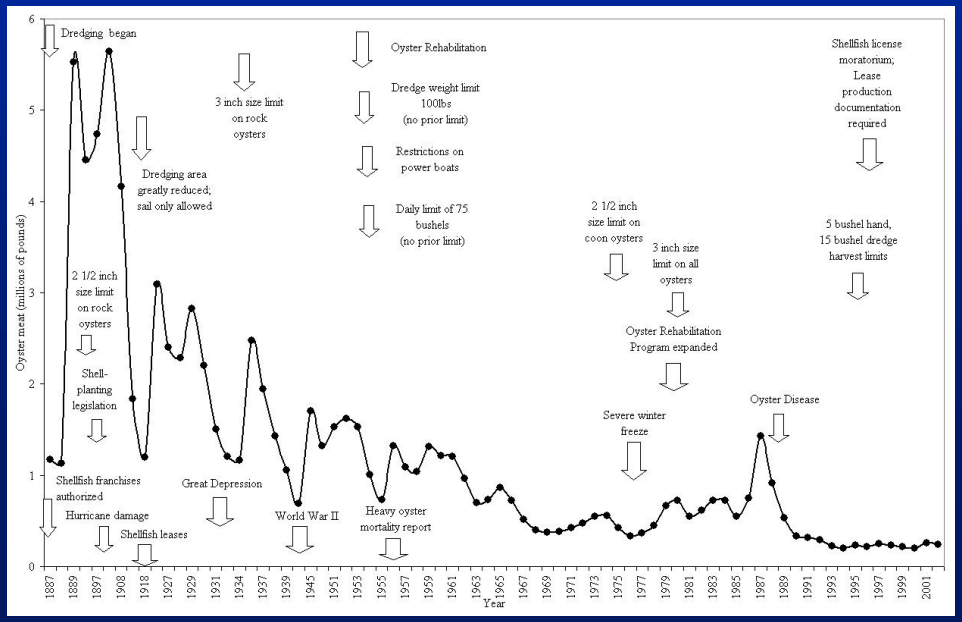
Some fish depend strongly on **specific** habitat types

Because habitats are interdependent, all fish depend on the **total habitat system**

Loss and Degradation of Shell Bottom

The Evidence

- Subtidal oyster reefs in Pamlico Sound system
  - Major losses due to oyster dredging late 1880s – early 1900s
  - Some displacement downstream due to flow and salinity changes and losses from harvesting, dredging, poor water quality
  - Not returning to previous levels [disease, bottom-disturbing fishing, greatly reduced cultch (surface for attachment)]
- Intertidal reefs more stable in southern coast.
- Partially mapped during 1880s and late 1980s to present



Loss and Degradation of SAV

The Evidence

- Most SAV mapped during late 1980s and early 1990s
- Anecdotal records suggest significant decline (> 50%) of low-salinity SAV in western Pamlico Sound and tributaries since the 1970s
- High salinity grasses fairly stable (Outer Banks – Bogue Sound)
- Water clarity is key factor for SAV survival
- Sediment and nutrients in water column reduce water clarity
- Some recovery in Chowan and other areas since 1980s as discharges removed and BMPs implemented

Loss and Degradation of Wetlands

The Evidence

- Coastal wetlands mapped
  - Hydric soil maps - 1950s
  - Wetland types - 1994
- Estimated 50% loss since pre-colonial times
- Most wetlands losses occurred prior to 1970s
- Current rate of loss has greatly slowed due to regulation

Cleared and ditched 404 wetland (Photo by DWQ staff)

Coastal wetland proposed for filling (Photo by DCM staff)

Water Quality Degradation

The Evidence

Nationwide Trends

- EPA report (2002) indicated that > 30% of U.S. rivers and 50% of estuaries and lakes are too polluted for swimming or fish consumption.
- Numerous studies show correlation between increasing human population and water quality degradation; which is a challenge given population growth on the coast, and in river basins that flow to coast.

North Carolina Trends

- According to land cover data, between 1982 and 1997, urban/built-up land and roads increased in coastal river basins by 43-132%

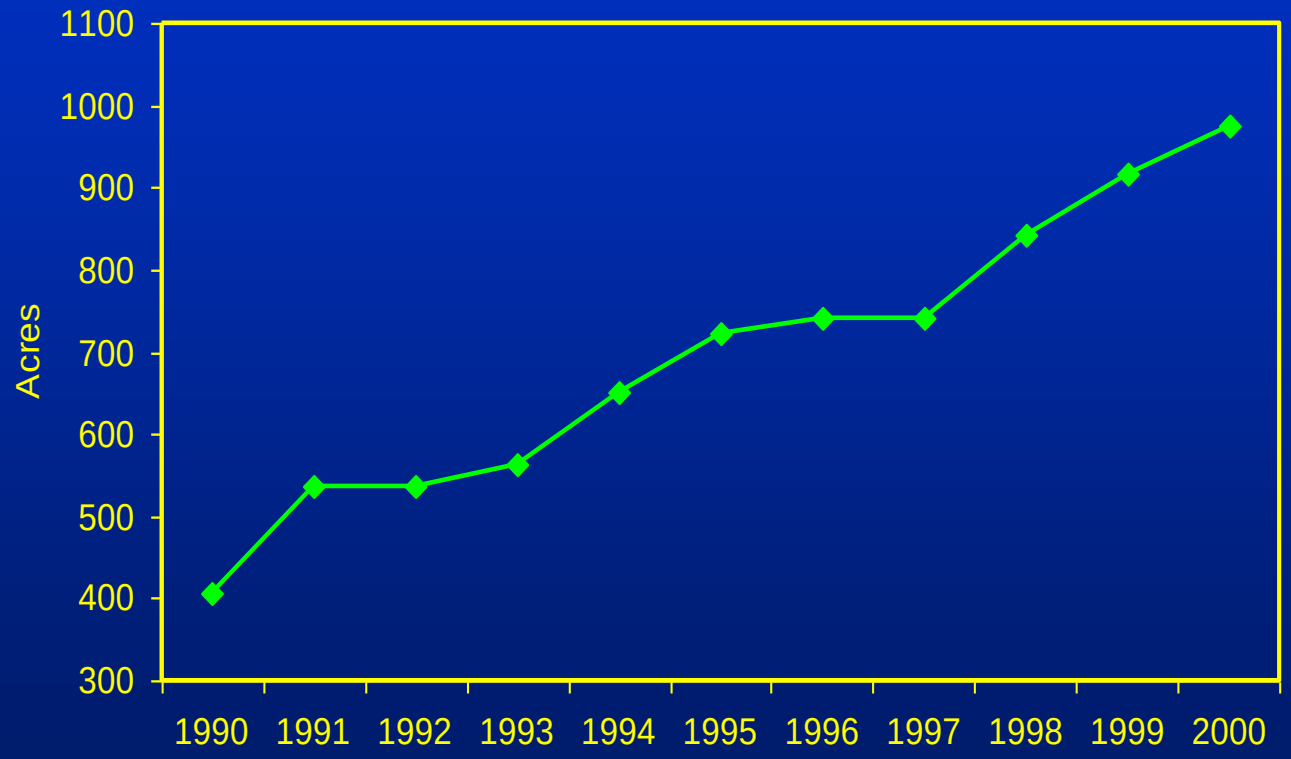
Corolla, NC

Sedimentation from Land Disturbing Activities

Water Quality Degradation

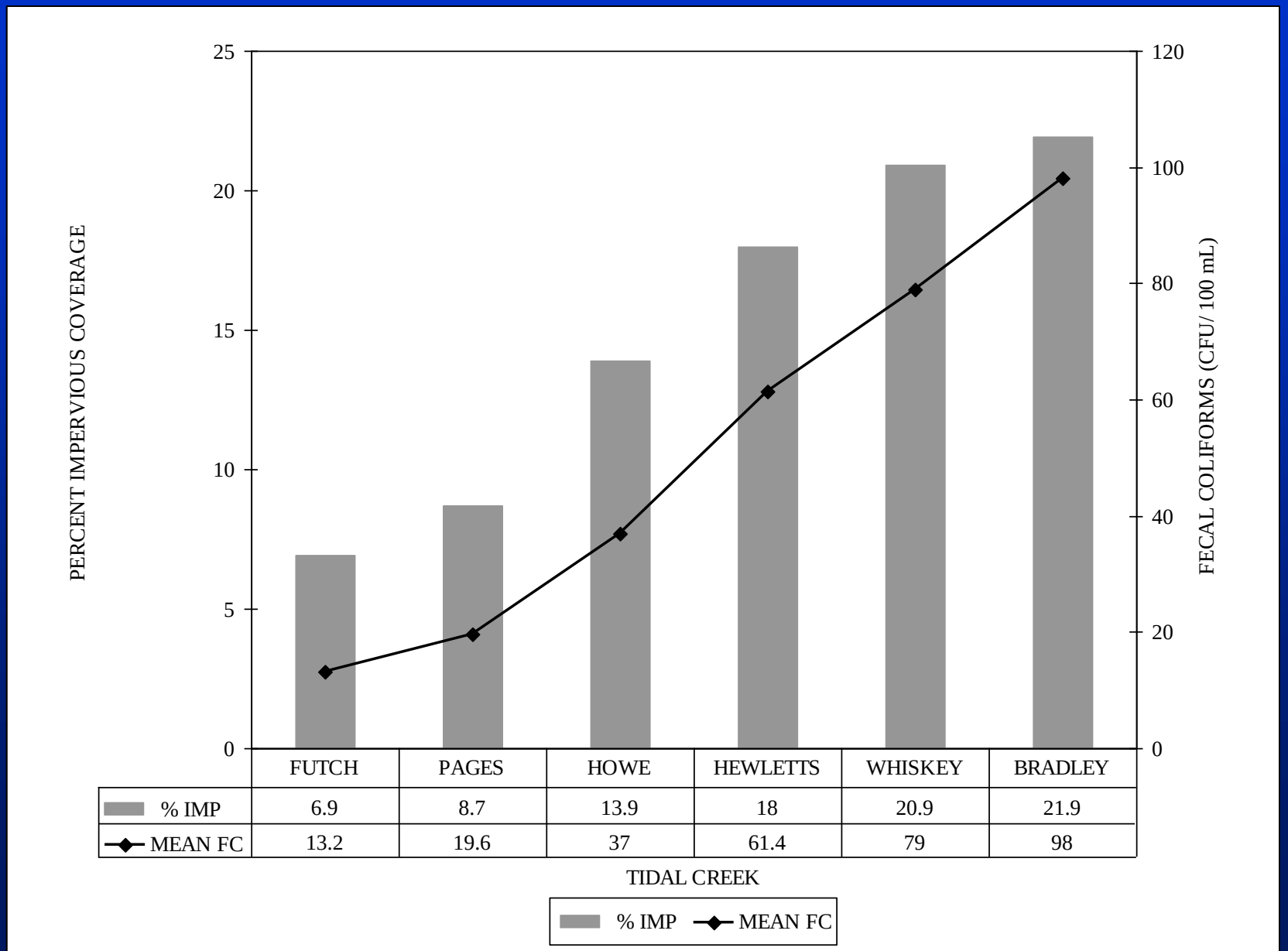
The Evidence

Shellfish Harvest Closures in Outstanding Resource Waters

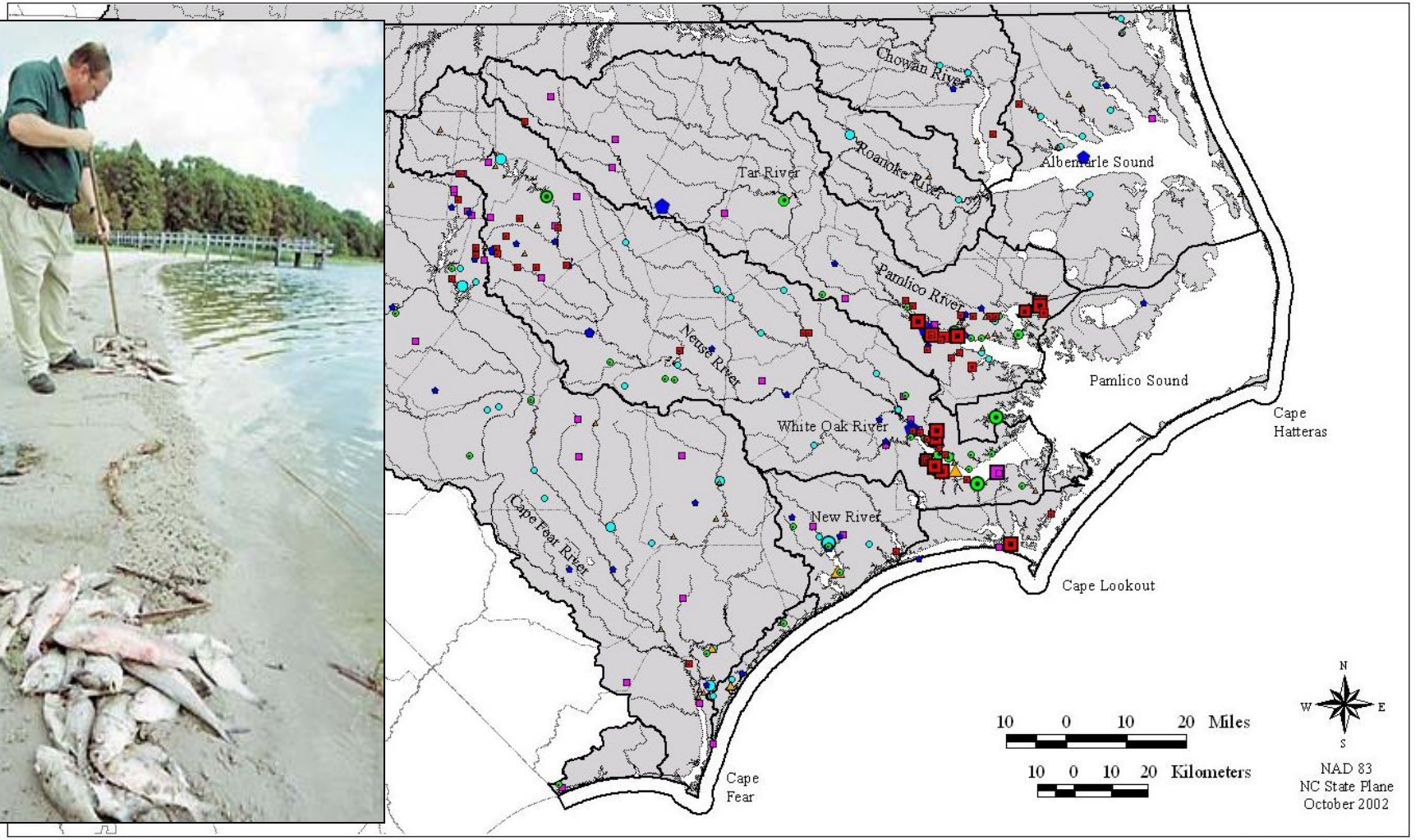


Data Source: Shellfish closure areas from DEH Shellfish Sanitation and Recreational Water Quality Section

Impervious Surface and Fecal Contamination



Observed Fish Kills



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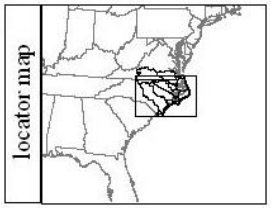
NCDENR

Fish Kills: 1996-2001 — Management Units

Fish Kills 1996	Fish Kills 1997	Fish Kills 1998	Fish Kills 1999	Fish Kills 2000	Fish Kills 2001
0 - 4,999	0 - 4,999	0 - 4,999	0 - 4,999	0 - 4,999	0 - 4,999
5,000 - 9,999	5,000 - 9,999	5,000 - 9,999	5,000 - 9,999	5,000 - 9,999	5,000 - 9,999
10,000 - 19,999	10,000 - 19,999	10,000 - 19,999	10,000 - 19,999	10,000 - 19,999	10,000 - 19,999
20,000 - 49,999	20,000 - 49,999	20,000 - 49,999	20,000 - 49,999	20,000 - 49,999	20,000 - 49,999
50,000 - 100,000	50,000 - 500,000	50,000 - 300,000	50,000 - 1,000,000	50,000 - 152,000	50,000 - 161,780

Coastal Habitat Protection Plan

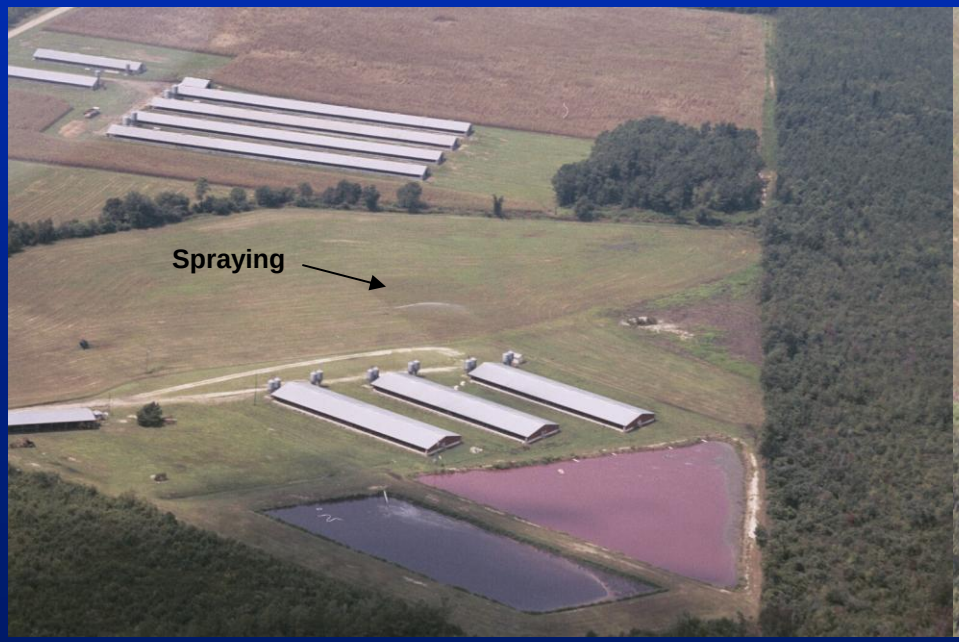


Storm Effects vs. Human Activities

Post *Hurricane Floyd* flooding

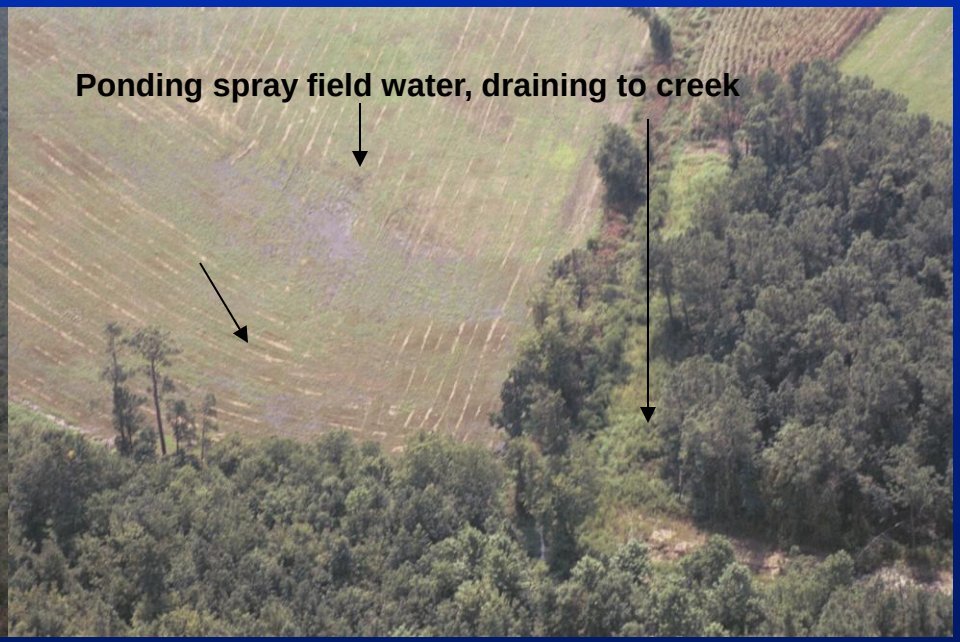
Wastewater Storage/Discharge

- Row crop agriculture has declined in North Carolina in recent years
- Animal operations have greatly increased, especially in Coastal Plain
- Waste can enter streams from lagoon breaches, runoff from spray field
- Waste can enter groundwater and increase nitrogen in air



Animal operation - lagoon and spray field.

(Photo by DWQ)



Saturated spray field. Spray effluent puddling on surface and draining to adjacent creek.

(Photo by DWQ)

Shoreline Alteration

(Marinas and docks, estuarine shoreline stabilization, beach nourishment)

Fishing Practices and Boating Activity

- Clam kicking and oyster dredging dig up soft bottom and oysters, and increase turbidity; some SAV is within clam kicking areas
- Wakes from high speed boat operations erode fringing wetland vegetation, increase turbidity, destabilize shell bottom





Effects on the Total Habitat System can be Individually Small, but Cumulatively Large





Public Participation

- **Public Outreach prior to Public Meetings (10 each year)**

2003	2004
- video	- mailings (>600)
- brochure (15,000)	- new tabloid (250,000)
- tabloid (250,000)	- Internet (draft CHPP)
- Internet	

- **Focus of Public Meetings**
  - **2003: identify threats & suggest actions**
  - **2004: introduce & discuss recommendations**

- **Comments also received after each years' meetings via telephone, e-mail, U.S. Mail, and in person. Shared with IRC, DENR**

CHPP Goals & Recommendations

Goal 1 **IMPROVE EFFECTIVENESS OF EXISTING RULES AND PROGRAMS PROTECTING COASTAL FISH HABITATS**

Goal 2 **IDENTIFY, DESIGNATE, AND PROTECT STRATEGIC HABITAT AREAS (SHAs)**

Goal 3 **ENHANCE HABITAT AND PROTECT IT FROM PHYSICAL IMPACTS**

Goal 4 **ENHANCE AND PROTECT WATER QUALITY**

Public Comments

- Improve enforcement and compliance monitoring
- Coordinate rule-making and enforcement among Commissions and agencies
- Enhance education on habitat and threats
- Reduce stormwater impacts on water quality
- Enough studies – time for action

CHPP Schedule

- July & Sept. 2004: Draft CHPP on DMF web site ☑
- July – August 2004: Coast wide public meetings ☑
- September 2004: Draft CHPP to Commissions ☑
- December 2004: Commissions adopt CHPP
- Early 2005: Commissions/DENR prepare implementation plans
- Mid-2005: Begin CHPP Implementation
- Every 5 years: Update CHPP

http://www.ncfisheries.net

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