

A/P River Herring: Model for Ecosystem-Based Management?

**Albemarle-Pamlico National Estuary Program
Science and Technical Advisory Committee**

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ENVIRONMENTAL DEFENSE

finding the ways that work

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Basic Herring Biology



- Two congeneric species, Blueback Herring (*Alosa aestivalis*) and Alewife (*Alosa pseudoharengus*)
- Anadromous: spawning and nursery areas in freshwater headwaters and riverine swamps
- Sea-run; return multiple times starting at age 3 or 4.

The Once and Future Fish?



Heritage Fisheries



Photo: DMF



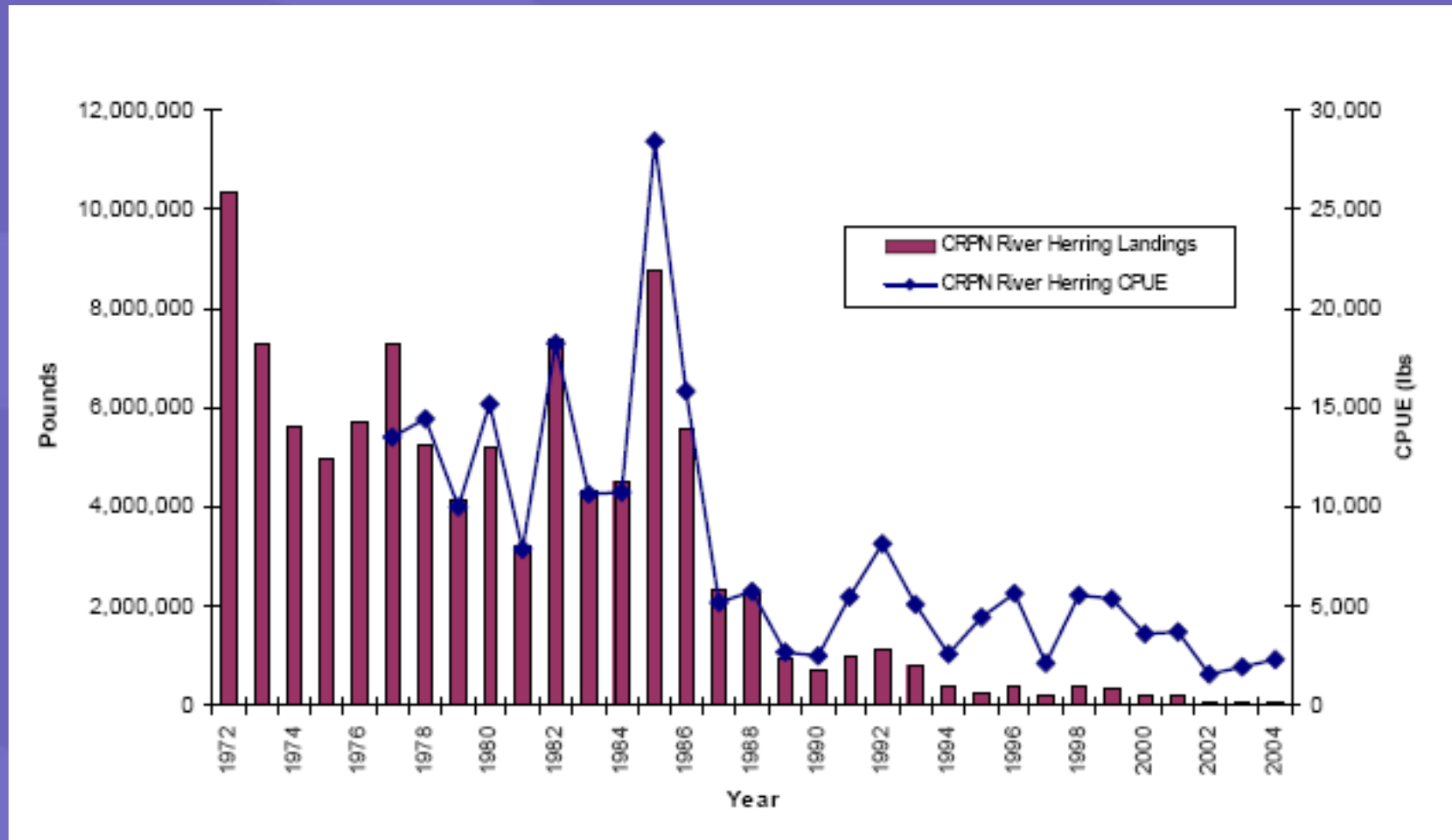
Rader Copy of
Photo in Possession of Frances Inglis

“Gilmer” Map (circa 1862)



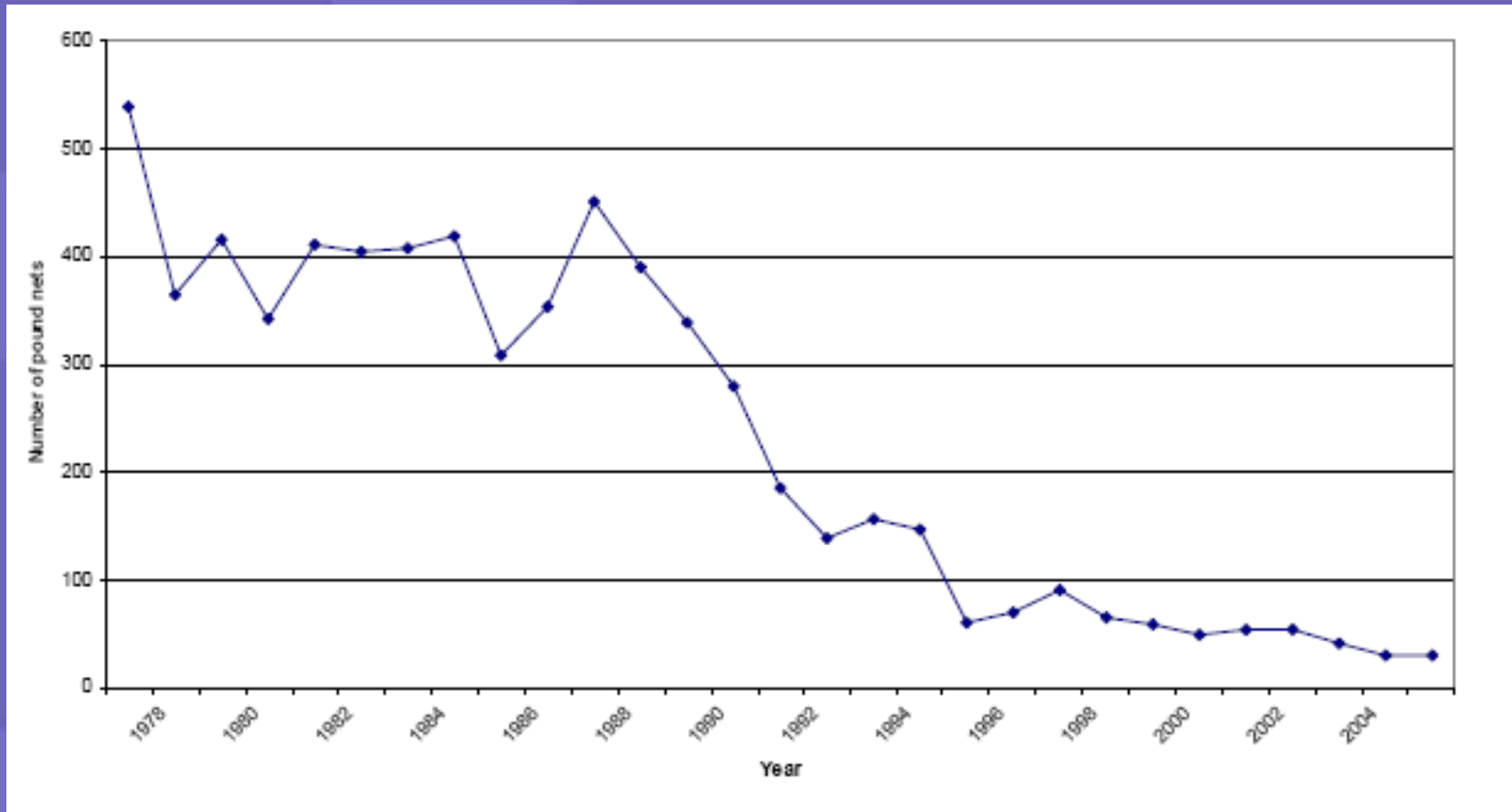
Source: NC Archives

Chowan River Herring Harvest



Source: DMF, 2007

Poundnets in the Chowan: A Heritage Lost?



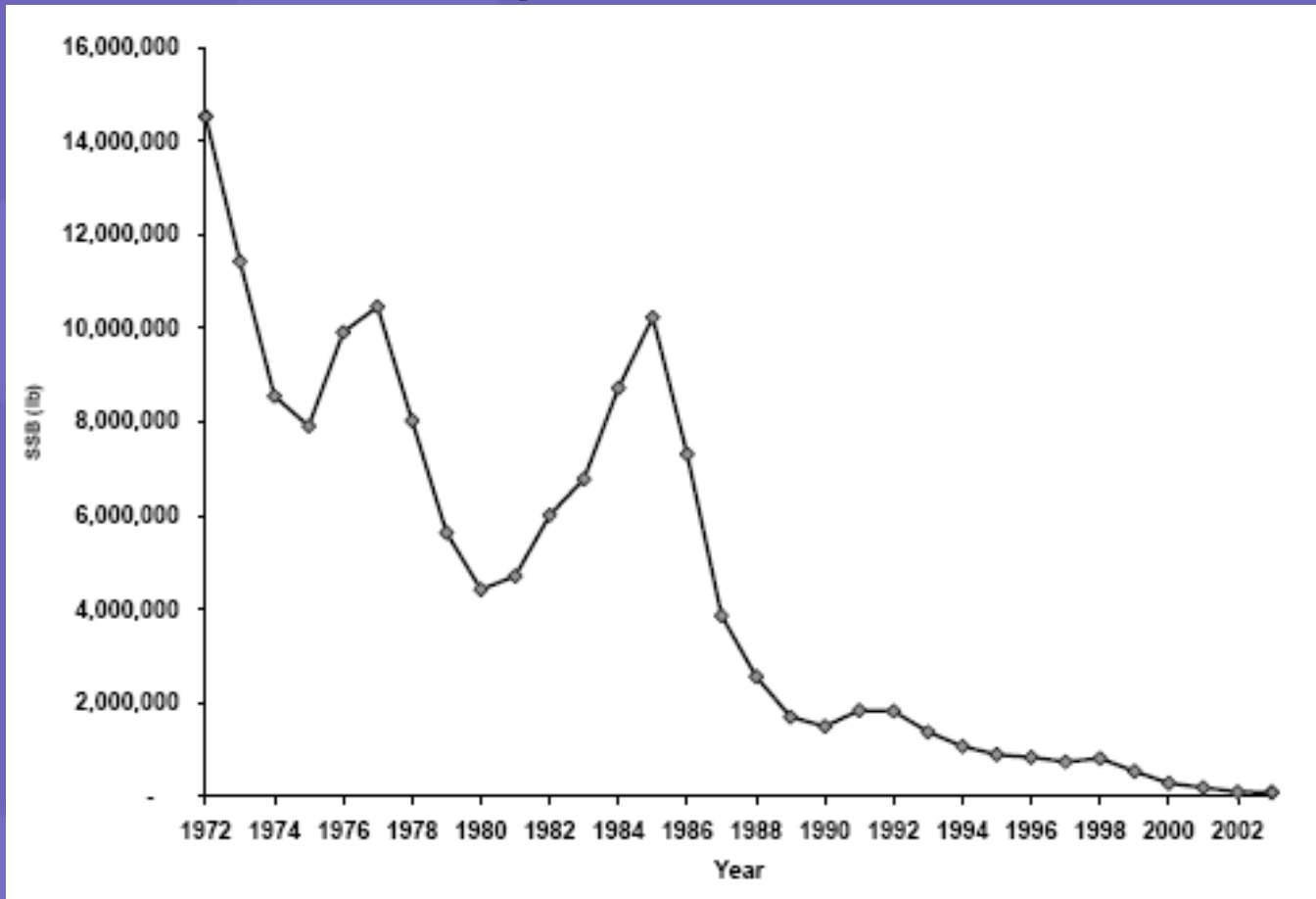
River Herring Sustainability

- Sustainable Fishing
- Habitat Adequacy
- Suitable Water Quality

Fisheries Management

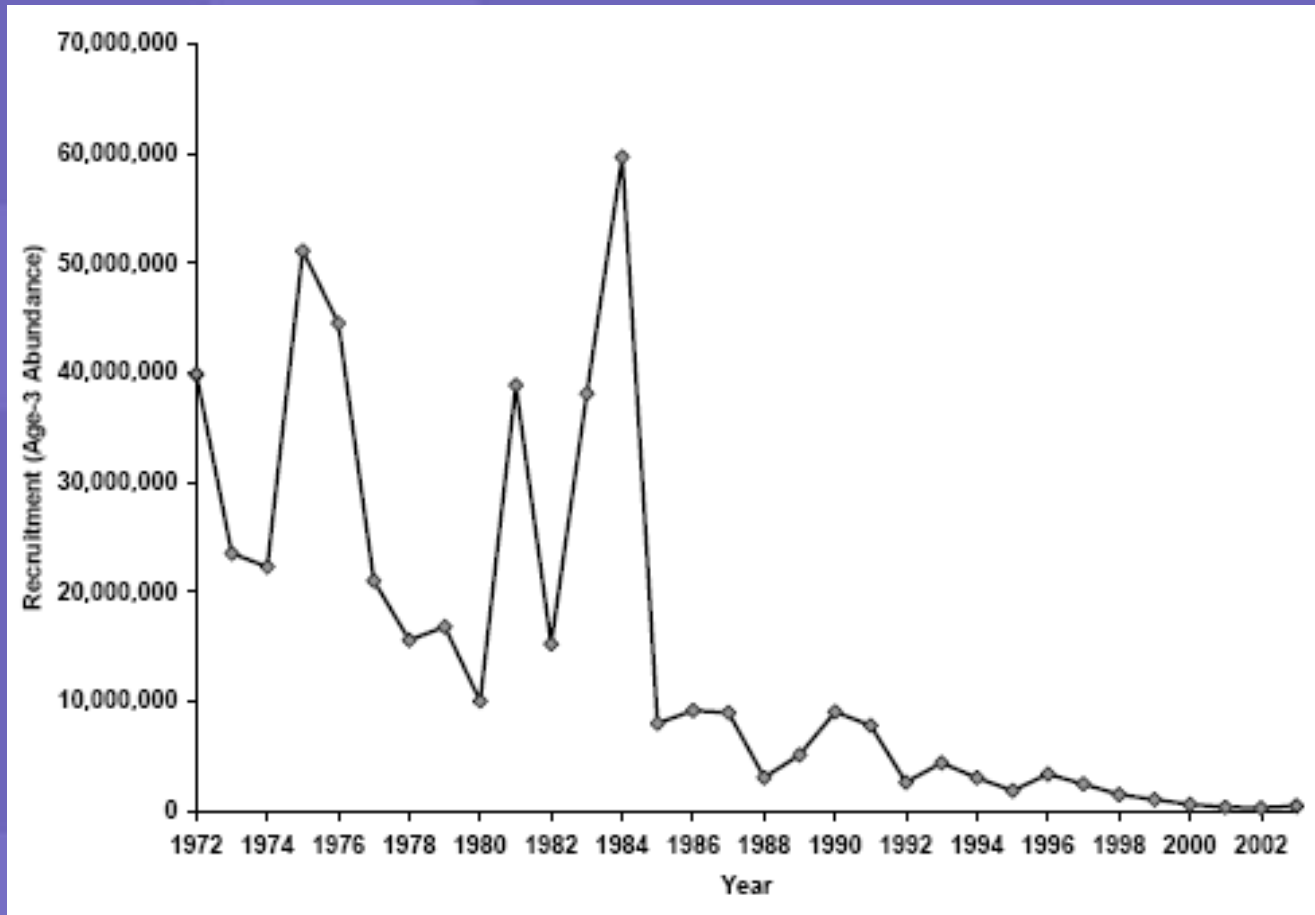
- NC Fishery Management Plan (2007)
- NC Wildlife Commission in Inland Waters, by regulation (2006)
- Atlantic States Marine Fisheries Commission's Shads and River Herrings FMP (revision anticipated)

Stock Status: Spawning Stock Biomass

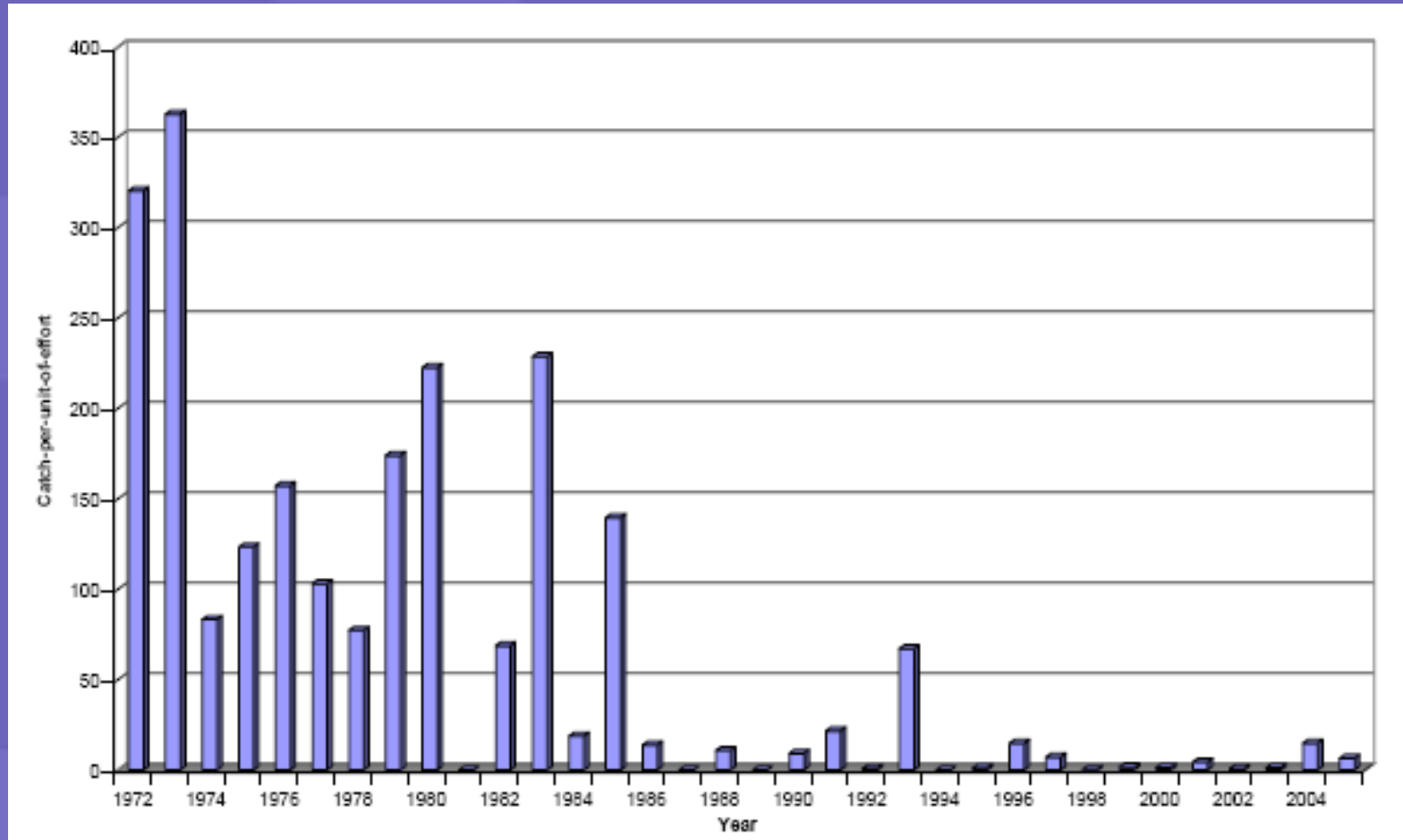


Source: DMF, 2007

Stock Status: Recruitment



Stock Status: Juvenile Abundance



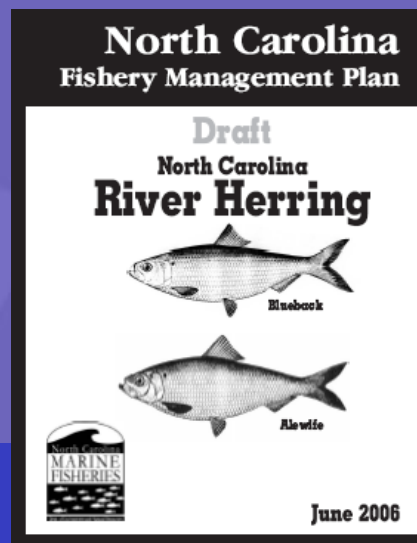
Failure in Repeat Spawning

Table 5.8. Percentage of alewife repeat spawners (spawned two or more times) and maximum number of spawning marks from the Albemarle Sound area gill net fishery, 1999-2004.

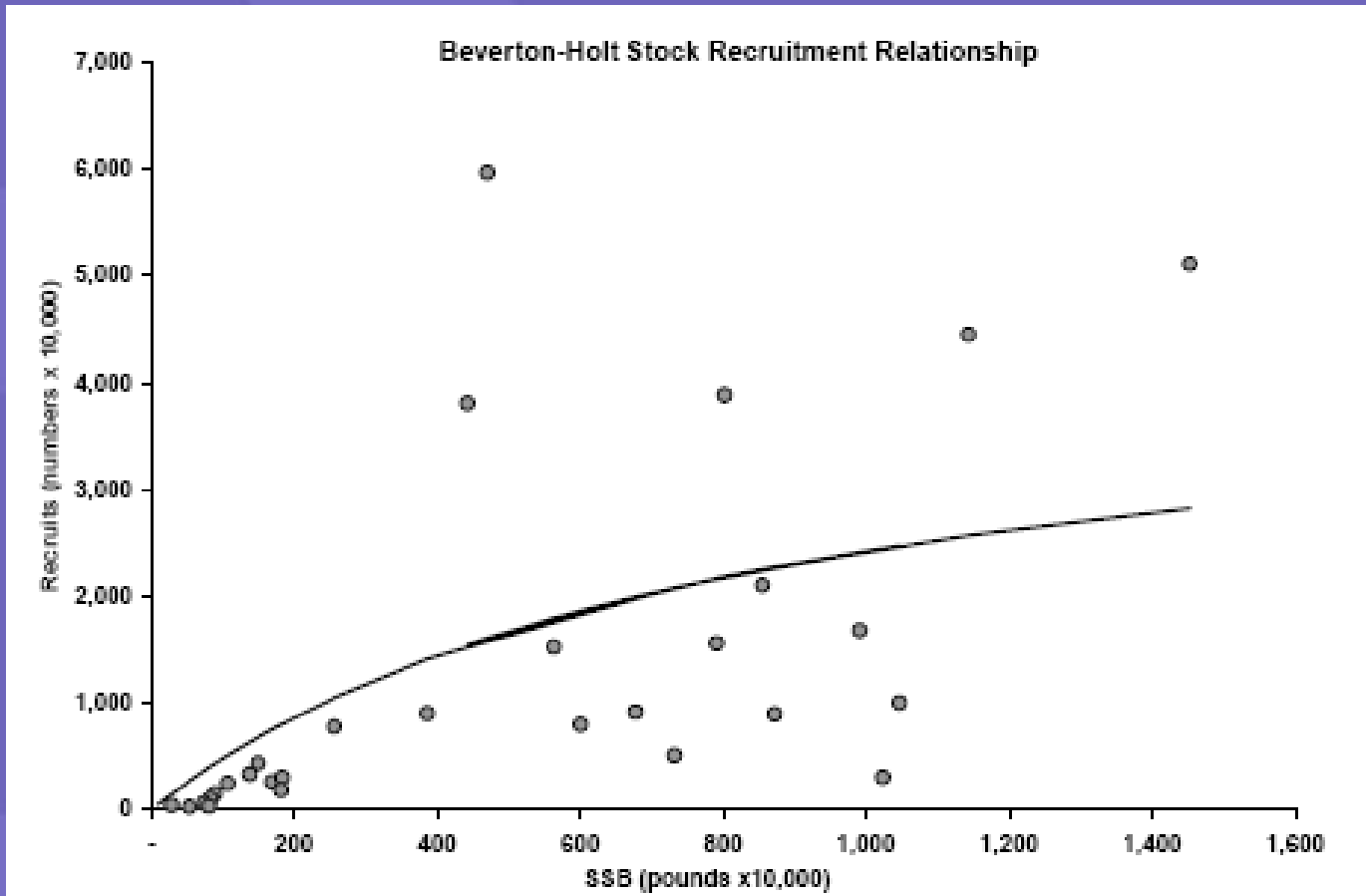
Year	Percent male	Percent female	Percent sexes combined	Maximum number of spawning marks
1999		41.2	31.1	2
2000	4.9	4.9	2.1	2
2001	12.7	4	7.2	2
2002	35.9	25.3	30.0	3
2003	27.7	14.3	19.1	3
2004	6.7	18.7	14.7	3

2007 NC Herring FMP

- Moratorium on commercial harvest
- Prohibition of recreational harvest (WRC)
- Habitat recommendations (CHPP?)

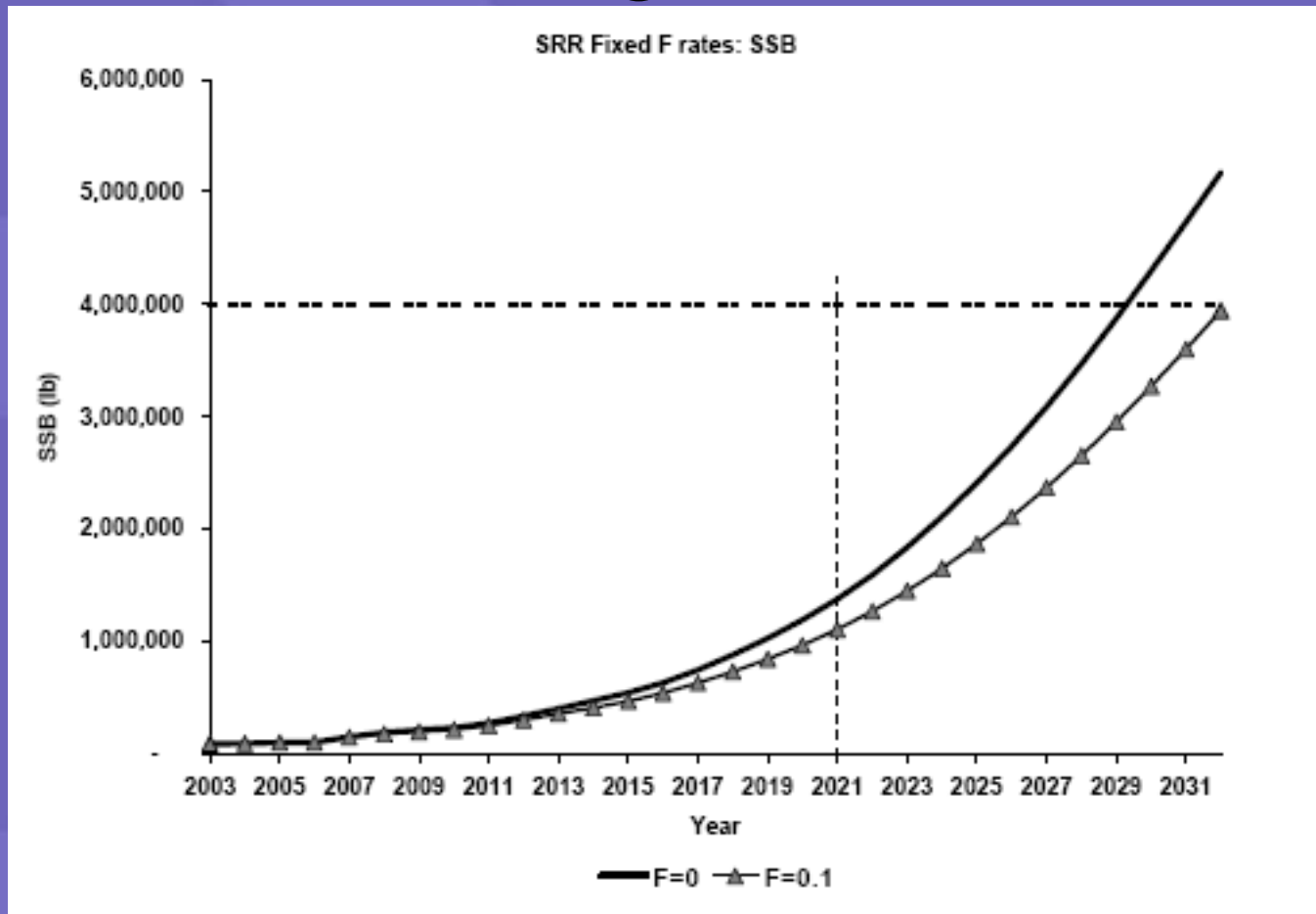


Challenge: Stock-Recruit Relationships



Source: NCDMF, 2005

Challenge: Rebuilding Scenarios



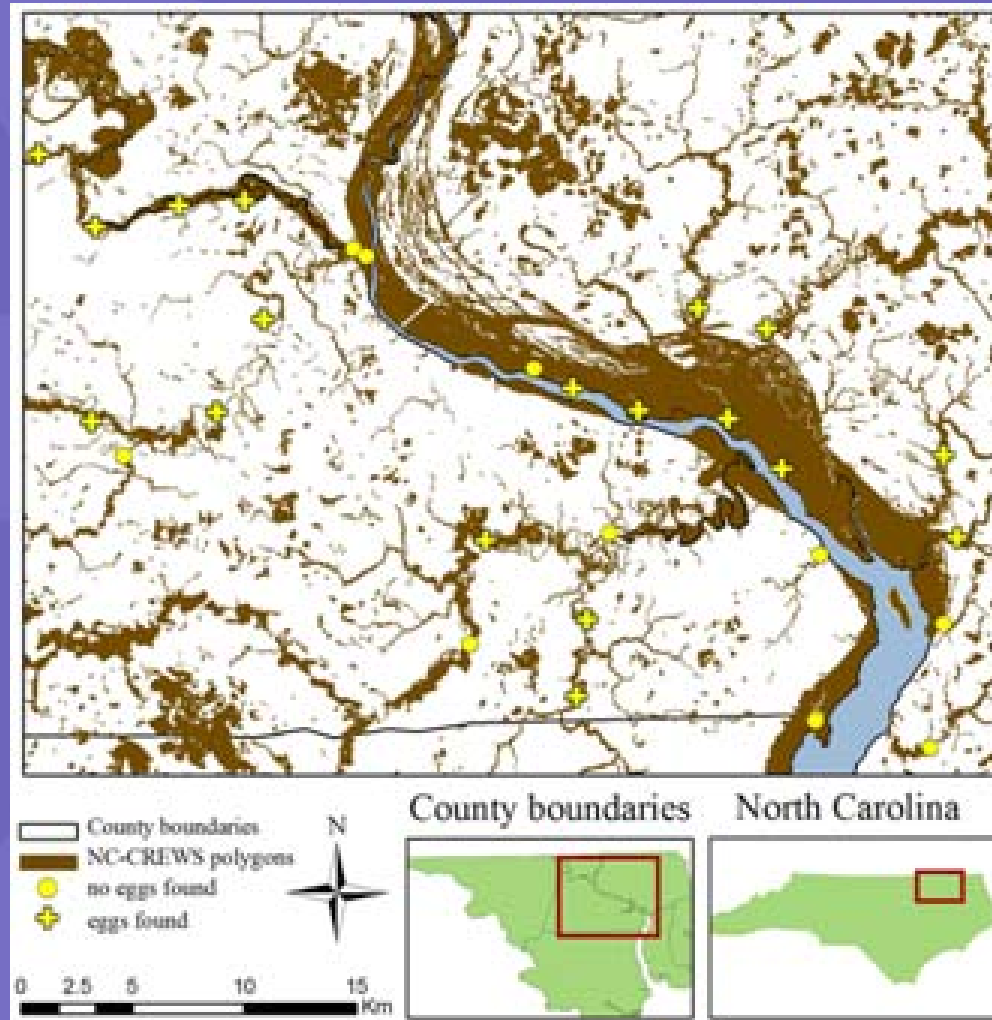
Other Fishery Issues

- Albemarle Sound stripers
- Oceanic bycatch
- Catch shares?



Source: WRC

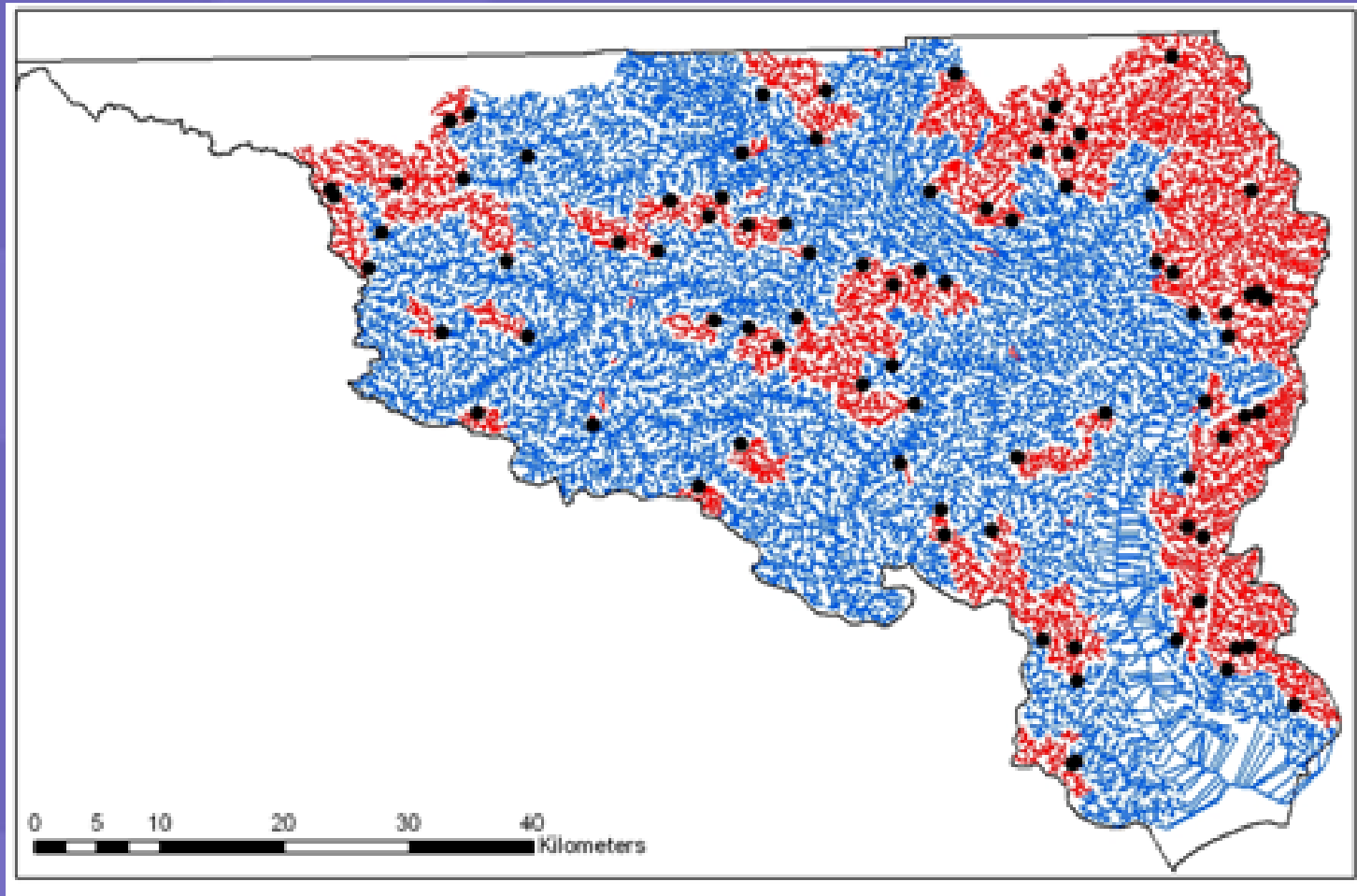
Spawning and Nursery Habitats



Habitat Protection

- SAFMC Fishery Ecosystem Plan
- ASMFC Habitat Plan
- Coastal Habitat Protection Plan (CHPP)
- APNEP CCMP
- EMC Basinwide Plans
- Private Conservation (e.g. CAP+)

Obstacles to Migration



Other Headwater Challenges

- Drainage networks and canals
- “Desnagging”
- Landuse and water quality
- Inadequate habitat monitoring



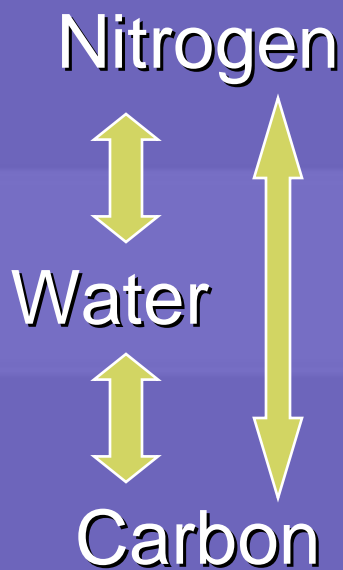
Photo: Riggs

Mainstem Challenges

- Nutrient overenrichment (Virginia!!)
- Inner banks development (SAV, etc.)
- Virginia waste discharges

Altered Threat?

Disruption of Biogeochemical Cycles



Albemarle Sound?

Photo: DWQ

Science Challenges

- Recruitment determinants?
- Multispecies/energy flow?
- Habitat needs for rebuilt stocks?
- Restoration strategy??
- Stock enhancement???
- Global warming??

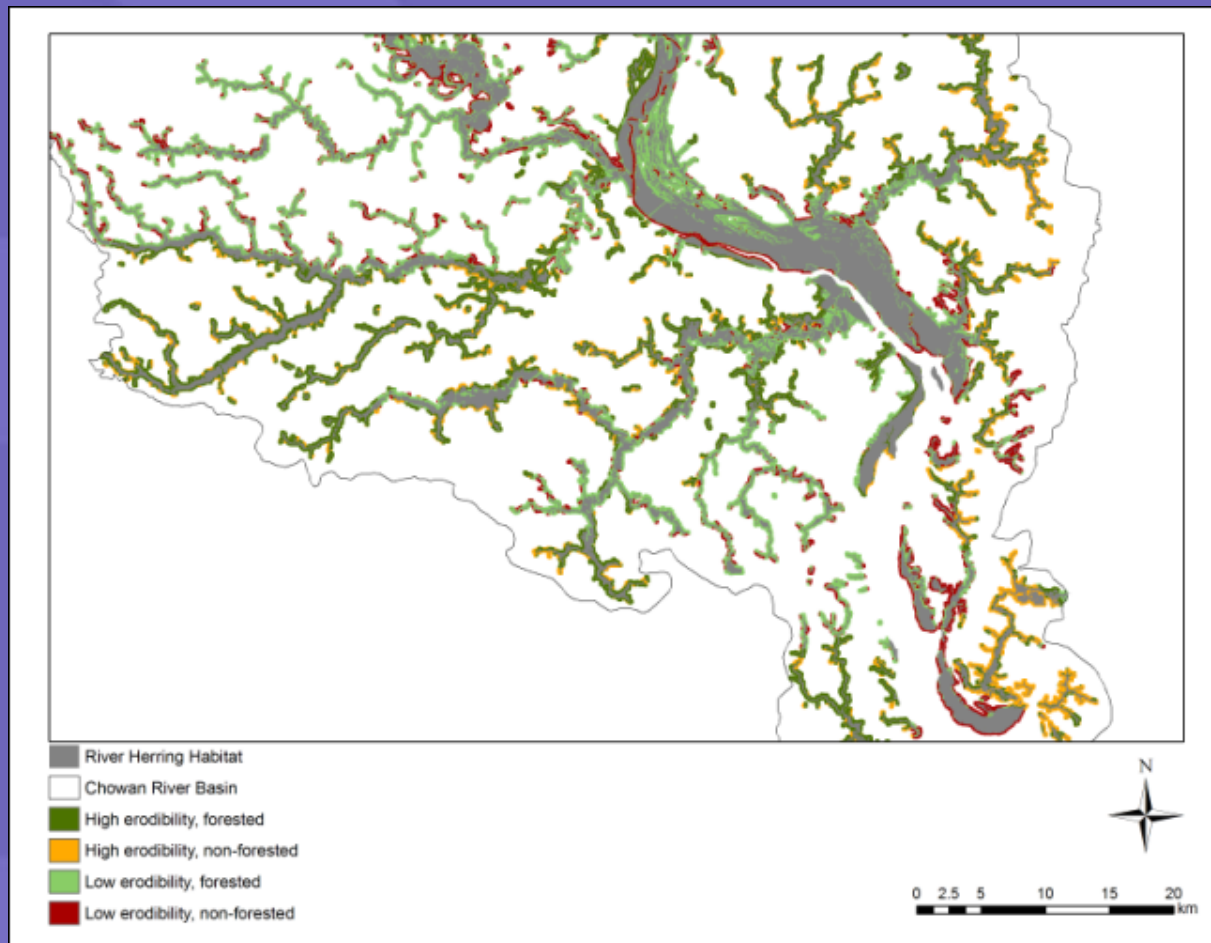


Photo: WRC

Opportunities

- Pending budget and legislation
- APNEP CCMP/CHPP Round 2
- Chowan Basinwide Plan Revision
- Albemarle Partnership
- DENR Planning Efforts (Pearsall)
- Climate Change Science Program

Chowan Core Wetland Reserve



ENVIRONMENTAL DEFENSE



Photo: ED



Photo: Rader