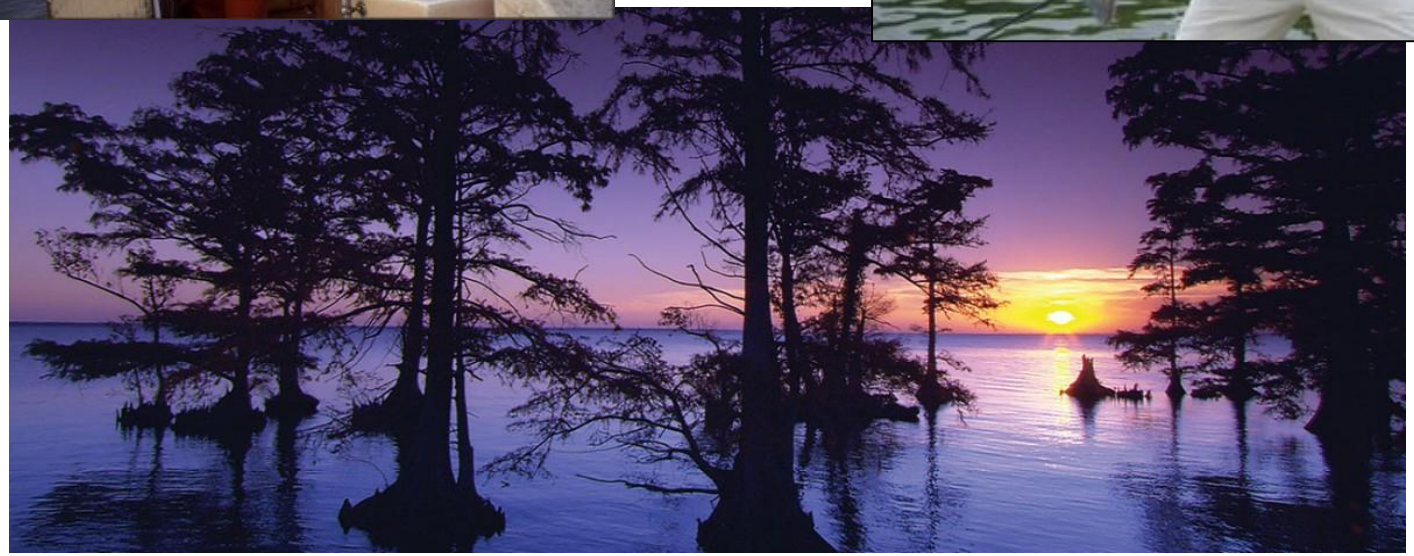
Nothing Compares
NORTH CAROLINA

Albemarle Sound System Fish and Fisheries

March 25, 2016

Department of Environmental Quality

Albemarle Sound System Fish and Fisheries



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Albemarle Sound System Fish and Fisheries

Fish Guilds

Freshwater	Diadromous	Marine spawning; low salinity nursery	Marine spawning; high salinity nursery	Inlet/estuarine spawning
Catfish (channel, blue)	River herring (alewife, blueback herring)	Atlantic croaker	Bluefish	Oyster
Perch (white, yellow)	Striped bass	Spot	Sheepshead	Blue crab
Bass	Atlantic sturgeon	Striped mullet		Red drum
Bluegill	Shad (American, gizzard)	Southern flounder		Spotted seatrout
	American eel			

Albemarle Sound Fish and Fisheries

2014 Commercial Landings

Species	Albemarle Sound	Chowan River	Pasquotank River	Perquimins River	Currituck Sound	Alligator River	Croatan Sound	Roanoke Sound	Total
Blue Crabs, Hard	12,611,716	***	956,459	64,467	2,256,268	2,423,736	907,862	298,311	19,518,819
Flounder, Southern	348,299		***		94,070	***	66,513	20,045	528,927
Catfishes	208,793	243,393	***	5,446	28,309				485,941
Blue Crabs, Peeler	190,947				48,412	50,525	57,600		347,484
Blue Crabs, Soft	254,886		***					30,076	284,962
Striped Mullet				5160			124027	36847	166,034
Shad, Gizzard		86678							86,678
Menhaden, Atlantic						***	60394	22017	82,411
Perch, White		8612	***		19655	280			28,547
Perch, Yellow				9064					9,064
Striped Bass		2665							2,665

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Table 2.4. Spawning and egg requirements for resident freshwater and anadromous fishes inhabiting coastal NC. [Sources: Funderburk et al. (1991), Pattilo et al. (1997), SAFMC (1998b), USFWS (lit. cited: reference titles beginning Species Life Histories and Environmental Requirements), Wannamaker and Rice (2000), NOAA (2001)]

	Salinity (ppt)		Temperature (C)		Dissolved oxygen (mg/l)		Flow (cm/s)	Other parameters
Species	Adult	Spawn/ Egg	Adult	Spawn/ Egg	Adult	Spawn /Egg	Spawning	Spawn/ Egg
Alewife	[S] 0-5	[S] 0-5 [O] 0-2		[S] 11-28 [O] 17-21	[S] >4	[S] >4	[O] slow current	SS <1000 mg/l
American shad	[S] 0-18	[S] 0-18	[S] 10-30	[S] 13.0-26.0	[S] >5		[S] 30-90	
Blueback herring	[S] 0-5	[S] 0-22 [O] 0-2		[S] 14-26 [O] 20-24	[S] >5		[O] strong current	SS <1000 mg/l
Striped bass	[S] 0-5	[S] 0.5-10	[S] 20-22	[S] 12-24, [O] ~18-22	[S] >5		[S] 30.5-500, [O] 100-200	
Yellow perch	[S] 0-13	[S] 0-2	[S] 6-30		[S] >5			SS <1000 mg/l
White perch	[S] 5-18	[S] 0-2	[S] 10-30	[S] 12-20	[S] >5			SS <100 mg/l
Sturgeon, Atlantic	[S] 0 to >30	[S] 0-5	[S] 0 to >30	[S] 11-20				
Sturgeon, Shortnose	[S] 0 to >30	[S] 0-5	[S] 0 to >30	[S] 5-15				

[S] = suitable, [O] = optimum

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Albemarle Sound Fish and Fisheries

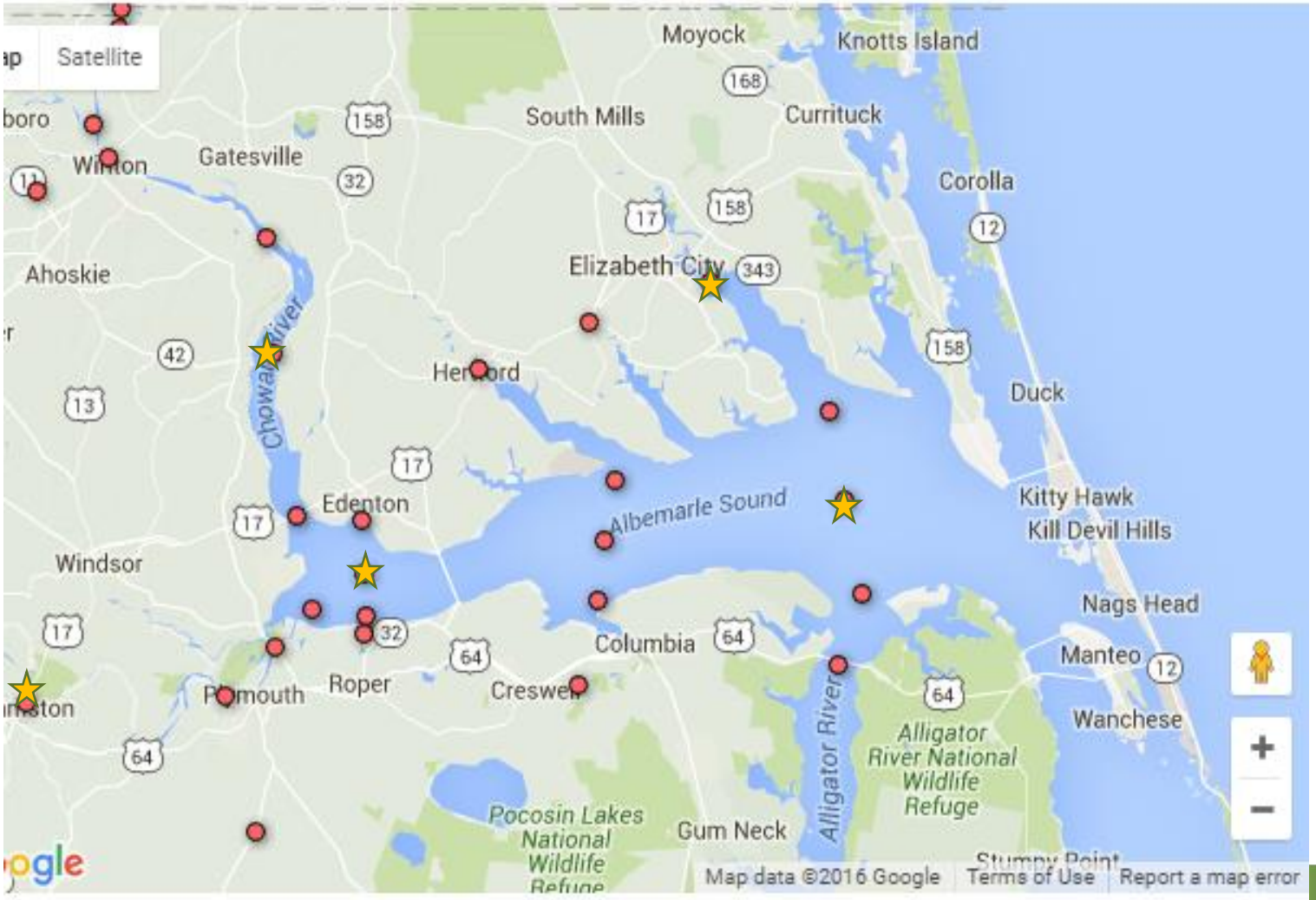
Table 2.8. Larval and juvenile water quality requirements for anadromous fish species inhabiting coastal NC. [USFWS (lit. cited: reference titles beginning Species Life Histories and Environmental Requirements), Funderburk et al. (1991), Pattilo et al. (1997), SAFMC (1998b), Wannamaker and Rice (2000), NOAA (2001)]

Species	Salinity (ppt)		Temperature (C)		Dissolved oxygen (mg/l)	
	Larvae	Juvenile	Larvae	Juveniles	Larvae	Juvenile
Alewife	[S] 0-3	[S] 0-5	[S] 8-31	[S] 10-28	[S] >5.0	[S] >3.6
American shad	[S] 0-18	[S] 0-30	[S] 15.5-26.1	[S] 15.6-23.9		
Blueback herring	[S] 0 to 18	[S] 0-2	[S] 14-28	[S] 10-30	[S] >5.0	[S] >3.6
Striped bass	[S] 1.0-10.5	[S] 0-16	[S] 12-23	[S] 10-27		
Sturgeon, shortnose	[S] 0-5	[S] 0-5	[S] 5-15	[S] 0 to >30		
Sturgeon, Atlantic	[S] 0-5	[S] 0 to >30	[S] 11-30	[S] 0 to >30		
Yellow perch	[S] 0-2	[S] 0-5	[S] 10-30	[S] 10-30		[S] >5
White perch	[S] 0-2	[S] 0-3	[S] 12-20	[S] 10-30		[S] >5

[S] = suitable, [O] = optimum

Albemarle Sound Fish and Fisheries

Map of selected DWR Ambient Stations in Albemarle Sound



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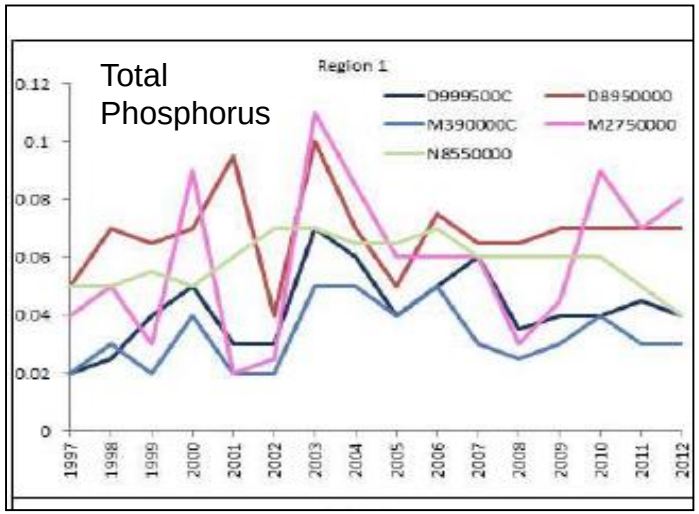


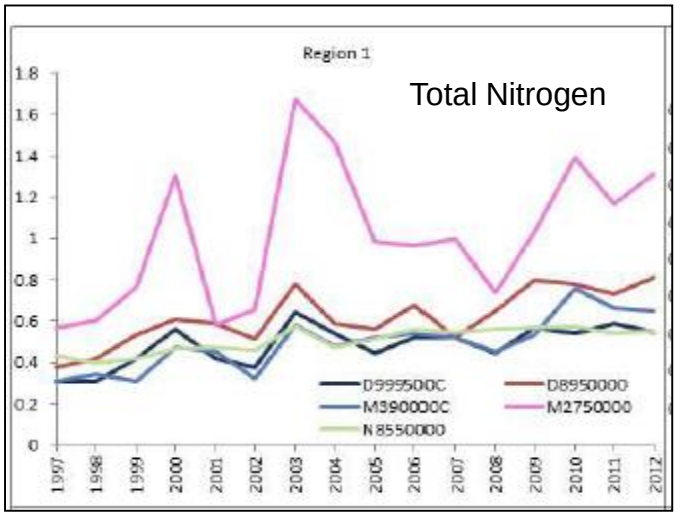
Light blue = Roanoke R. near Williamston

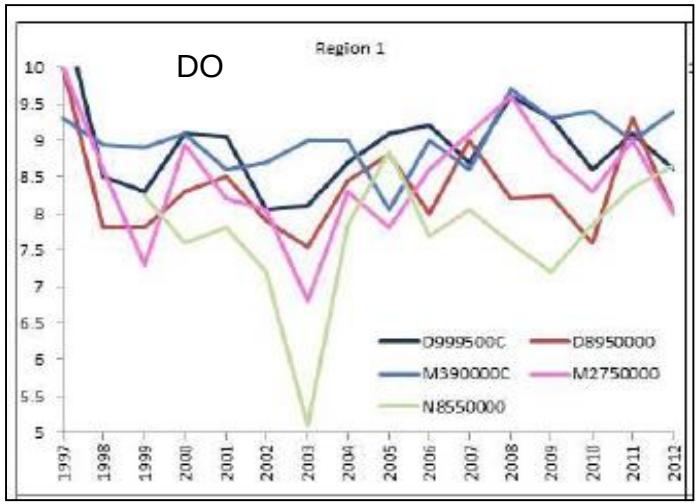
Dark blue = Albemarle Sound near Edenton

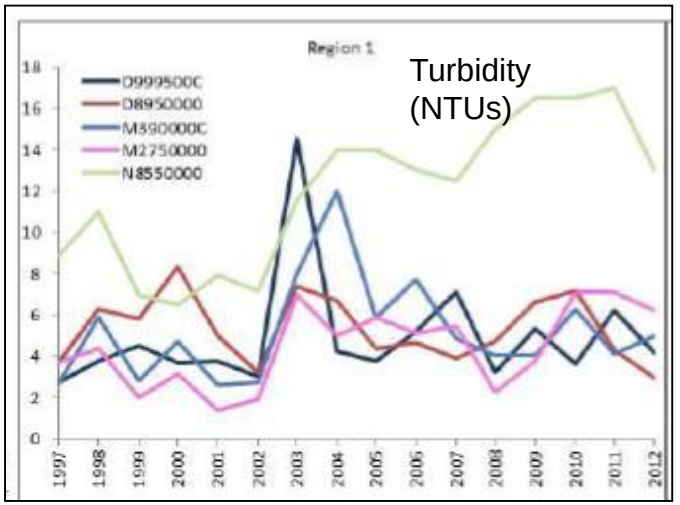
Med blue = Albemarle Sound near Frog Island

Red = Chowan R. near Colerain

Pink = Pasquotank River near Elizabeth City







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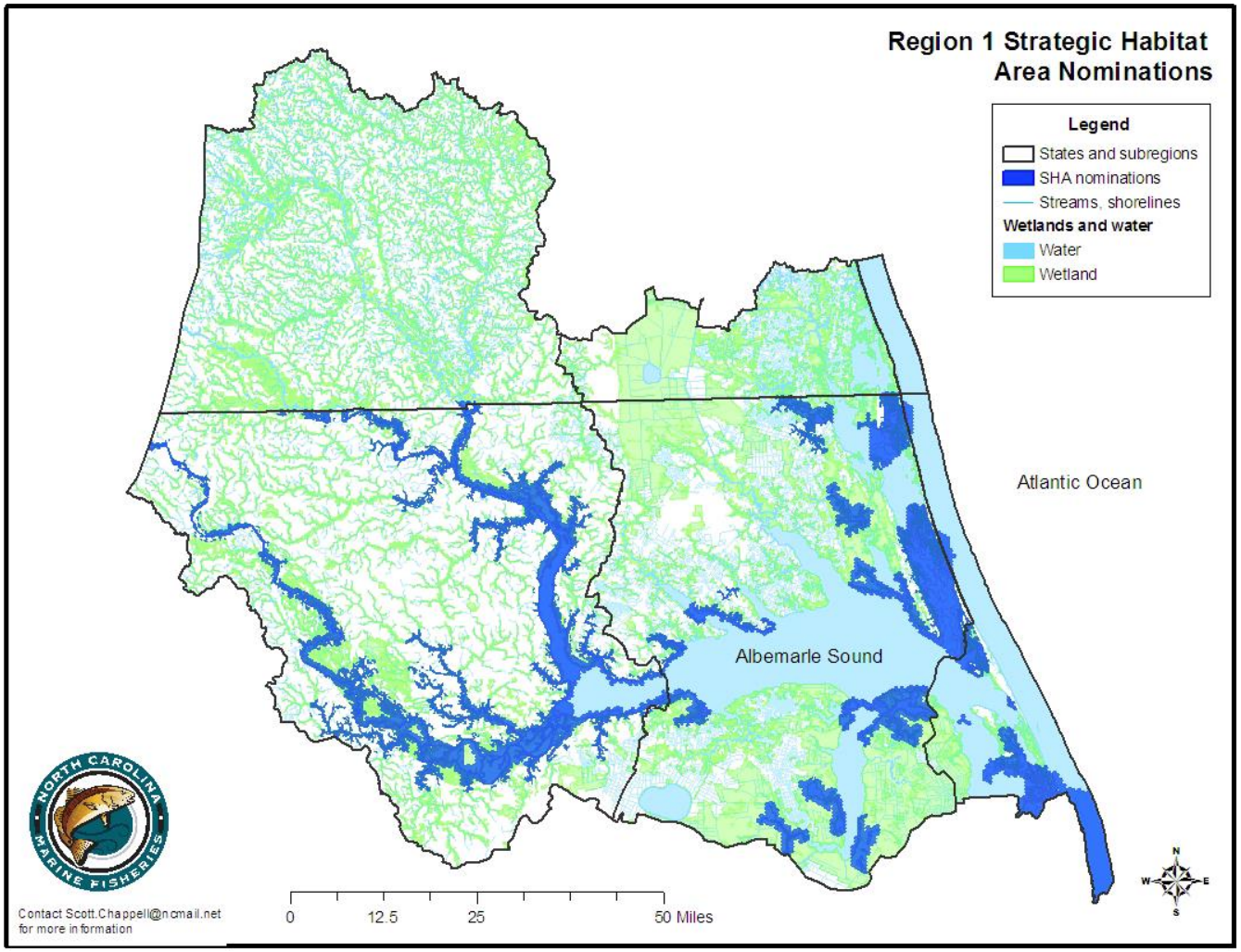

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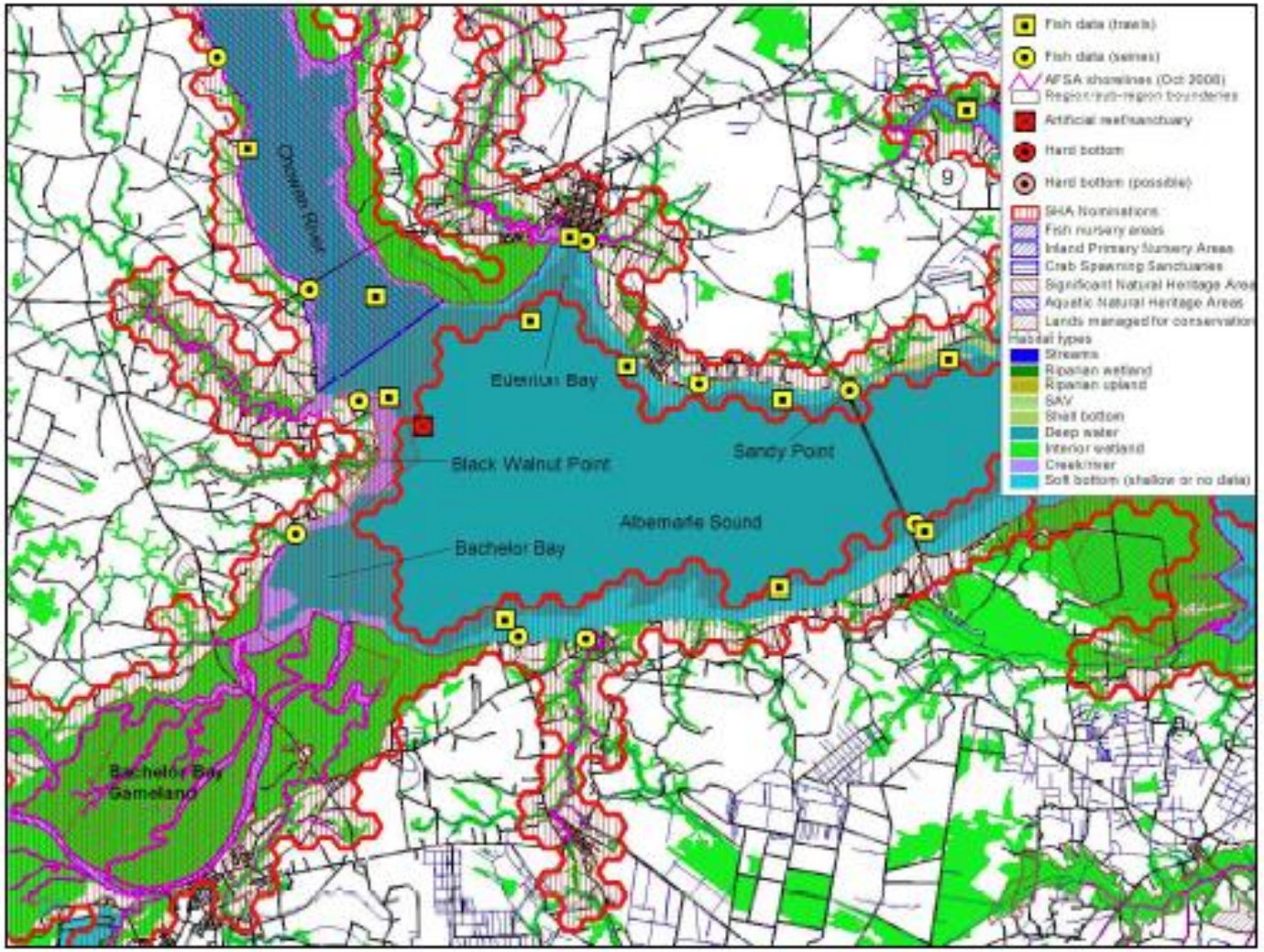

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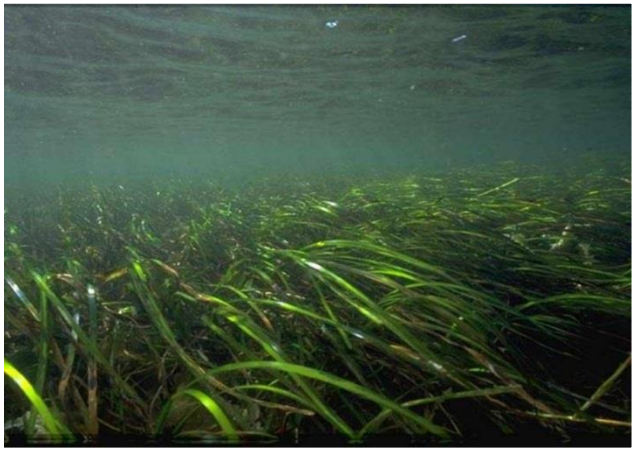
Sea Grant Fellowship – Tim Ellis



- Examined relationship juvenile fish distribution and abundance in A.S. and habitat and water quality variables
- Used Prg. 100 juvenile fish trawl data (63 stations) 2004-2007
- Striped bass, blueback herring, white perch, spot, Atlantic croaker distribution and abundance
- Species richness and diversity
- Temperature, salinity, DO, wetland edge, SAV, substrate type, alteration score, shallow water (<6ft)

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- 64 species, but only 11 species found in at least 10% of samples – all estuarine (spot, croaker, bay anchovy)
- Distribution - juvenile striped bass widely distributed but more concentrated in western Albemarle Sound; blueback herring almost absent from eastern sound; white perch most concentrated in the Chowan River; spot most concentrated in northern tribs, croaker in eastern sound
- Blueback herring, white perch distribution, species richness and diversity declined DO < 4 mg/l.
- Striped bass and spot distribution declined DO < 6 mg/l
- Blueback herring, striped bass, croaker abundance declined with increasing alteration scores
- Not positive correlation with SAV coverage or wetland shoreline

Albemarle Sound Fish and Fisheries

Water Quality Concerns

- Reports of blue crabs dying in crab pots due to low DO events
- Algal blooms in Chowan River – reported in 2015
- Anadromous fish more sensitive to water quality
- Anadromous fish spawning areas designated by MFC but no water quality protections
- Water quality standards not targeted for SAV, yet SAV critical for many Albemarle fish species

Albemarle Sound Fish and Fisheries

QUESTIONS?

Contact Information:
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Download CHPP:
http://portal.ncdenr.org/web/mf/habitat/chpp/downloads