30 Years of Research in the ACE Basin

by the Estuarine Finfish Section of SCDNR

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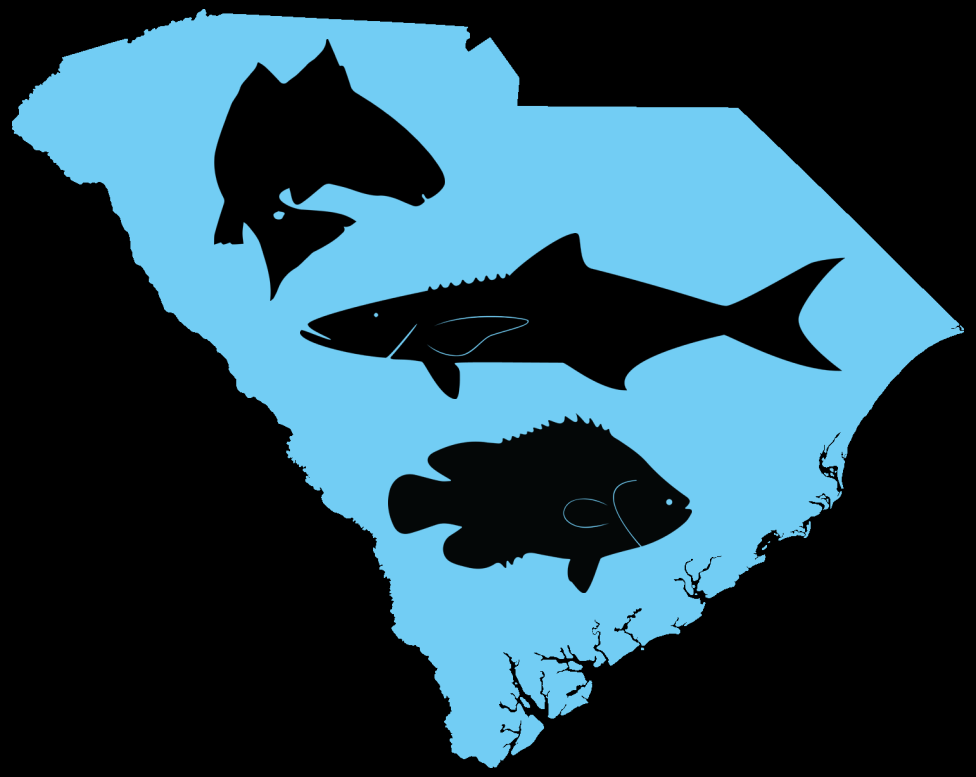
Fisheries Biologist
SCDNR

The Estuarine Finfish Section



Mission

To provide useful information for the sustainable management of SC's inshore fish species

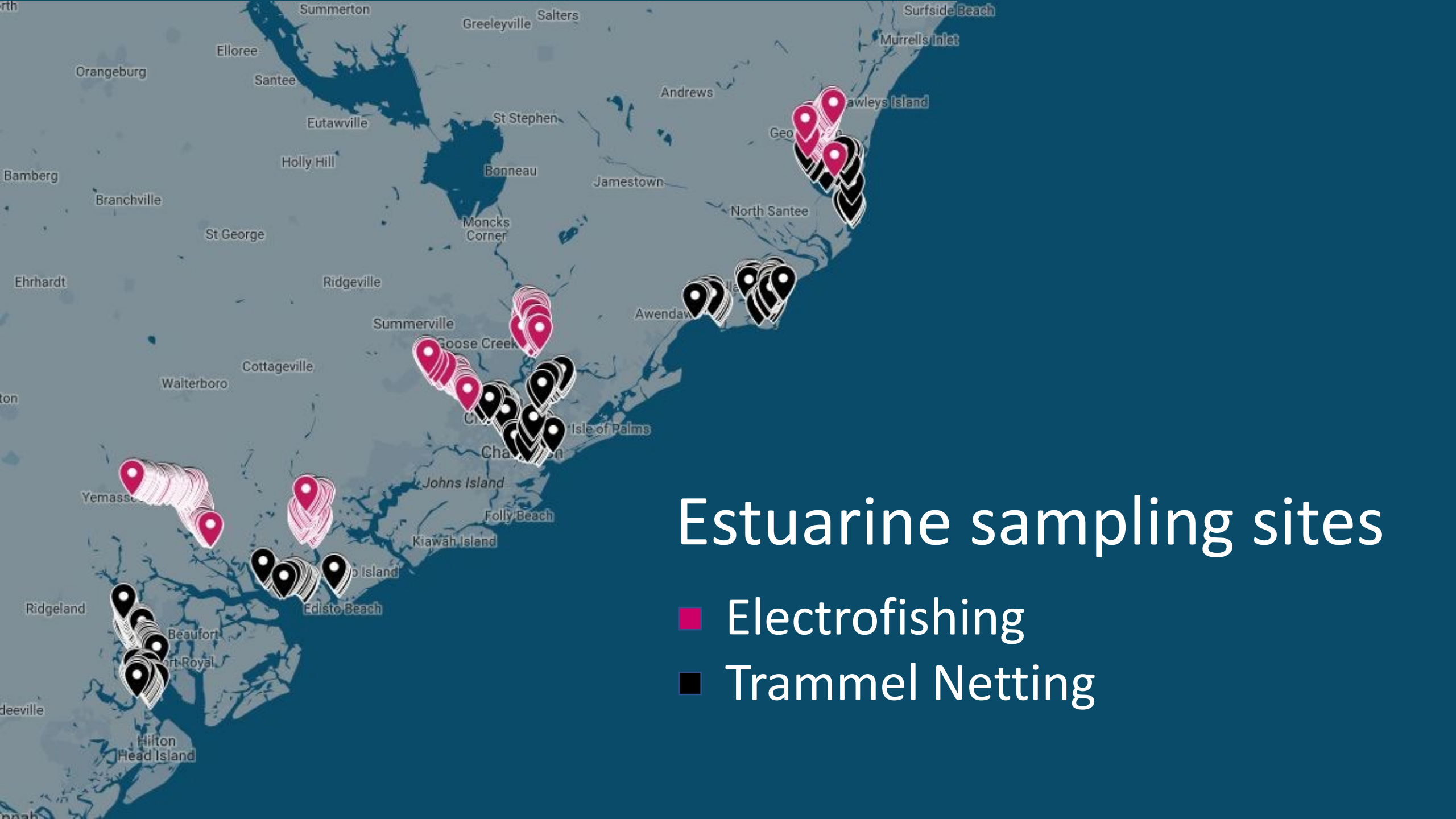
Long Term Monitoring

Trammel Netting

Since 1990

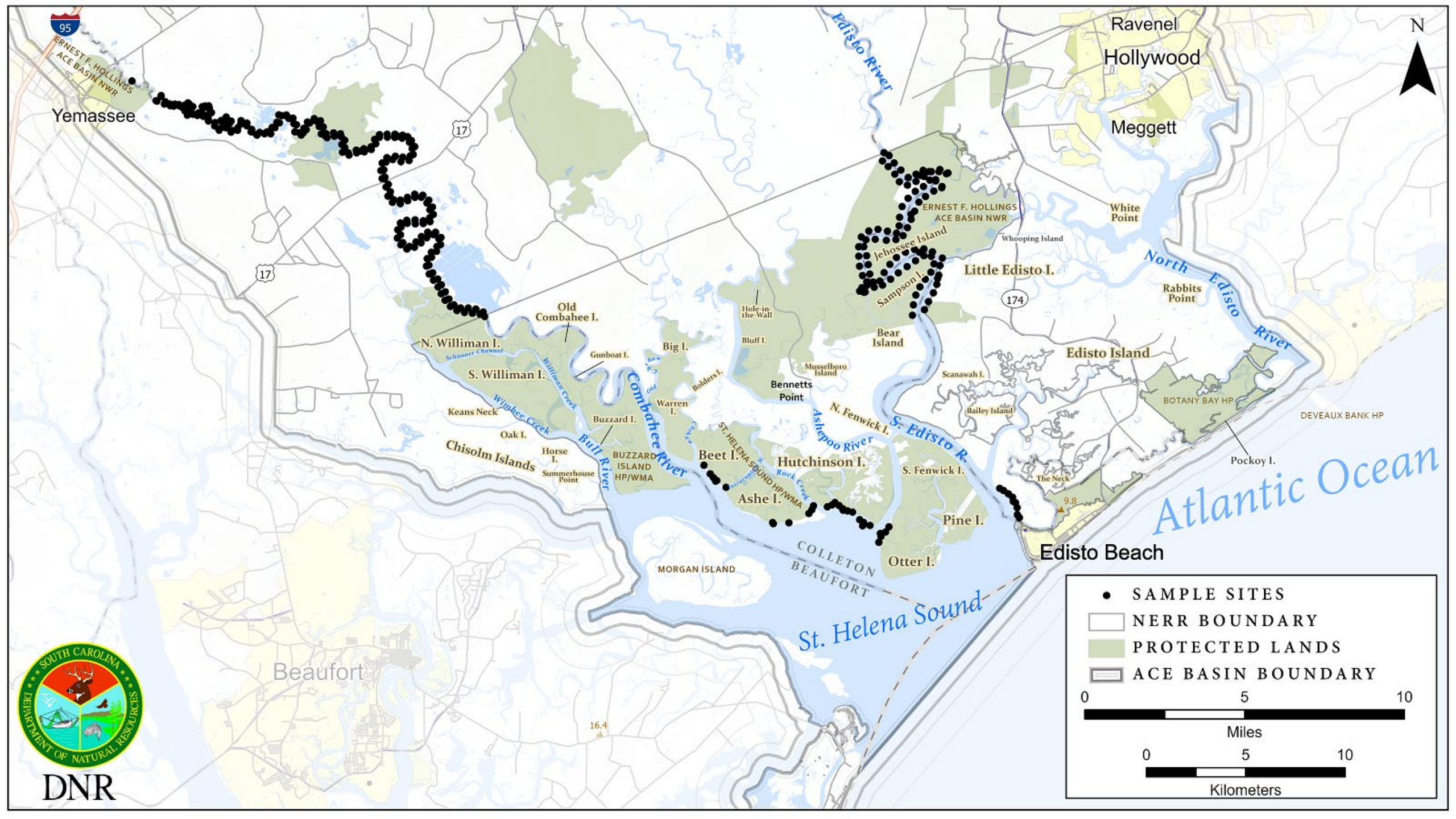
Electrofishing

Since 2001



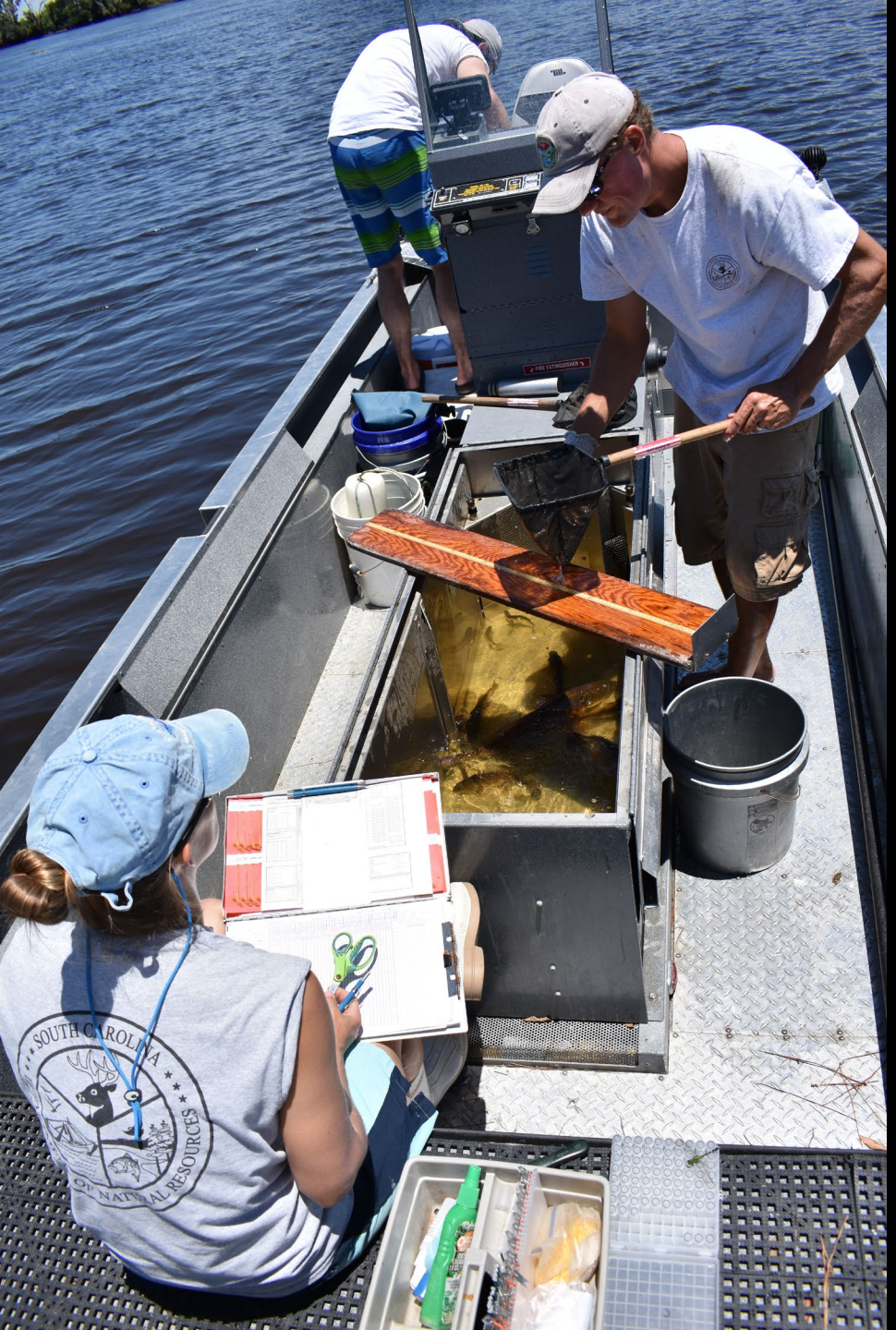
Estuarine sampling sites

- Electrofishing
- Trammel Netting


Yemassee
ERNEST F. HOLLINGS ACE BASIN NWR
95
17
17
Ravenel
Hollywood
Meggett
N
Edisto River
ERNEST F. HOLLINGS ACE BASIN NWR
White Point
Whooping Island
Jehossee Island
Sampson I.
Little Edisto I.
North Edisto River
174
Rabbits Point
Old Combahee I.
N. Williman I.
Schooner Channel
Williman Creek
Gunboat I.
S. Williman I.
Big I.
Hole-in-the-Wall
Bluff I.
Bear Island
Musselboro Island
Bolders I.
Bennetts Point
Edisto Island
Scanawah I.
Bailey Island
BOTANY BAY HP
DEVEAUX BANK HP
Keans Neck
Wimbee Creek
Buzzard I.
Oak I.
Chisolm Islands
Horse I.
Summerhouse Point
Bull River
BUZZARD ISLAND HP/WMA
Combahee River
Warren I.
Beet I.
ST. HELENA SOUND HP/WMA
Ashepoo River
N. Fenwick I.
S. Edisto R.
Hutchinson I.
S. Fenwick I.
Rock Creek
Ashe I.
Pine I.
Otter I.
Pockoy I.
The Neck
9.8
Atlantic Ocean
Edisto Beach
COLLETON
BEAUFORT
MORGAN ISLAND
St. Helena Sound
Beaufort
16.4
SAMPLE SITES
NERR BOUNDARY
PROTECTED LANDS
ACE BASIN BOUNDARY
0
5
10
Miles
0
5
10
Kilometers
SOUTH CAROLINA DEPARTMENT OF NATURAL RESOURCES
DNR

30 years of Trammel Netting

- 86 species of fish, turtles, and crabs
- Over 100,000 fish tagged statewide
- 33,000+ recaptures
- 7,276 fish tagged in ACE (84% Red Drum)



20 years of Electrofishing

- 101 species
- Co-occurrence of fresh and saltwater species
- Rivers are very dynamic (rainfall vs drought)

Top 20 Species from Trammel Nets

Common Name	Total # Caught
Spotted Seatrout	15,609
Spot	8,028
Red Drum	7,191
Striped Mullet	5,930
Blue Crab	4,484
Southern Flounder	3,267
Hardhead Catfish	2,880
Atlantic Stingray	2,060
Atlantic Croaker	1,535
American Harvestfish	1,414
Diamondback Terrapin	1,405
Horseshoe Crab	1,195
Southern Kingfish	1,086
Bonnethead	910
Atlantic Menhaden	586
Pinfish	554
Striped Burrfish	524
Atlantic Sharpnose Shark	515
Black Drum	510
Longnose Gar	447

Top 20 Species from Electrofishing

Common Name	Total # Caught
Striped Mullet	57,198
Inland Silverside	24,889
Spot	24,543
Atlantic Menhaden	20,718
Bay Anchovy	8,104
White Catfish	5,302
Longnose Gar	4,943
Mummichog	4,321
Silver Perch	3,230
Blue Catfish	2,793
Red Drum	2,719
Largemouth Bass	2,481
Redbreast Sunfish	2,366
Atlantic Croaker	2,338
Western Mosquitofish	1,855
American Eel	1,665
Southern Flounder	1,584
Common Carp	1,396
Bowfin	1,358
Bluegill	961

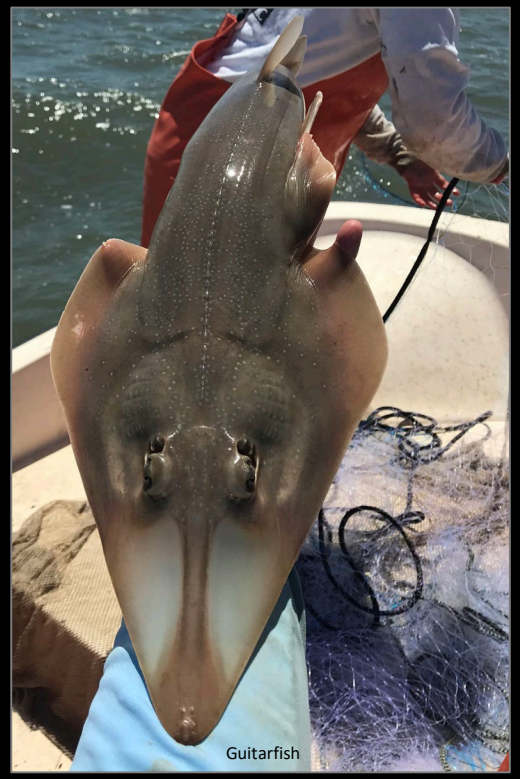
DNR

Pig Fish

Spotted Eagle Ray

Clearnose Skate

Striped Burrfish


Guitarfish

Kemps Ridley

Mangrove Snapper

Diamondback Terrapin

Gaff-topsail Catfish

We take data on every animal we catch…
Can you identify each these animals?

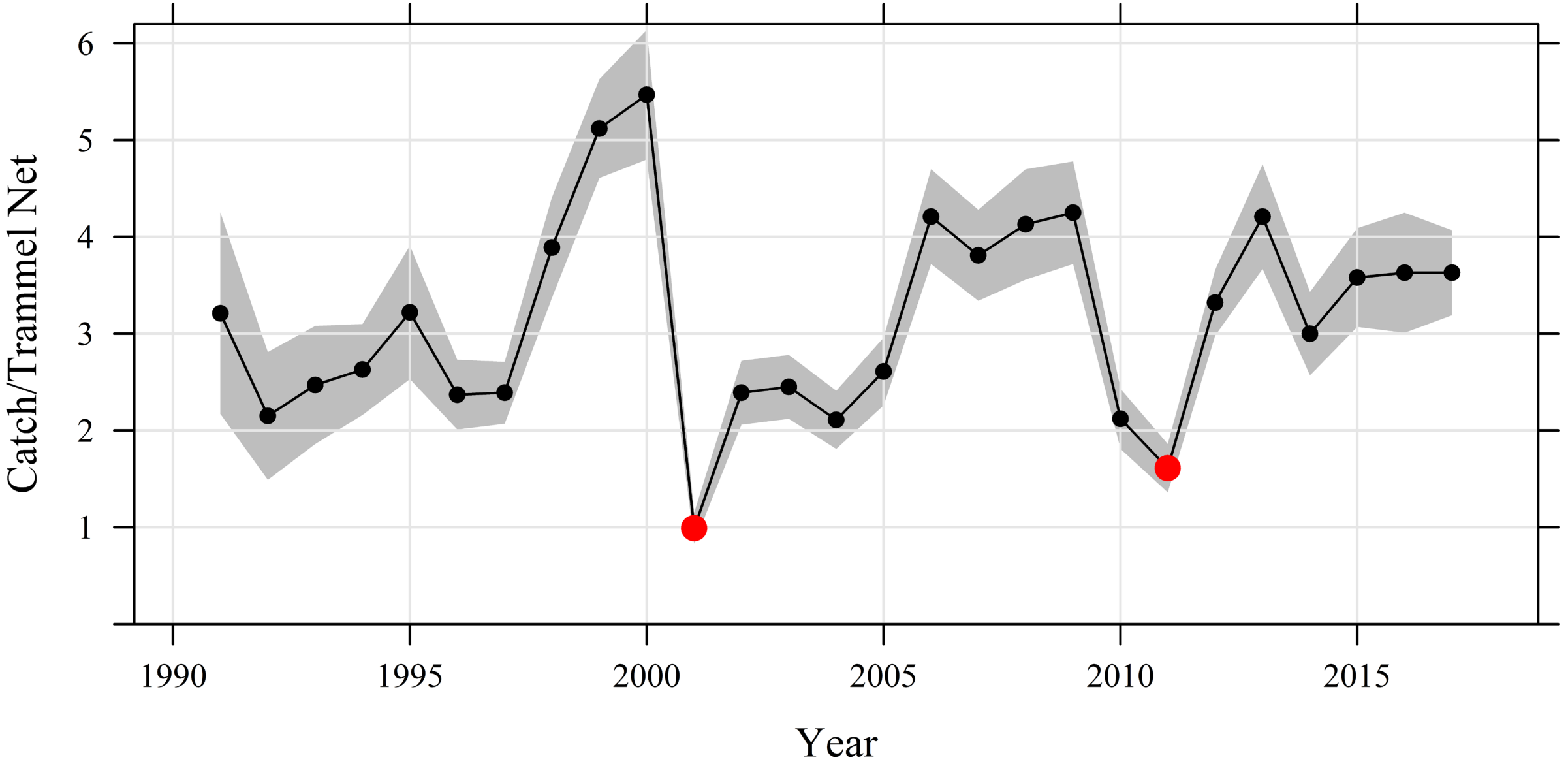
Juvenile Warmouth

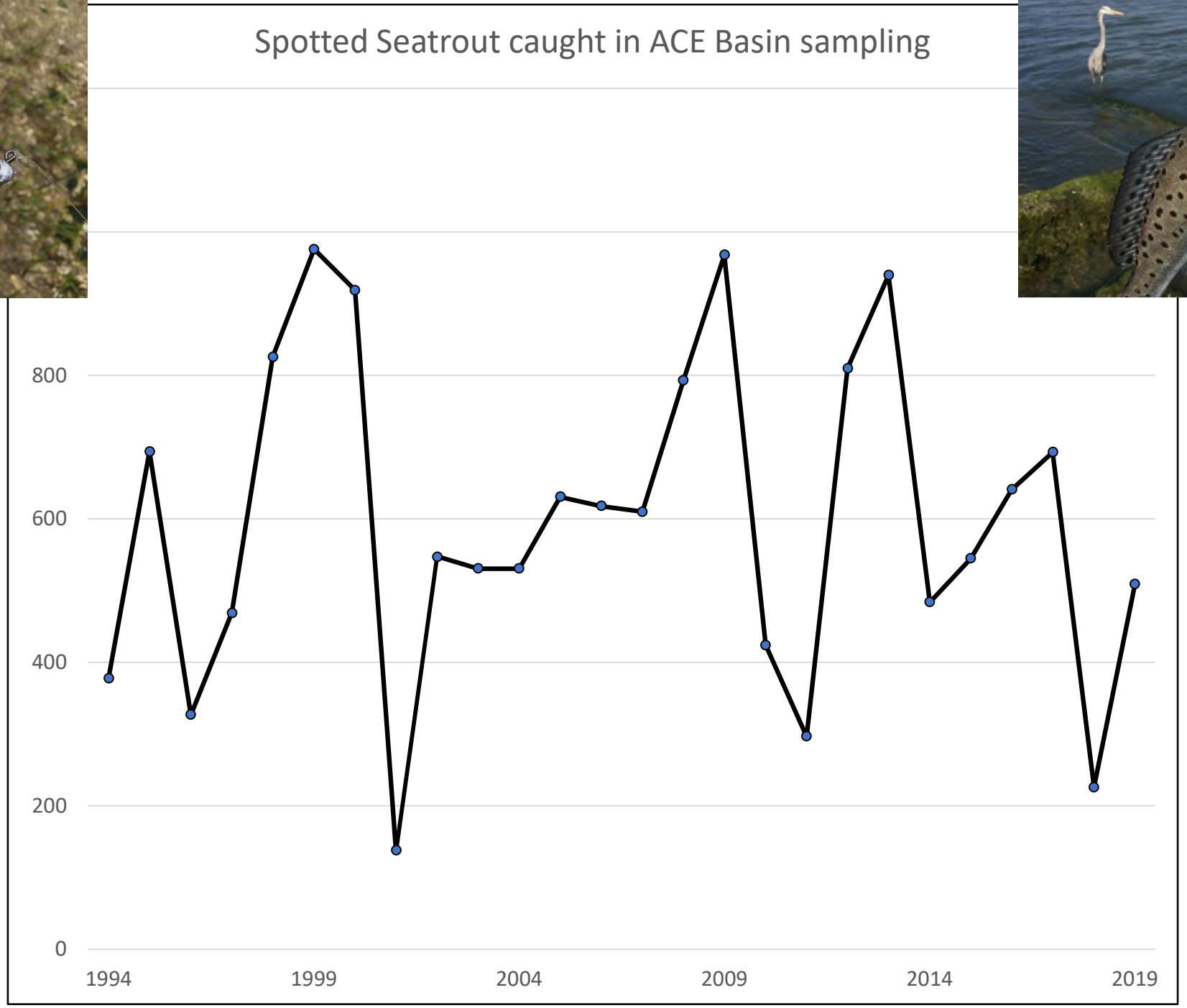
DEPARTMENT

Ship's Wheel

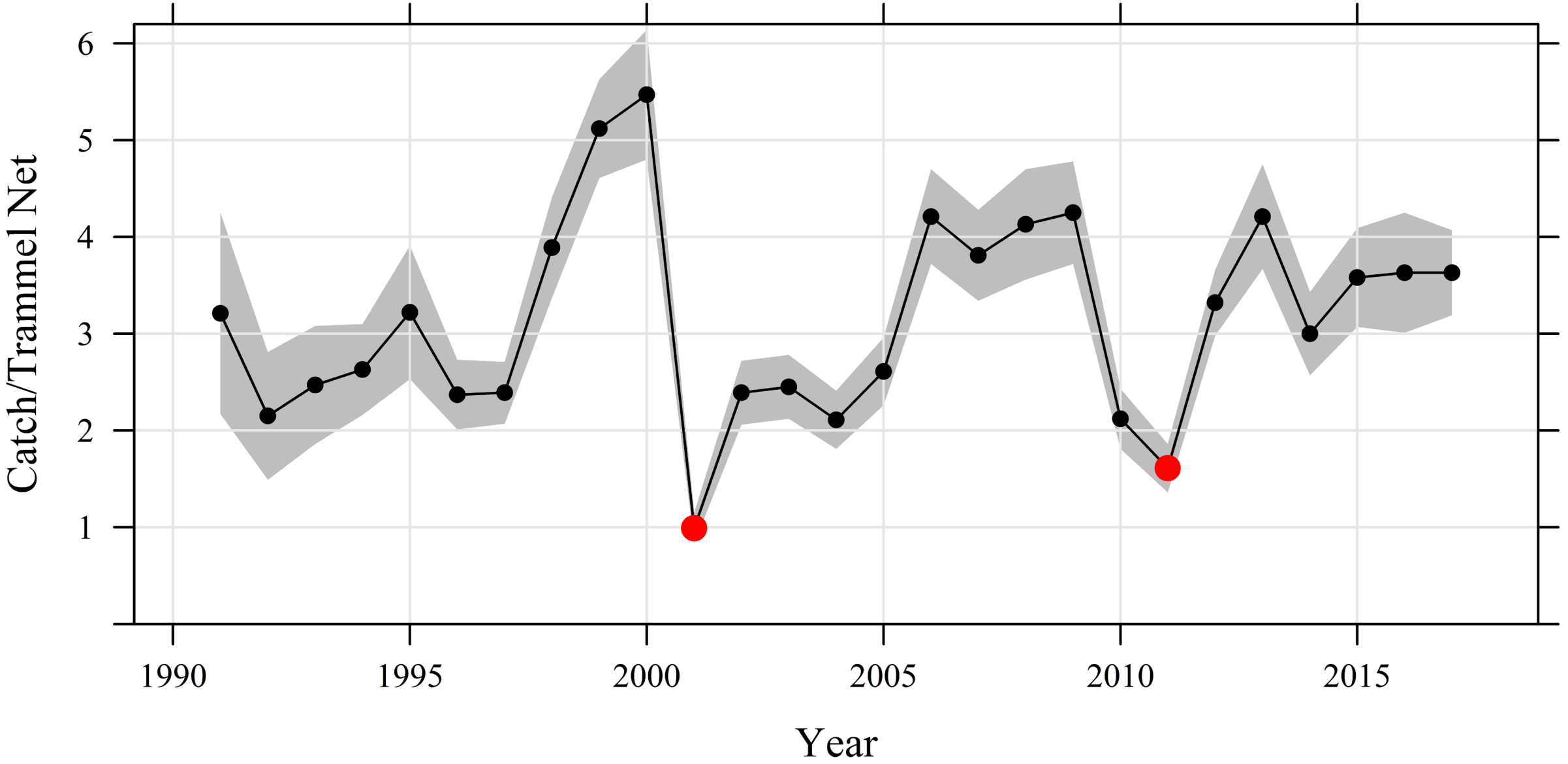
Case Study: Seatrout Cold Kills 2018

Spotted Seatrout Annual Relative Abundance

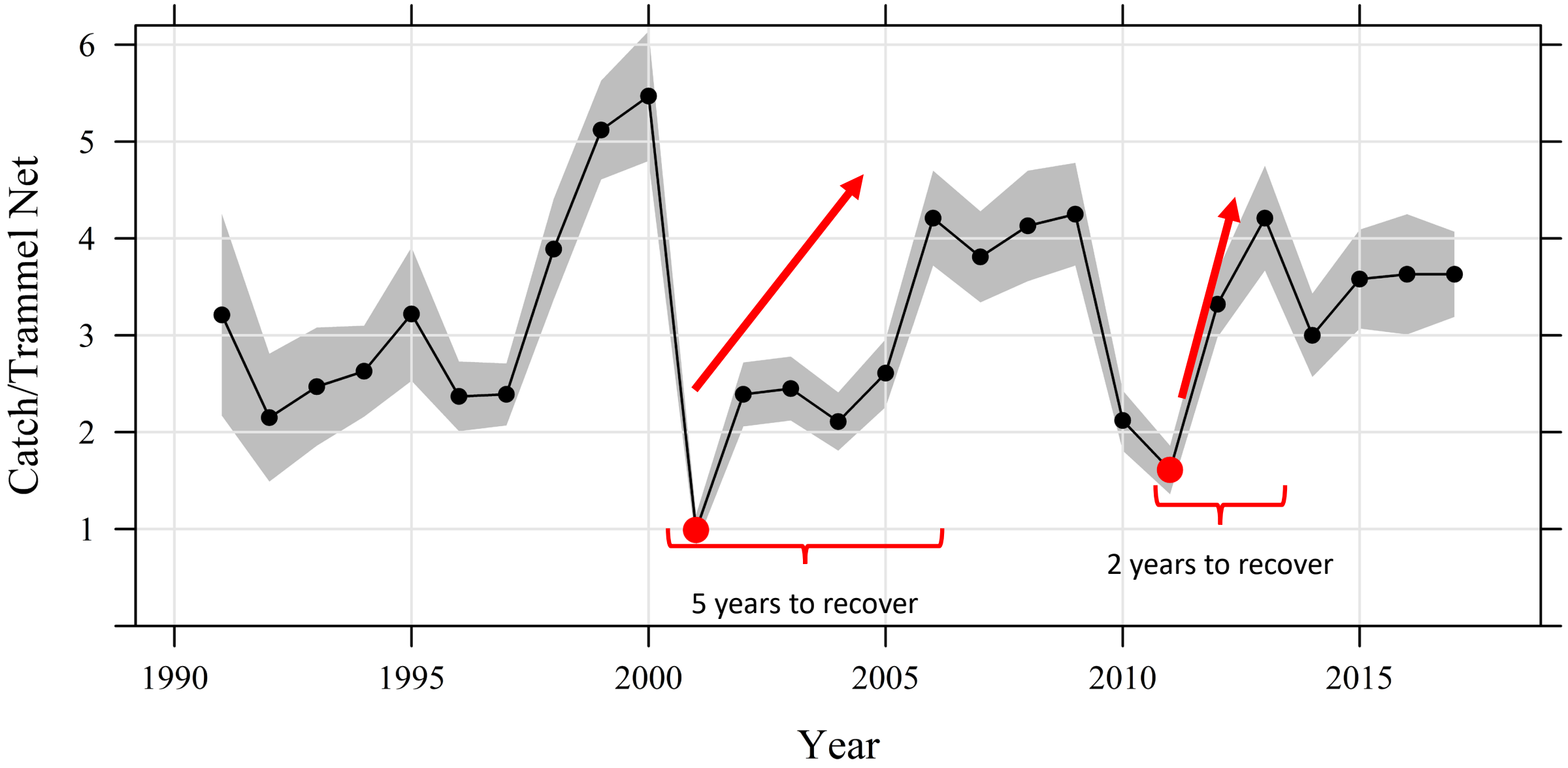



Spotted Seatrout caught in ACE Basin sampling
800
600
400
200
0
1994
1999
2004
2009
2014
2019

Spotted Seatrout Annual Relative Abundance



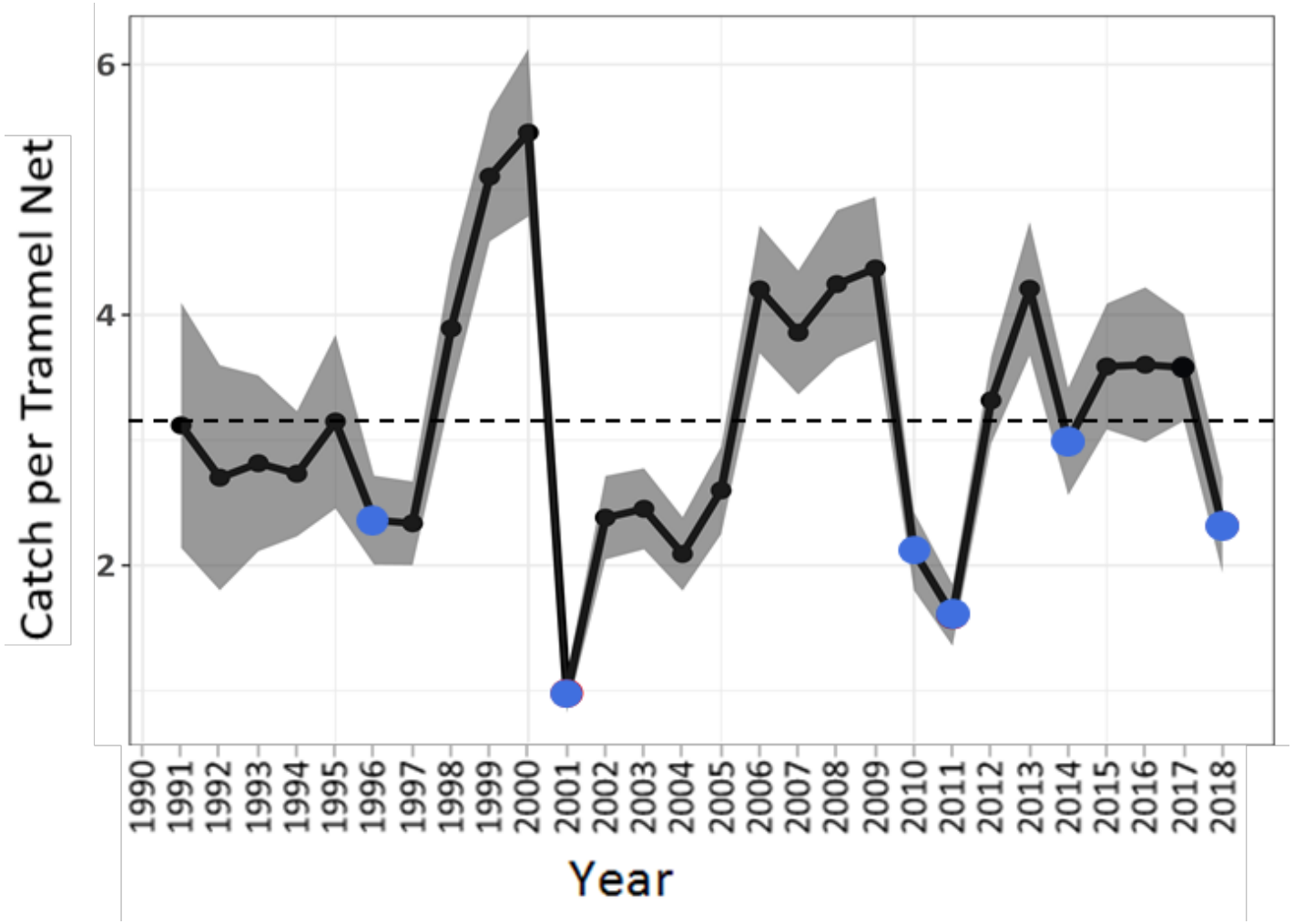
Spotted Seatrout Annual Relative Abundance



Effect on Abundance

Largest decreases:

- 2001 – 82% decrease
- 2010 – 52% decrease
- 2018 – 35% decrease
- 2014 – 29% decrease
- 1996 – 25% decrease
- 2011 – 24% decrease



Conclusions

- Largest decreases in abundance follow cold winters, if temperature falls below 7°C (44.6°F)
- Long-term monitoring allows us to predict the effects of cold weather on Spotted Seatrout abundance
- Seatrout loss due to cold weather in 2018 was not as extreme as originally anticipated

Thank you!

Funding Sources:

- NOAA National Marine Fisheries Service
- SCDNR SRFAC (Saltwater License Sales)
- SCDNR SWG (State Wildlife Grant)
- MIPI (Morgan Island Funds)

ACE Basin
National Estuarine Research Reserve

SOUTH CAROLINA DEPARTMENT OF NATURAL RESOURCES