Fisheries Committee

Meeting Agenda
Monday, October 12, 2020

10:00 am – 12:00 pm
Commission Room/ZOOM
Centennial Campus, Raleigh

Welcome/Open Meeting ..... *Tommy Fonville*

Albemarle Sound/Roanoke River Striped Bass Management ..... *Jeremy McCargo*

Veterans Fish for Free in Mountain Heritage Trout Waters Proposal ..... *Doug Besler*

Reservoir Habitat Enhancement Initiative ..... *Mark Fowlkes*

French Broad River Muskellunge Research ..... *Amanda Bushon*

Management using F1 Bass ..... *Lawrence Dorsey*

Additional Topics of Interest/Discussion ..... *Tommy Fonville*

Adjourn ..... *Tommy Fonville*

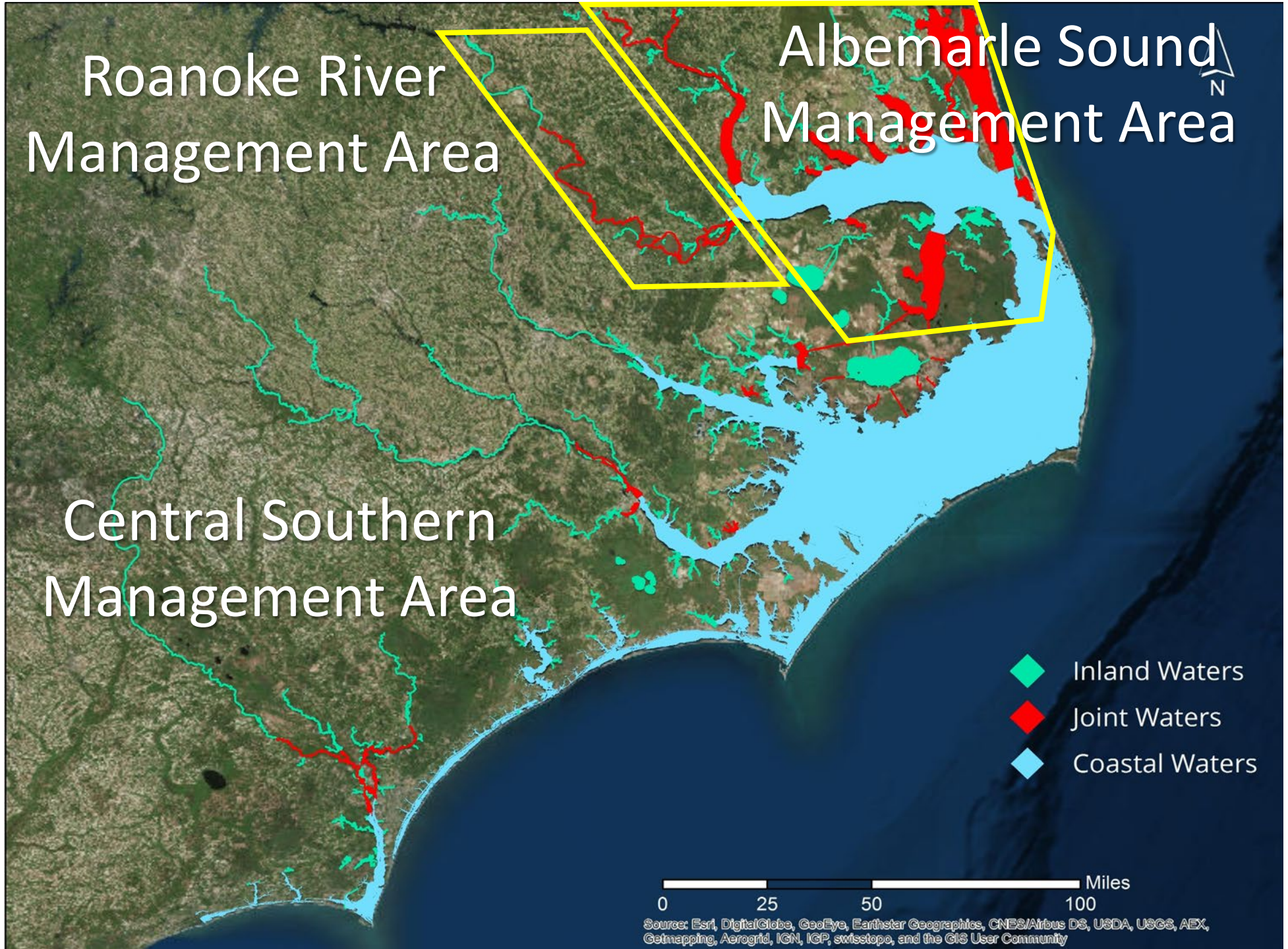
Albemarle-Roanoke Striped Bass Management Update

Jeremy McCargo
Anadromous Research Coordinator

Katy Potoka, Chris Smith, and Chad Thomas

Presentation Objectives

- Provide a status update for the Roanoke River-Albemarle Sound population
- Discuss 2021 harvest season modifications for the Roanoke River
- Outline steps for development of the Striped Bass Fishery Management Plan with the NC Division of Marine Fisheries



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Management Oversight

- Migratory Striped Bass in North Carolina are managed through a collaborative process between the Wildlife Resources Commission, the NC Division of Marine Fisheries, and the Atlantic States Marine Fisheries Commission.

- The NC Fisheries Reform Act of 1997 mandated that the NC Division of Marine Fisheries and the Marine Fisheries Commission develop formal Fishery Management Plans for commercially and recreationally significant species or fisheries, which includes Striped Bass.

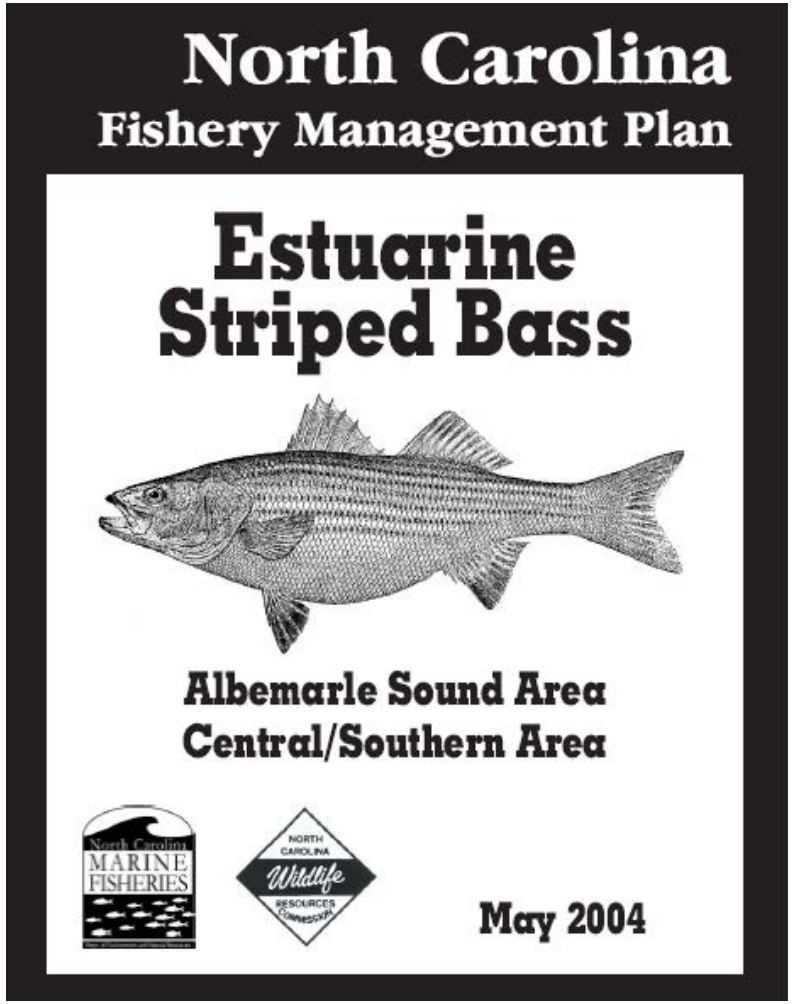
- Each Fishery Management Plan developed by NC Division of Marine Fisheries staff is voted on for approval by the Marine Fisheries Commission.

NCWRC Involvement

- The Wildlife Resources Commission is not statutorily required to approve the Fishery Management Plan for Striped Bass.
- WRC field staff serve on the joint Plan Development Team. They assist with development of stock assessments, write sections of the Fishery Management Plan, and recommend management actions.
- Concurrent with Marine Fisheries Commission actions, the WRC board reviews the draft Fishery Management Plan, selects their preferred management measures, considers its support of the plan's final recommendations, and initiates rulemaking as required.

Development History

NC Estuarine Striped Bass Fishery Management Plan



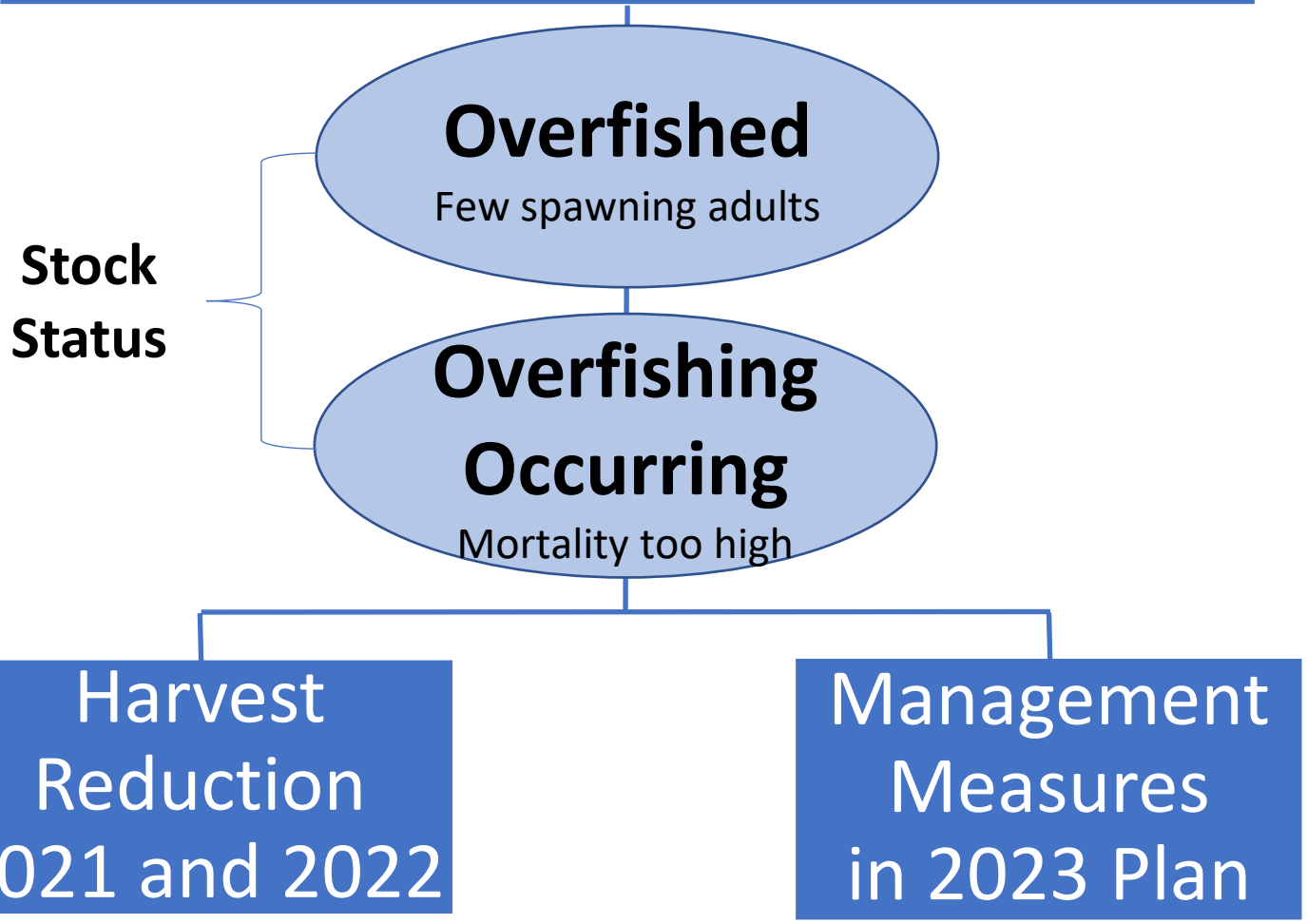
- **Original Striped Bass Plan approved** - May 2004
- **First update to the Plan (Amendment 1)** - May 2013
  - Revision to Amendment 1 to reduce the Albemarle Sound-Roanoke River harvest quota - November 2014
  - Revision to Amendment 1 to implement no-possession of Striped Bass in the Central Southern Management Area - March 2019
  - Revision to Amendment 1 to reduce the Albemarle Sound-Roanoke River quota - effective January 2021

  NOTE: Revisions are considered "Adaptive Management Measures" and do not require formal approval by the Marine Fisheries Commission
- **Second update to the Plan (Amendment 2)**
  - *in progress* expected completion February 2022

As outlined in the NC Fishery Reform Act of 1997, each Fishery Management Plan must include:

- A formal, peer-reviewed stock assessment
- Characterization of the fishery
- Habitat considerations
- Identified issues & concerns
- Management strategies and recommendations

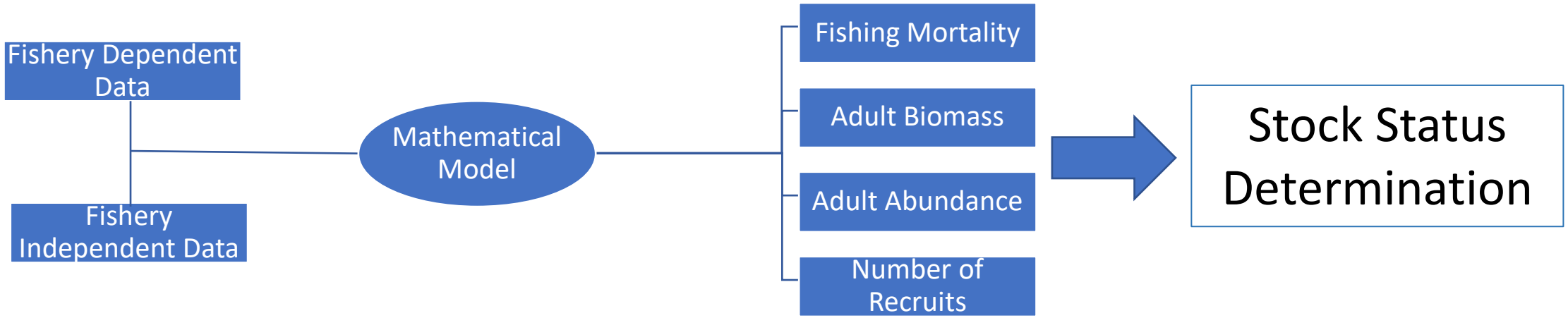
Albemarle-Roanoke Striped Bass Stock Assessment



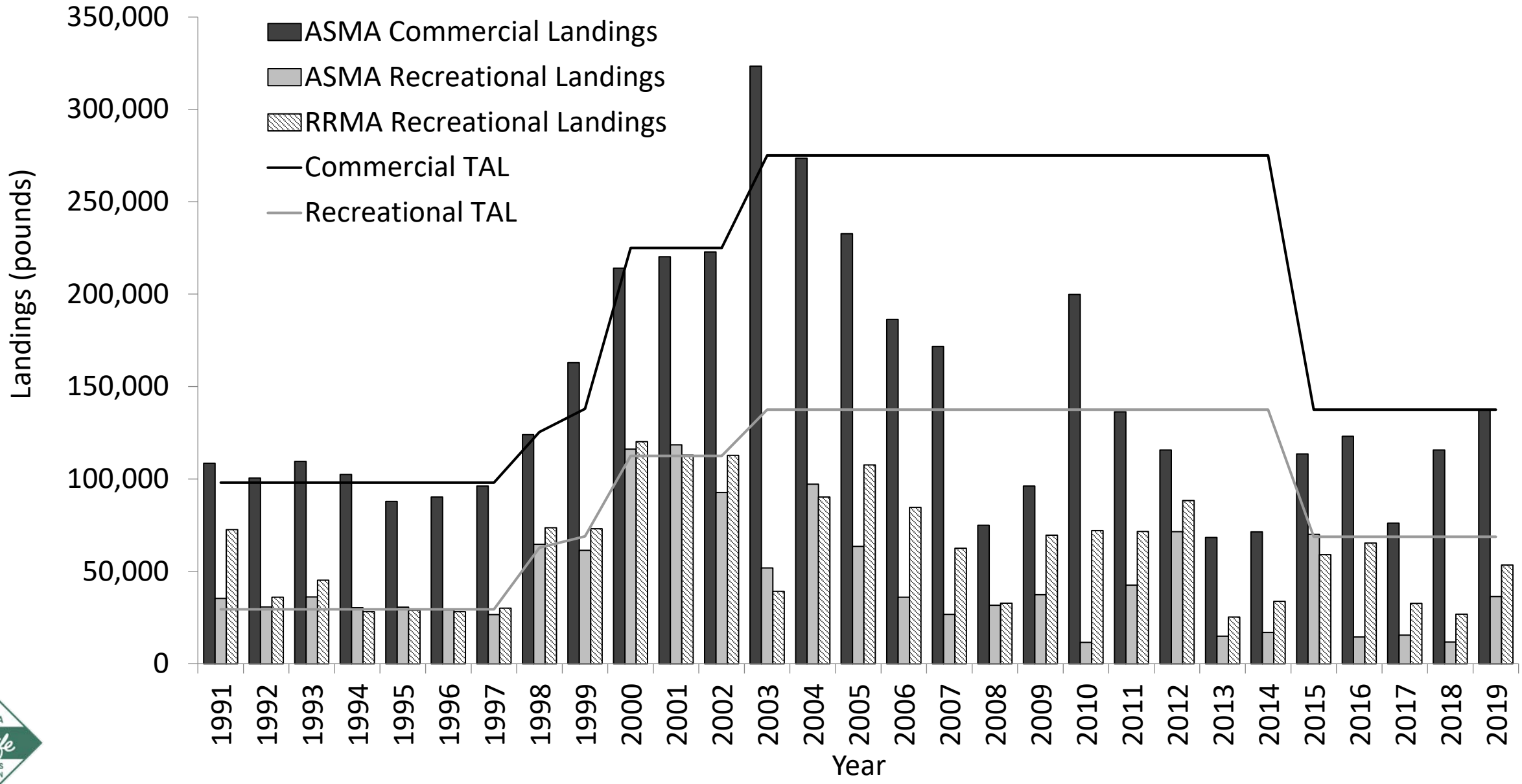
Stock Assessment Data

- Time Series 1991-2017
- Commercial and recreational landings
- Dead discards

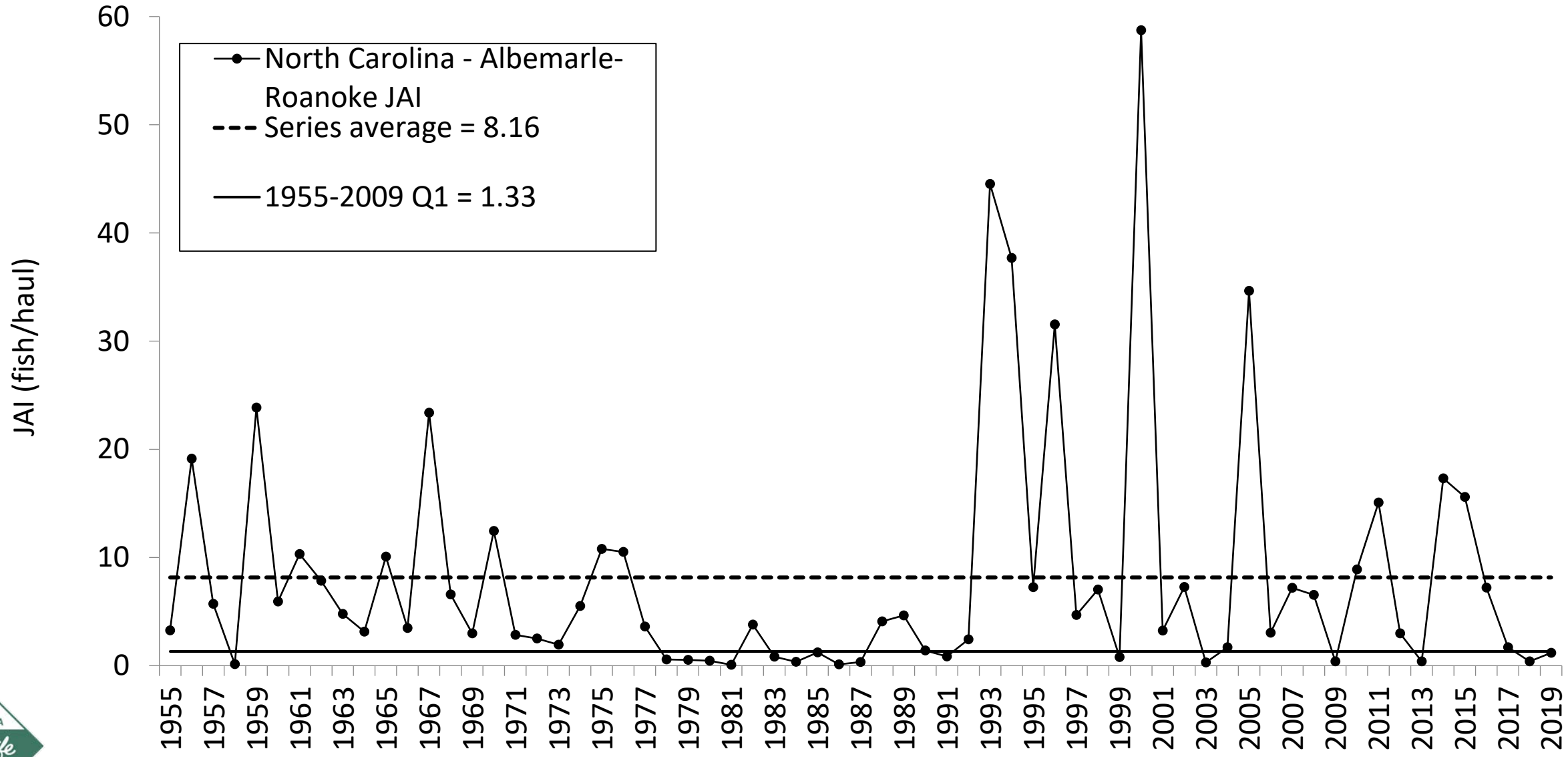
- DMF Juvenile Abundance Index
- DMF gillnet surveys spring and fall/winter
- WRC Roanoke River electrofishing survey
- Length and age information



Albemarle-Roanoke Striped Bass Harvest Data



NCDMF Juvenile Abundance Index



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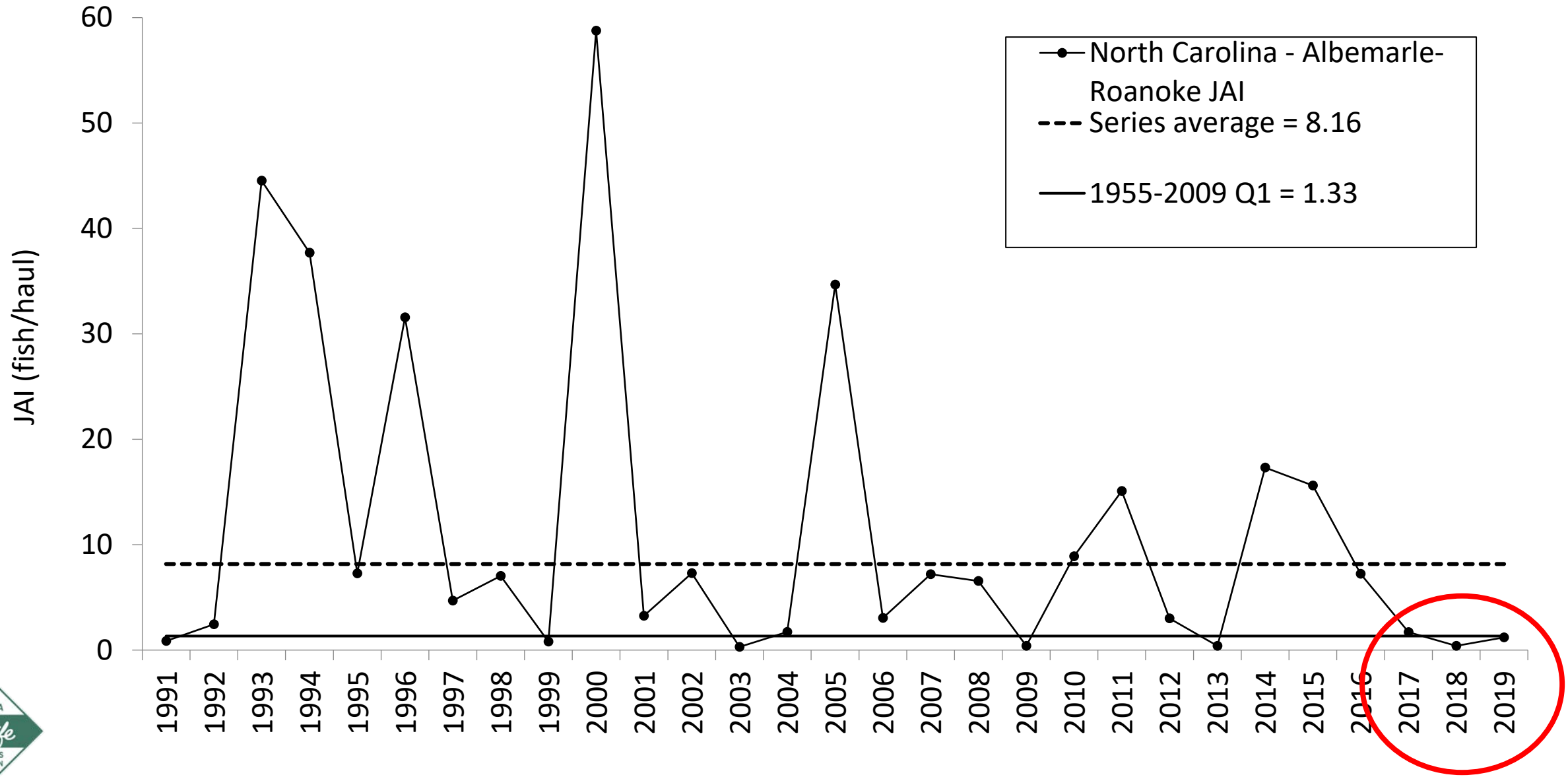
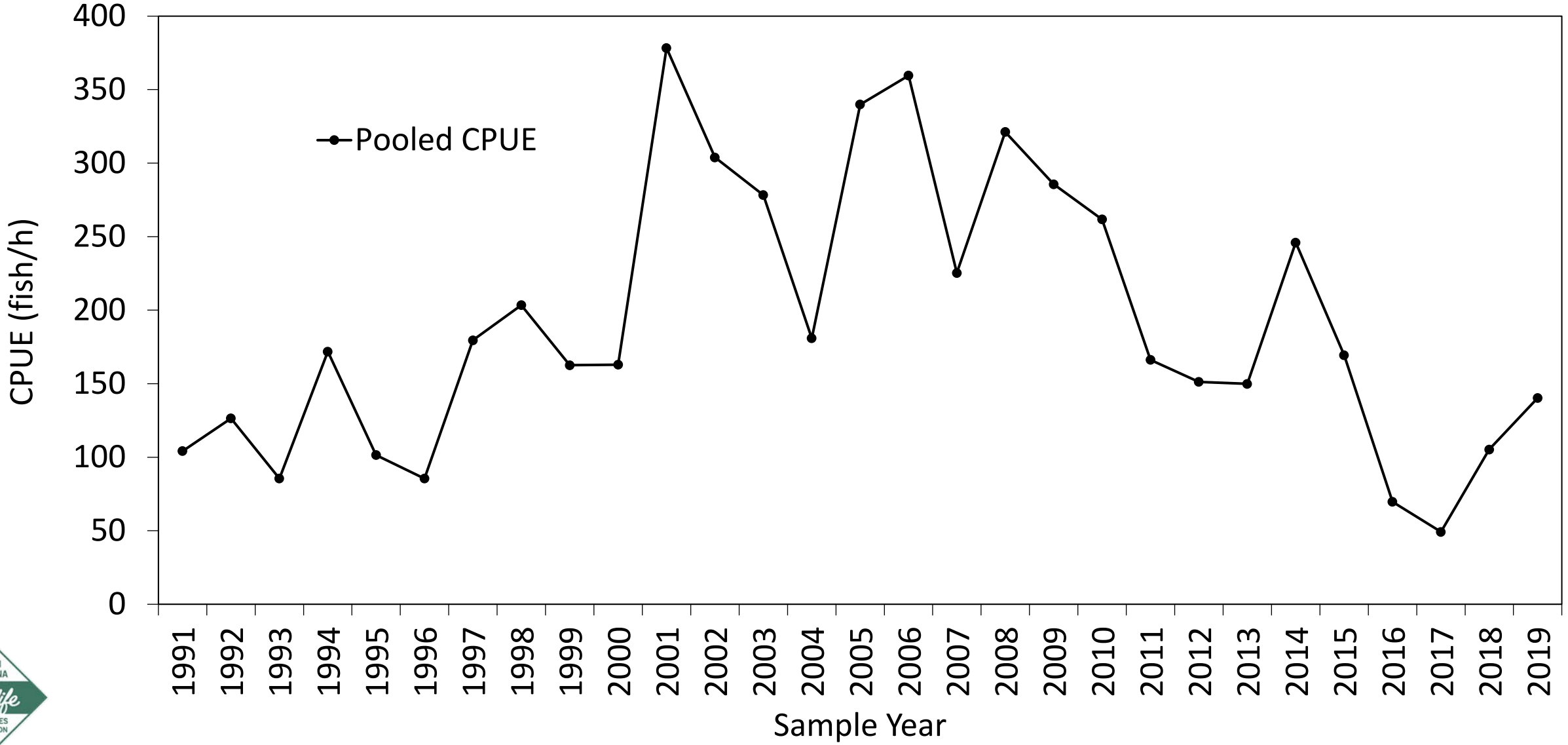
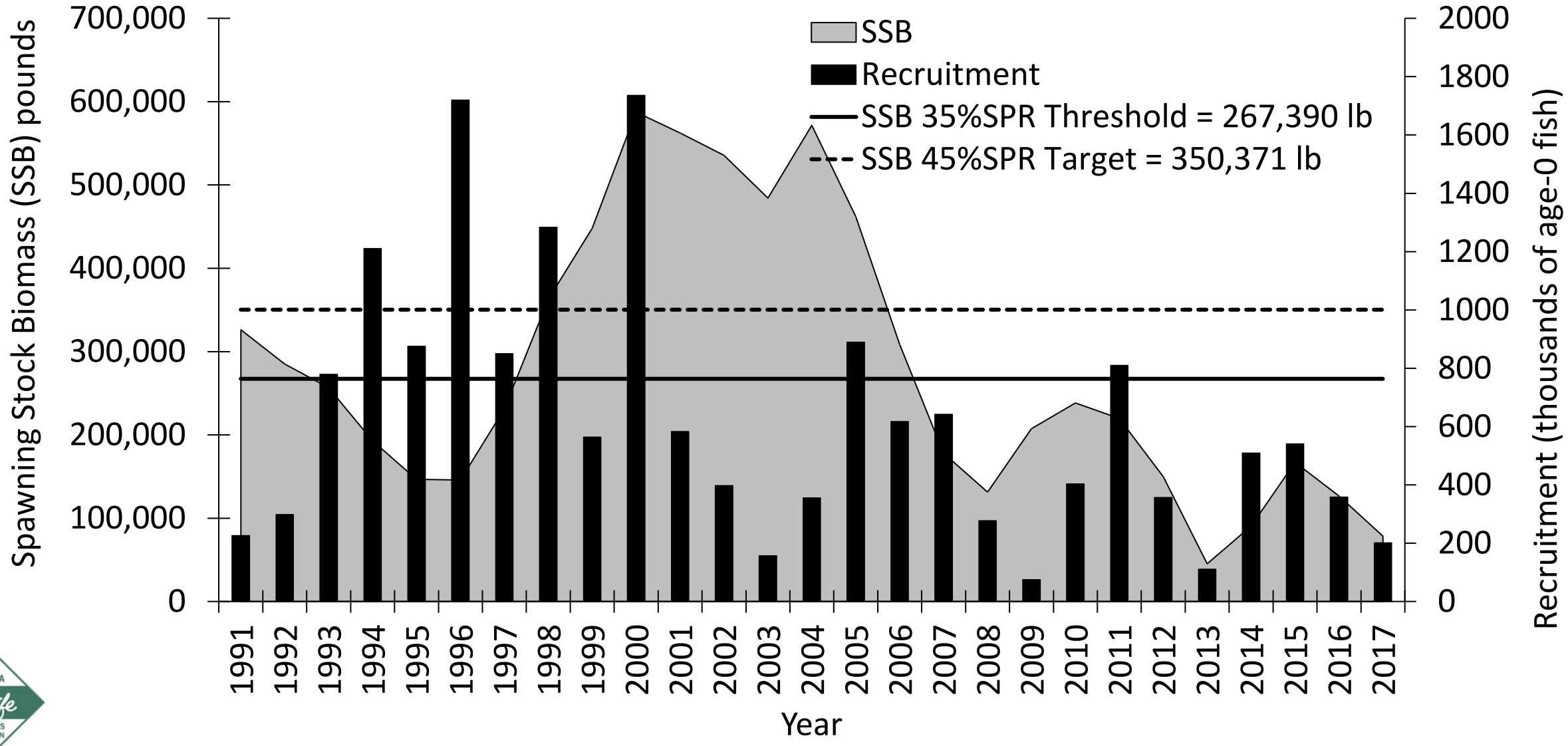


NCWRC Roanoke River Electrofishing Index

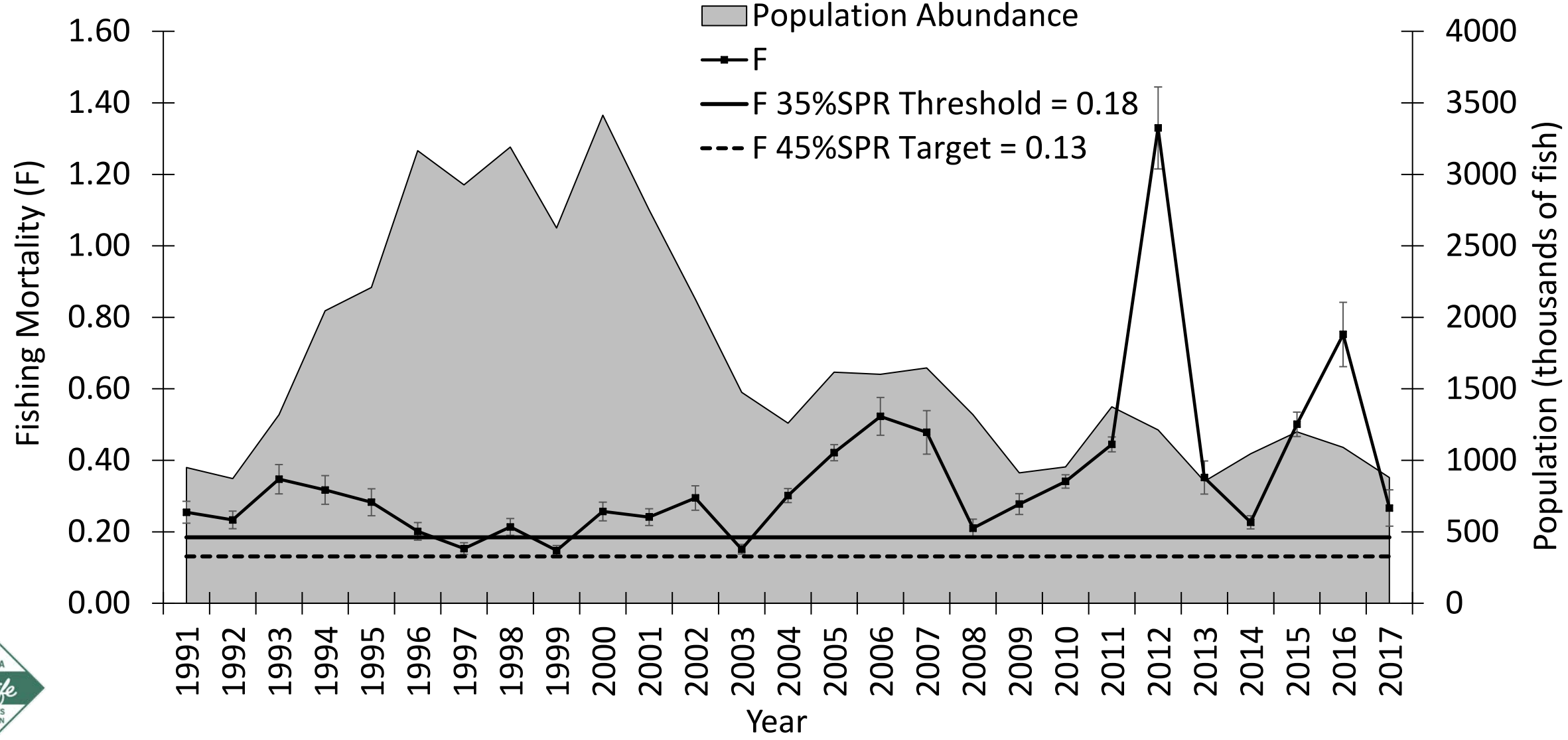


Abundance of Age 9+ Striped Bass on Roanoke River Spawning Grounds

Stock assessment model output: spawning females and recruits (overfished)



Stock assessment model output: fishing mortality and population abundance (overfishing)



2021 Harvest Quota (Total Allowable Landings)

Total Allowable Landings for the Albemarle Sound and Roanoke River management areas:

51,200 pounds

Allocated as follows:

- Albemarle Sound Commercial: 25,600 pounds
- Albemarle Sound Recreational: 12,800 pounds
- Roanoke River Recreational: 12,800 pounds

2021 Harvest Quota (Total Allowable Landings)

- The new quota was based on the reduction necessary to lower fishing mortality (F) to target levels.
- The specific calculations involved reducing observed landings in 2017 (119,000 pounds) by 57%
- This reduction will meet the requirement established in the Fishery Management Plan of ending overfishing within a 2-year period.

2021 Roanoke River Harvest Season Framework

<u>Two-week harvest season, split by zone</u>

Lower River Zone (Downstream of US 258 at Scotland Neck):
April 10th – April 16th

Upper River Zone (Upstream of US 258 at Scotland Neck):
April 24th – April 30th

- Harvest opens both weeks on a Saturday and closes at midnight the following Friday
- Season opening and closings would be established by proclamation
- No changes to size or creel limits

Poor Recruitment is the Primary Reason for the Population Decline

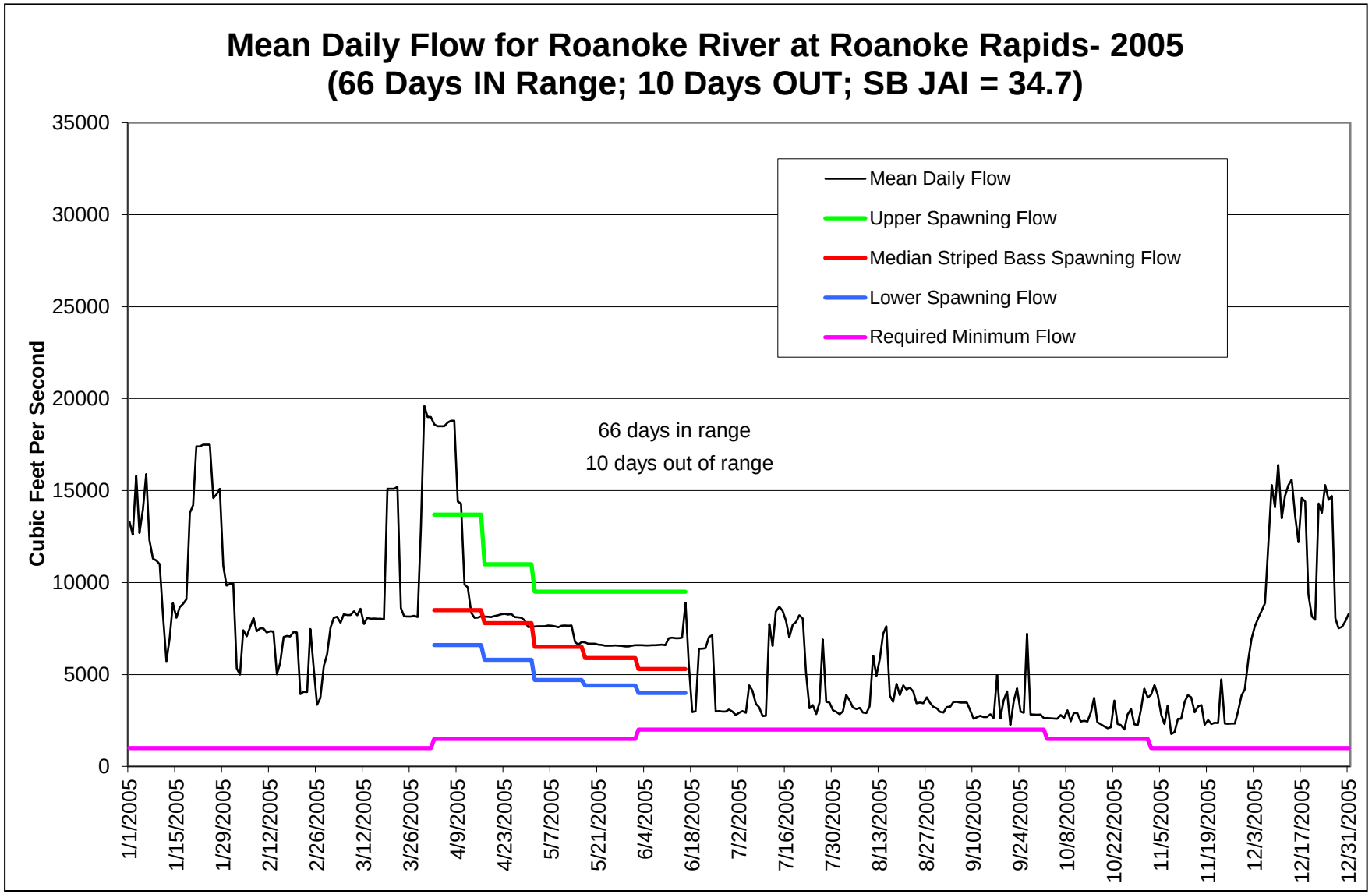
After many years of above-average recruitment (1997-2002), the population experienced several poor and missing year classes (2003, 2004, 2009, 2013), and 4 subsequent poor year classes (2017, 2018, 2019 & again in 2020).

WHY???

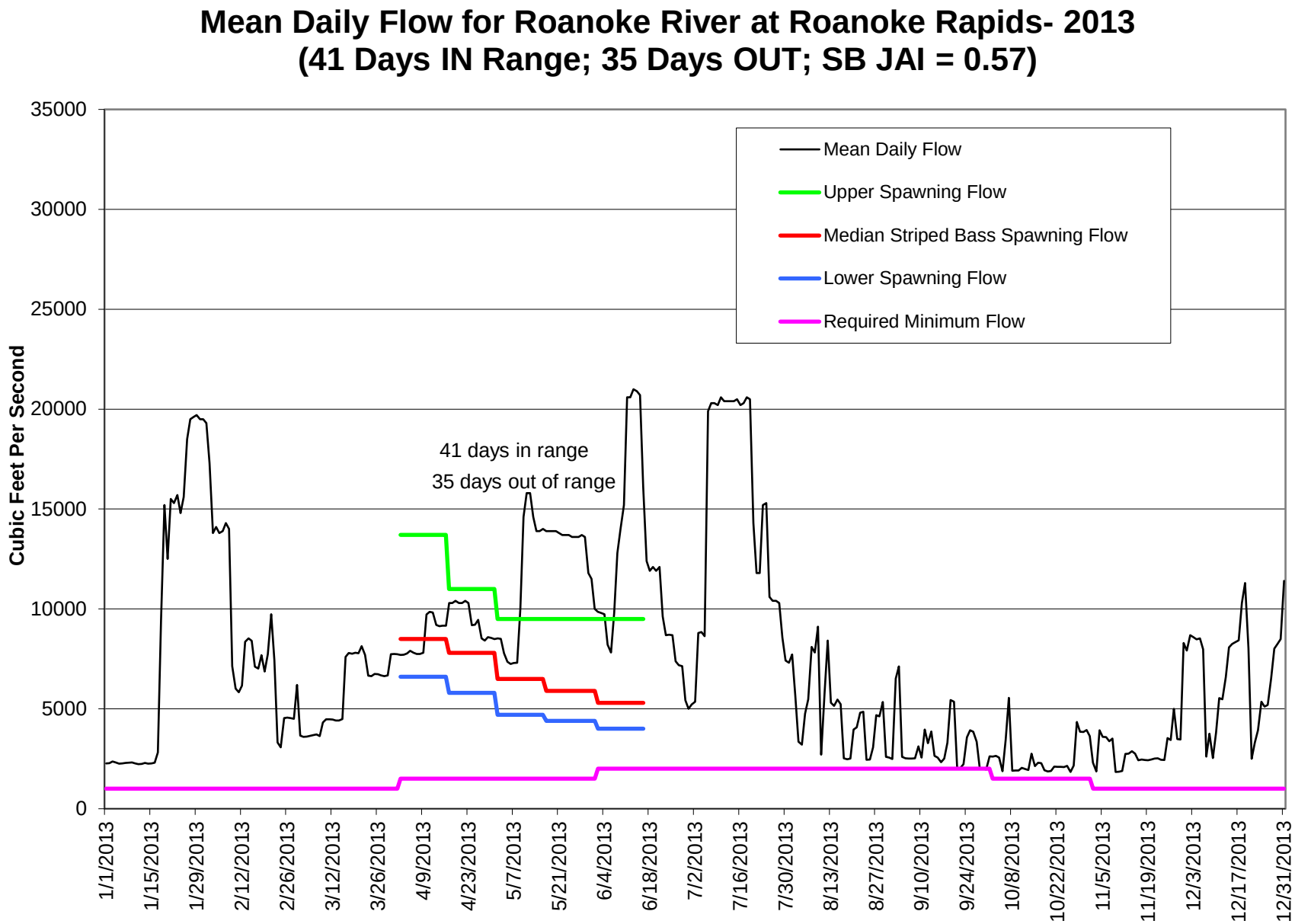
Stream Flow Management

- Roanoke Rapids and Gaston Dams
  - Dominion Energy
  - FERC License Agreement in 2004
  - No hydropeaking in spring
- John H. Kerr Dam
  - US Army Corps of Engineers
  - Negotiated Flow Regime provides beneficial flows for striped bass spawning in spring
  - Flood Control up to 35,000 cfs

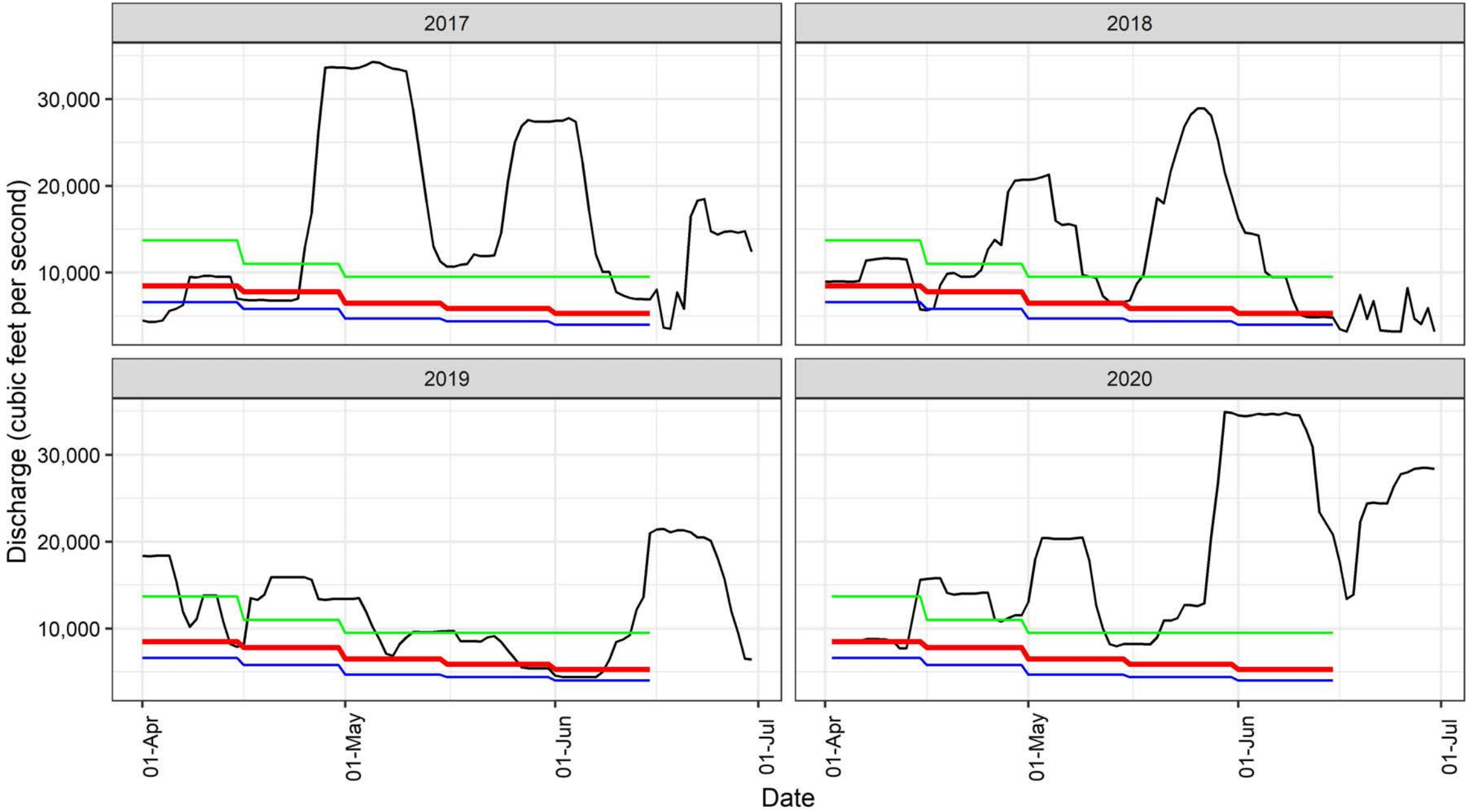
Excellent recruitment year with beneficial streamflow



Bad recruitment year with multiple flood events



Recent years with multiple flood events



Future developments

- Monitor harvest and performance of 51,200 pounds reduced quota in 2021 and 2022
- Update fishery management plan with DMF in 2021, completion in early 2022
- Develop management strategies for Albemarle-Roanoke River population as well as Tar-Pamlico, Neuse River, and Cape Fear populations
- Address overfished/overfishing status
- Bring possible management measures to the Commission in fall 2021

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MERCURY
MERCURY

Veterans Fish for Free in Mountain Heritage Trout Waters Proposal

Fisheries Committee
October 12, 2020

Doug Besler
Mountain Region Fishery Supervisor
828-674-3278 (cell)
doug.besler@ncwildlife.org

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MHTW Established in Statute

- Established by Session Law 2007-408 to promote trout fishing as a heritage tourism activity
- Commission was directed to establish and implement MHTW program
- Established 3-day ($5) MHTW fishing license valid only at MHTW locations
- MHTW licenses are only available via telephone or Commission website (www.ncwildlife.org)
- Program was implemented July 1, 2008

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MHTW License in Statute

§ **113-271. Hook-and-line licenses in inland and joint fishing waters**

(10) Mountain Heritage Trout Waters Three-Day Fishing License – $8.00. This license shall be issued to an individual resident or nonresident of the State and shall entitle the holder to fish in waters designated by the Wildlife Resources Commission as mountain heritage trout waters for the three consecutive days indicated on the license. An individual who holds a mountain heritage trout waters three-day fishing license does not need to hold any other hook-and-line fishing license issued pursuant to this subsection in order to fish in mountain heritage trout waters.

MHTW Program Summary

- Geographically limited license type
- Each MHTW location is added via a MOA with a proposed Mountain Heritage Trout City
- MHTW locations are currently designated Public Mountain Trout Waters that run through or adjacent to a city
- Most MHTW are classified as Hatchery Supported or Delayed Harvest
- 17 MHTW locations listed in the Regulations Digest
- Some locations have amenities (i.e. Tackle Loaner Program, pier, restrooms)
- No extra agency management (e.g. stockings)

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Current MHTW Sign

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MHTW Signage Placement

or

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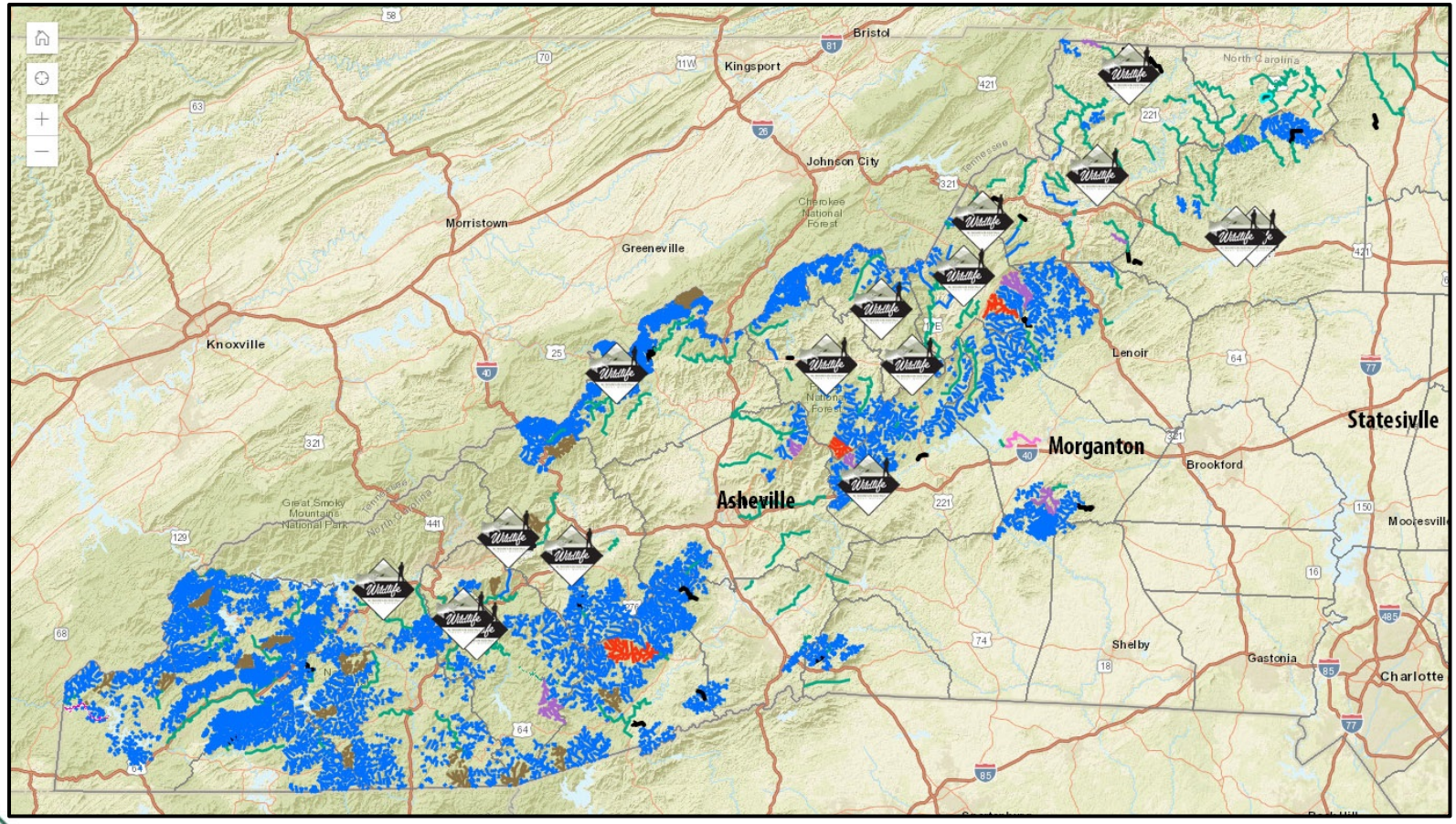
Current MHTW Locations



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Proposal to Recognize Veterans

- The ask - How can the NCWRC recognize veterans? Specifically within the agency's trout program?
- Modifying existing PMTW classifications to provide unique opportunities for only veterans would be difficult and increase the complexity of PMTW regulations
- **Propose to allow veterans to fish for free at the 17 MHTW locations across western North Carolina**

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Next Steps

- Develop statutory language to affect the proposed change
- **Engage the Legislature regarding the proposed statutory change**
- Communicate with MHTW Cities
- Modify existing MHTW signage
- Agency outreach (communications plan, website, regulations digest, social media, brochures used by local cooperator)

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Develop New MHTW Sign

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Questions?

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RESERVOIR HABITAT ENHANCEMENT INITIATIVE

NORTH CAROLINA Wildlife RESOURCES COMMISSION

Mark Fowlkes

Piedmont Aquatic Habitat Coordinator

Outline

- Goals
- Reservoir habitat
  - Artificial structure
  - Natural structure (felled trees and native vegetation)
- Commission's aquatic plant nursery
- Harris Lake habitat project

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Reservoir Habitat Goals

- Reservoir needs
- Improve angler satisfaction & participation
- Enhance fish & wildlife habitat
- Shoreline bank stability
- Improve water quality
- Inhibiting invasive species

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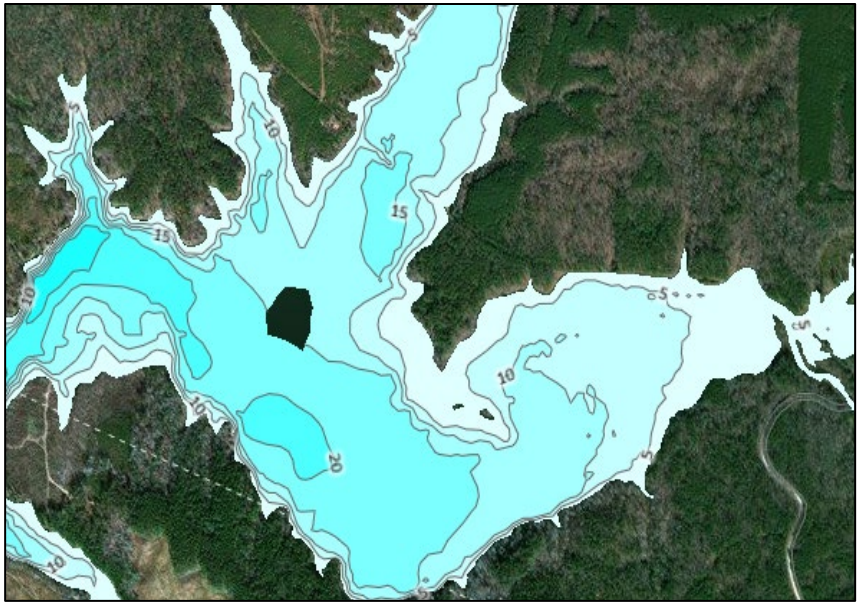
Reservoir Habitat - Artificial

- Led by District Fisheries Staff
- Improve angler success rates
- Enhance existing lake features
- GPS coordinates are available at ncwildlife.org



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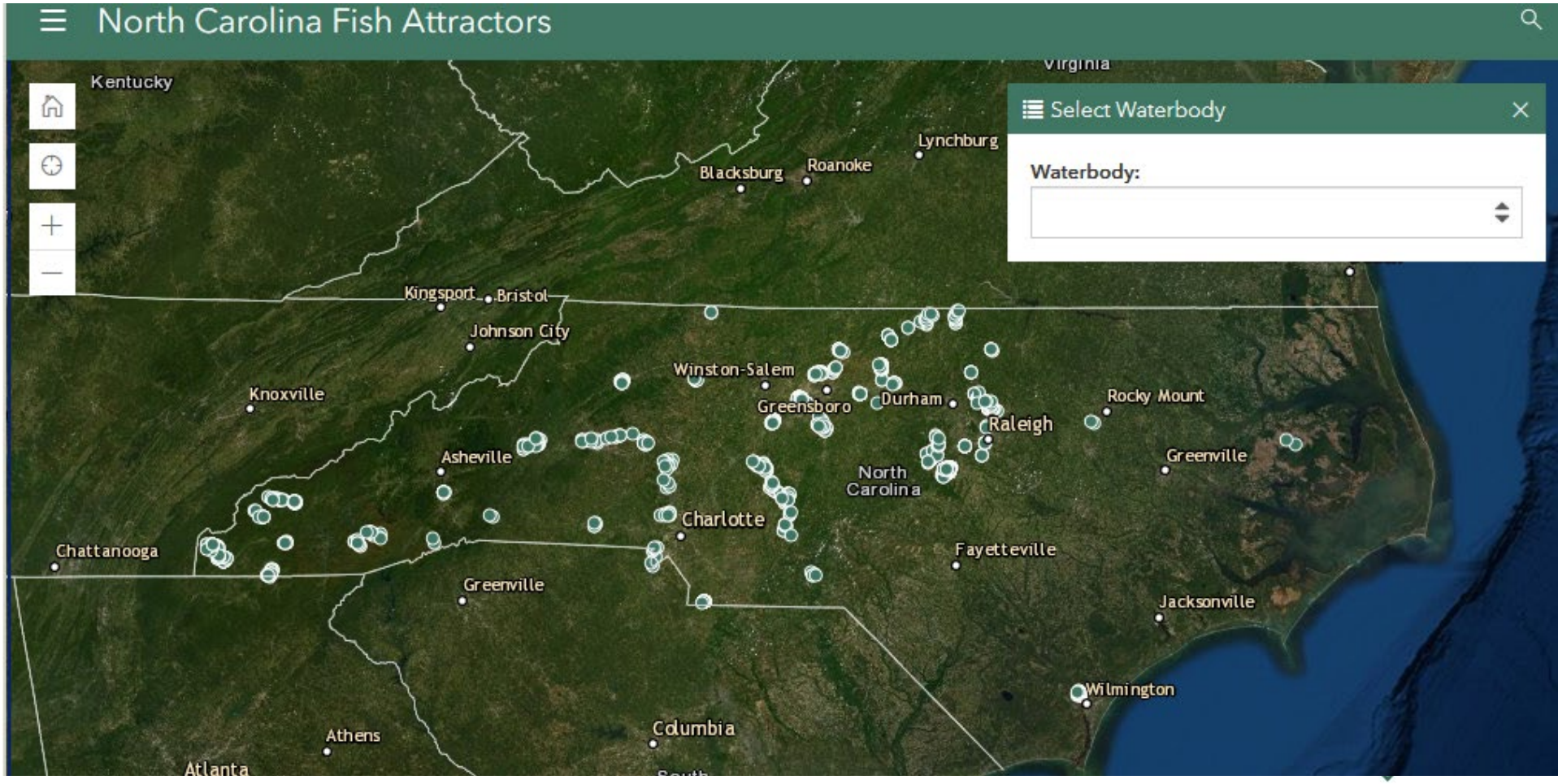
Artificial Fish Reefs

Fish Attractor Map

- NCWRC website https://www.ncpaws.org/ncwrcmaps/fishattractors



Reservoir Habitat – Natural
Cut & Cable Trees

Reservoir Habitat – Native Aquatic Vegetation

Benefits:

- Improve angler satisfaction & participation (grass = bass)
- Valuable habitat for aquatic organisms
- Refuge, spawning, foraging, growth
- Nutrient sink
- Reduce sedimentation
- Reduce shoreline erosion
- Improve water clarity and quality

Native Vegetation

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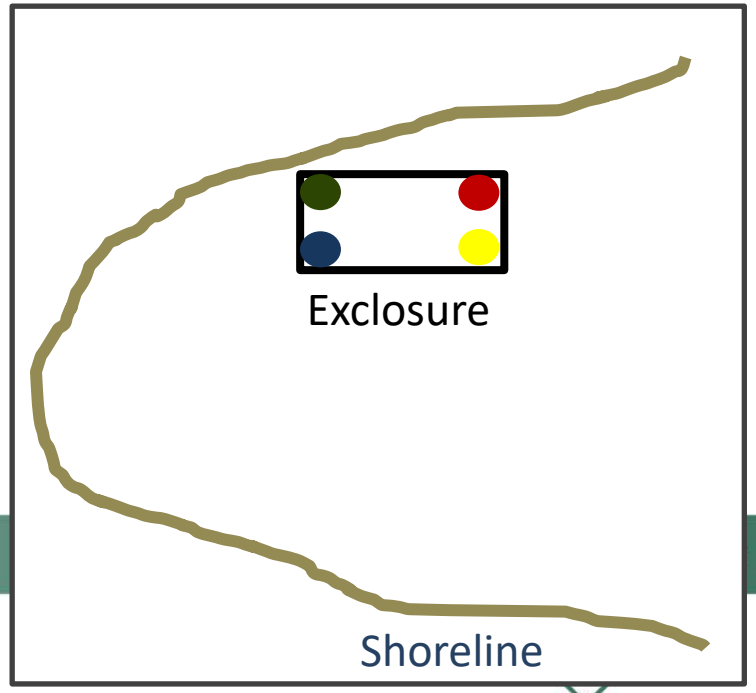
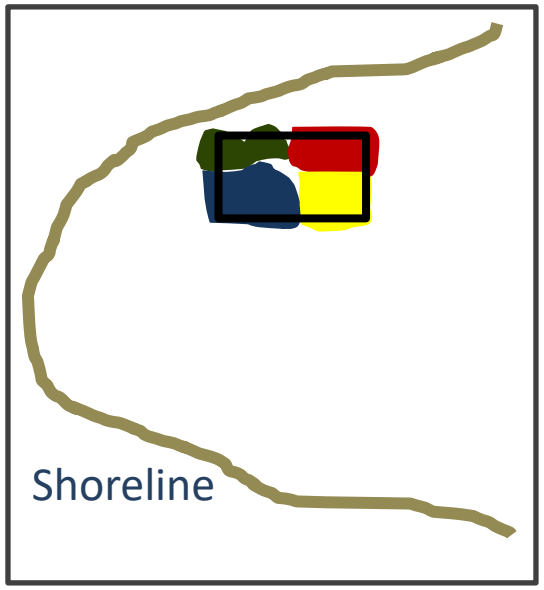
Establishing Native Vegetation
Founder Colony Concept

- Establish protected small colonies in strategic locations
- Source populations
- Spread through expansion and colonization
- **Must overcome herbivory pressure**

Initial fenced enclosure planted with 4 species of aquatic vegetation



Establish Founder Colonies



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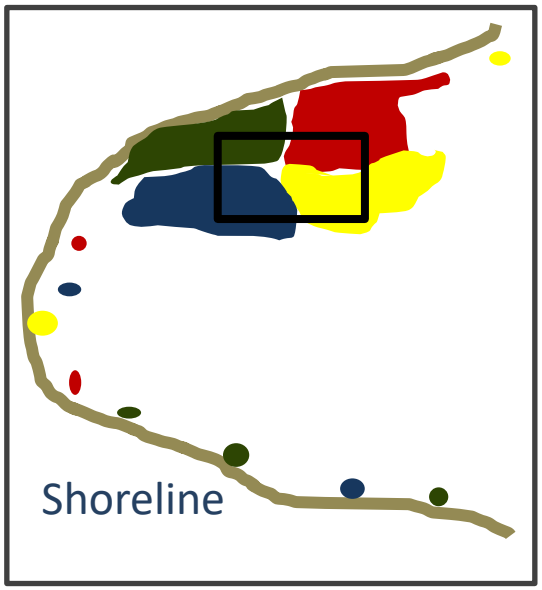
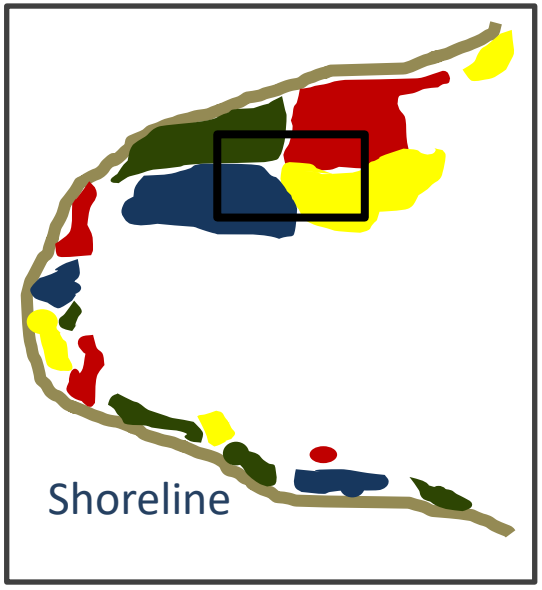


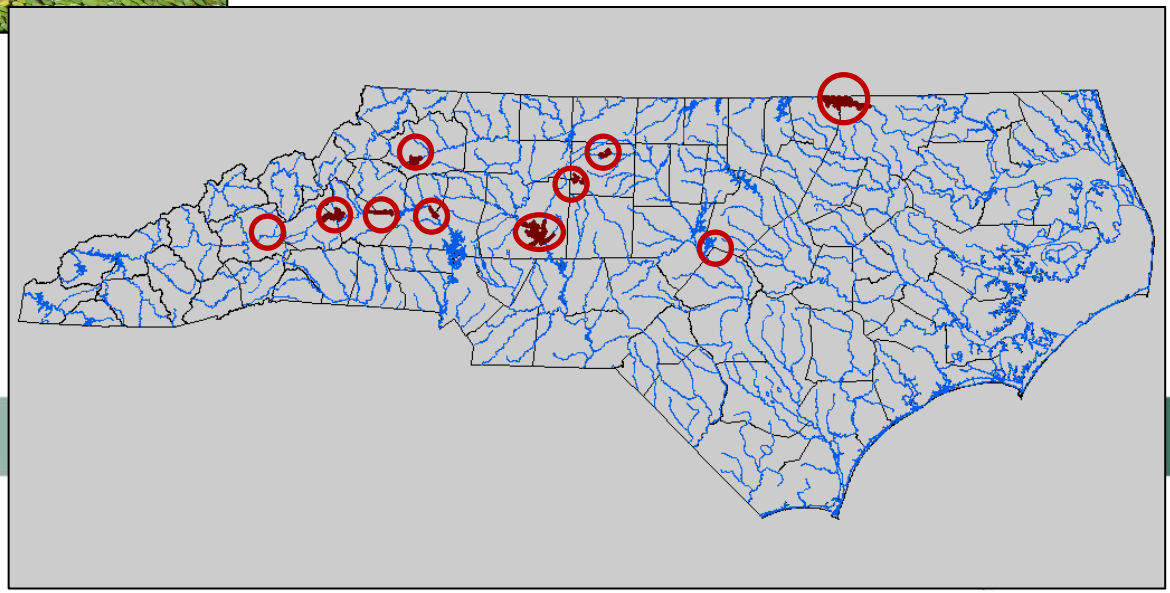
Over time, vegetation expands outside the enclosure



After multiple years, large swaths of vegetation spread beyond the enclosure

Vegetation Establishment

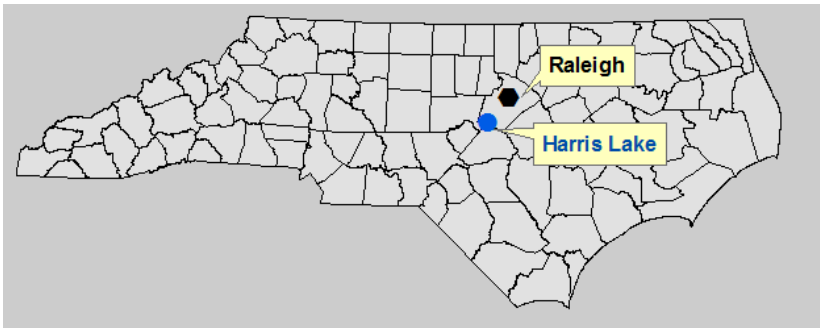
- The Commission has been establishing native vegetation for decades
- Currently have 10 projects



Aquatic Plant Nursery at Sykes Depot

- 14 tanks, 15 troughs
- Develop a greenhouse this winter
- Growing 8 different species
- Planted over 2,300 plants in 2020
- Potential to grow 4,500 plants per year

Harris Lake Aquatic Habitat Enhancement



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History–Hydrilla

Nuisance vegetation in Harris Lake:

- Hydrilla 1st reported in 1988
- Estimated 942 acres of Hydrilla in 2015; 232 acres in 2018
- No active hydrilla management taken place until Dec 2018
- 1,400 triploid grass carp stocked in Dec 2018
- 2,600 triploid grass carp stocked in spring 2019
- No Hydrilla found in fall 2019

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Harris Lake Habitat Enhancement Project

Goals:

- Maintain balanced and popular fisheries
- Establish and expand coverage of native aquatic vegetation (1 acre of founder colonies) by 2023
- Install at least 30 acres of artificial and natural structure (700 fish attractors) by 2023,
- Maintain existing water quality conditions
- Provide competition for Lyngbya

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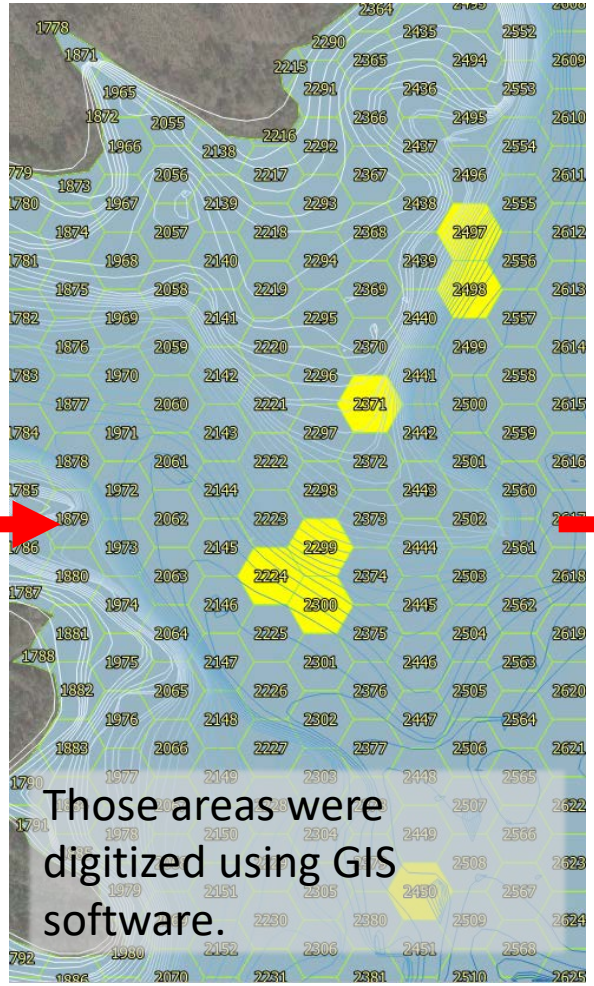
Harris Lake Aquatic Habitat Plan

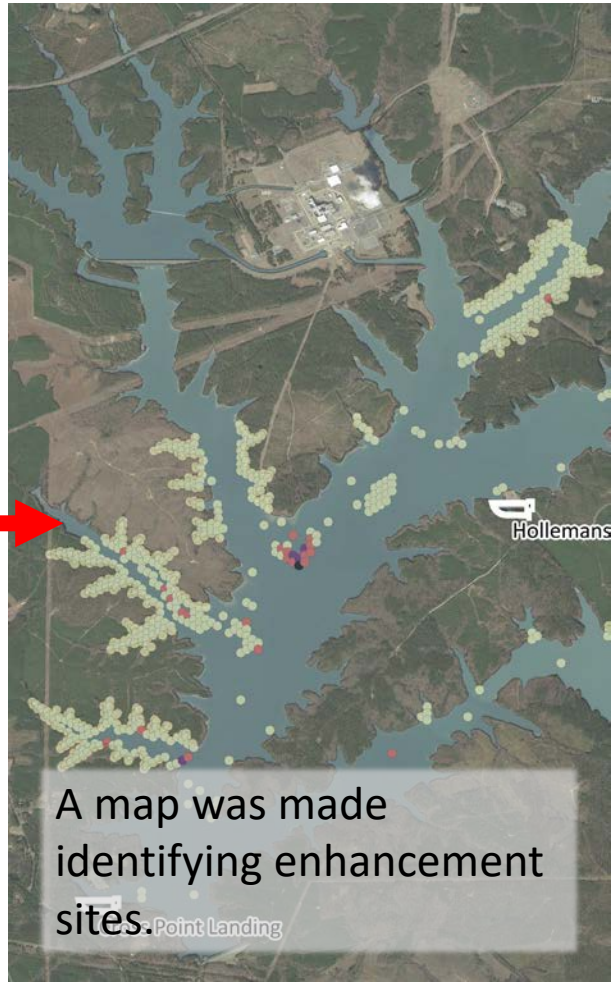
- 5-year plan 2018-2023
- Address aquatic habitat needs in Harris Lake
- Document existing aquatic habitat
- **Avenues for public participation**
- Identifies areas to be enhanced
- Updated annually
- Available on the Commission's website

Angler Input

An angler showing a Commission Biologist an area for enhancement.



Those areas were digitized using GIS software.



A map was made identifying enhancement sites.

Artificial Reef Locations

- 2017 – 5 existing sites
- 2018 – added 6 sites using 50 attractors
- 2019 – added 57 sites (68 total) using 273 attractors
- 2020-2021 – focus on shallow water habitat

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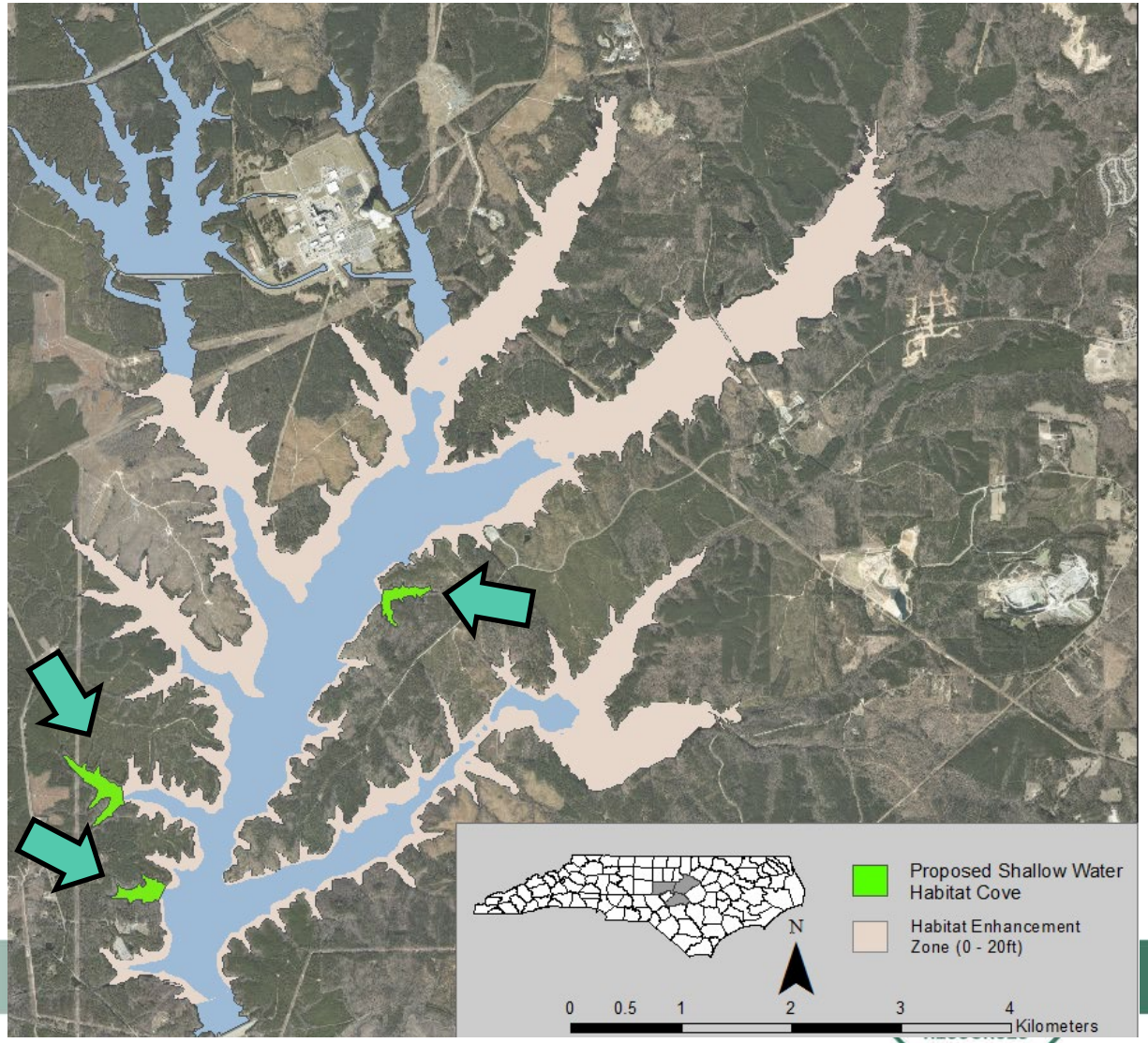
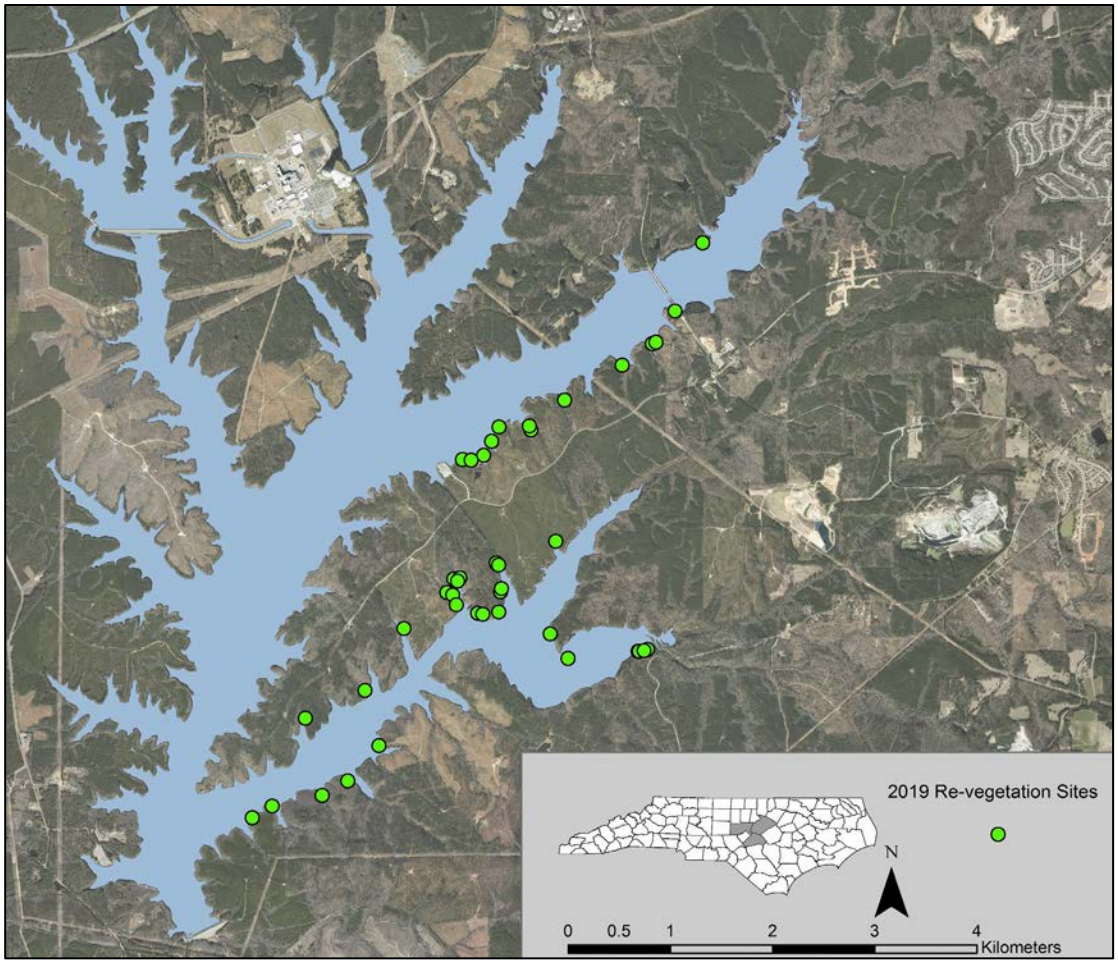
Fishing Feature Cove

- Focus on shallow water habitat
- Close to boat ramps
- Marked with danger buoys
- Proposed for 2021



Aquatic Vegetation



- Planted 11 sites in 2018
- Planted 26 sites in 2019
- Planted 51 sites in 2020
- **Over 2,300 plants**

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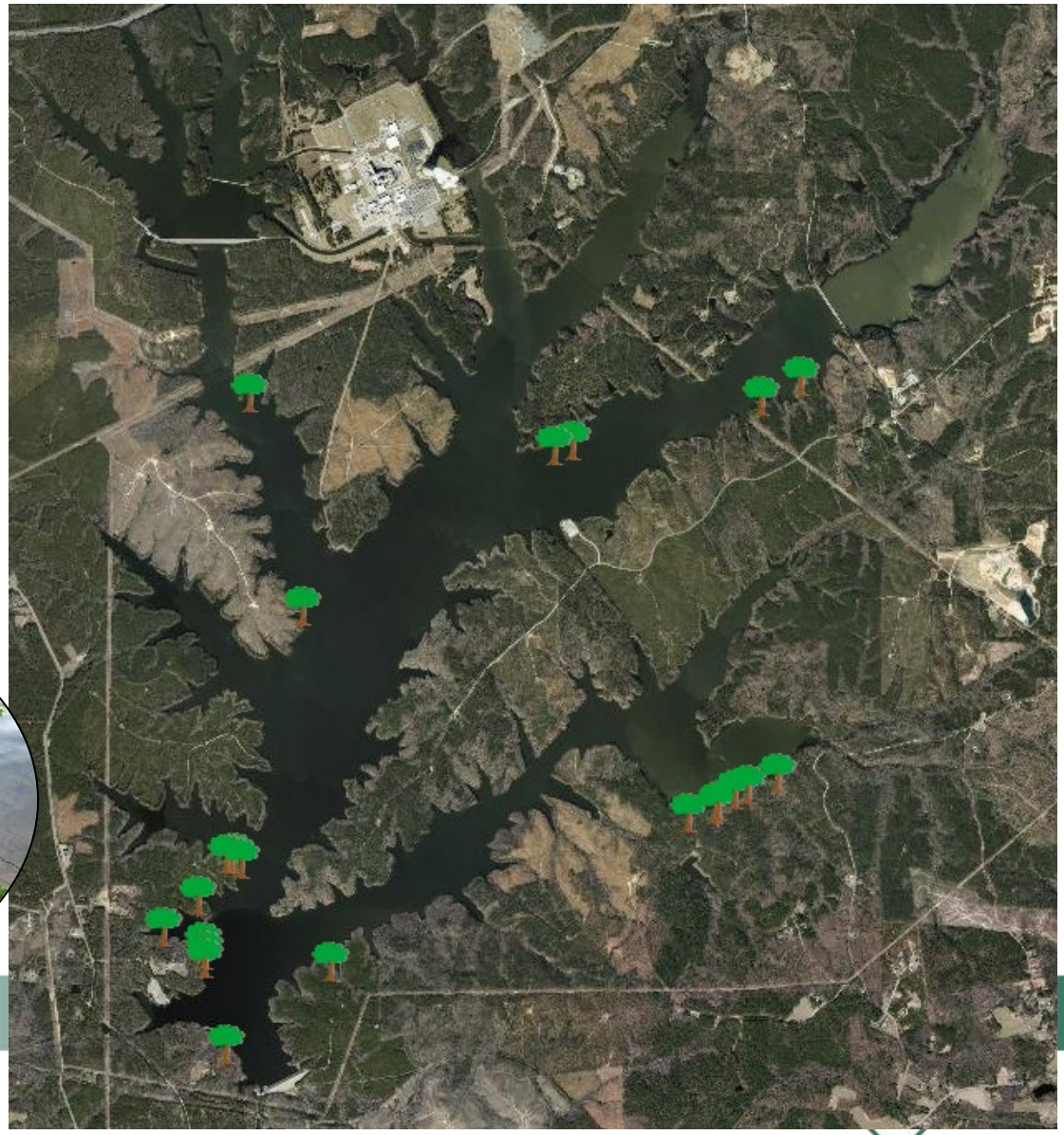
Cut and Cable Trees

- Identified 23 trees for cut and cable
- For safety reasons, Commission staff will carry out in January 2021



RESERVOIR FISHERIES HABITAT PARTNERSHIP

$30,000 Grant awarded in March 2020:

- Upgrade Commission aquatic plant nursery
- Establish and expand coverage of 0.5-acre native aquatic macrophyte communities
- Install 250 artificial and natural structures
- Create signage for boating access areas
- Work to be completed by Sep. 2021

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Partners

Wake County Parks Recreation
NC State University Basspack Bass Fishing Club
Carolina Kayak Anglers

Questions?

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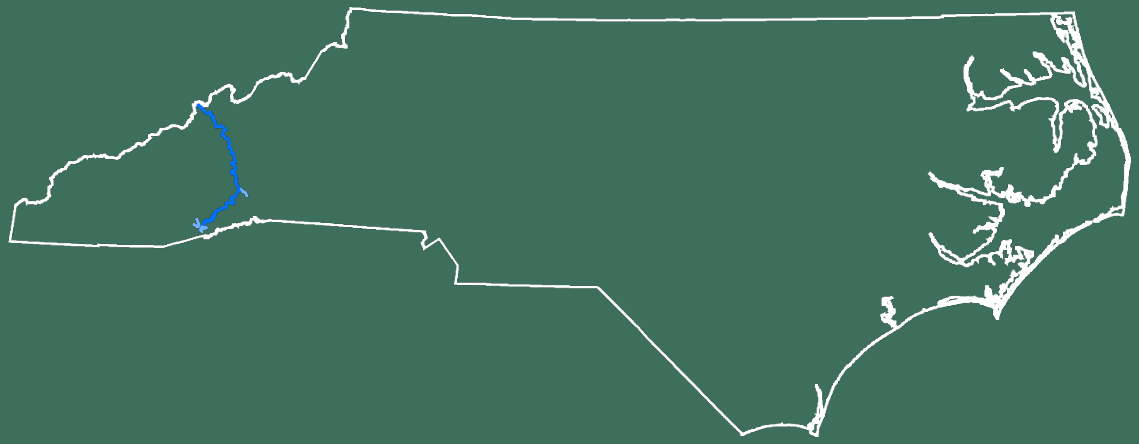
Evaluation of Muskellunge Habitat Use, Population Characteristics and Stocking Contribution in the Upper French Broad River

Amanda Bushon, C. Scott Loftis
North Carolina Wildlife Resources Commission

Dr. Derek Crane
Coastal Carolina University

French Broad River



- 117 miles in North Carolina
- Muskellunge native
- Long history of industry and agriculture
  - Muskellunge possibly extirpated by 1950's

SPORT FISH RESTORATION

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History of Muskellunge Management

- 1970
  - Stocking began
  - Fin clips
- 1982
  - Stock every other year to ID natural reproduction
- 1996
  - Coded Wire Tags (CWT)
  - Natural reproduction very low
  - Continue annual stockings

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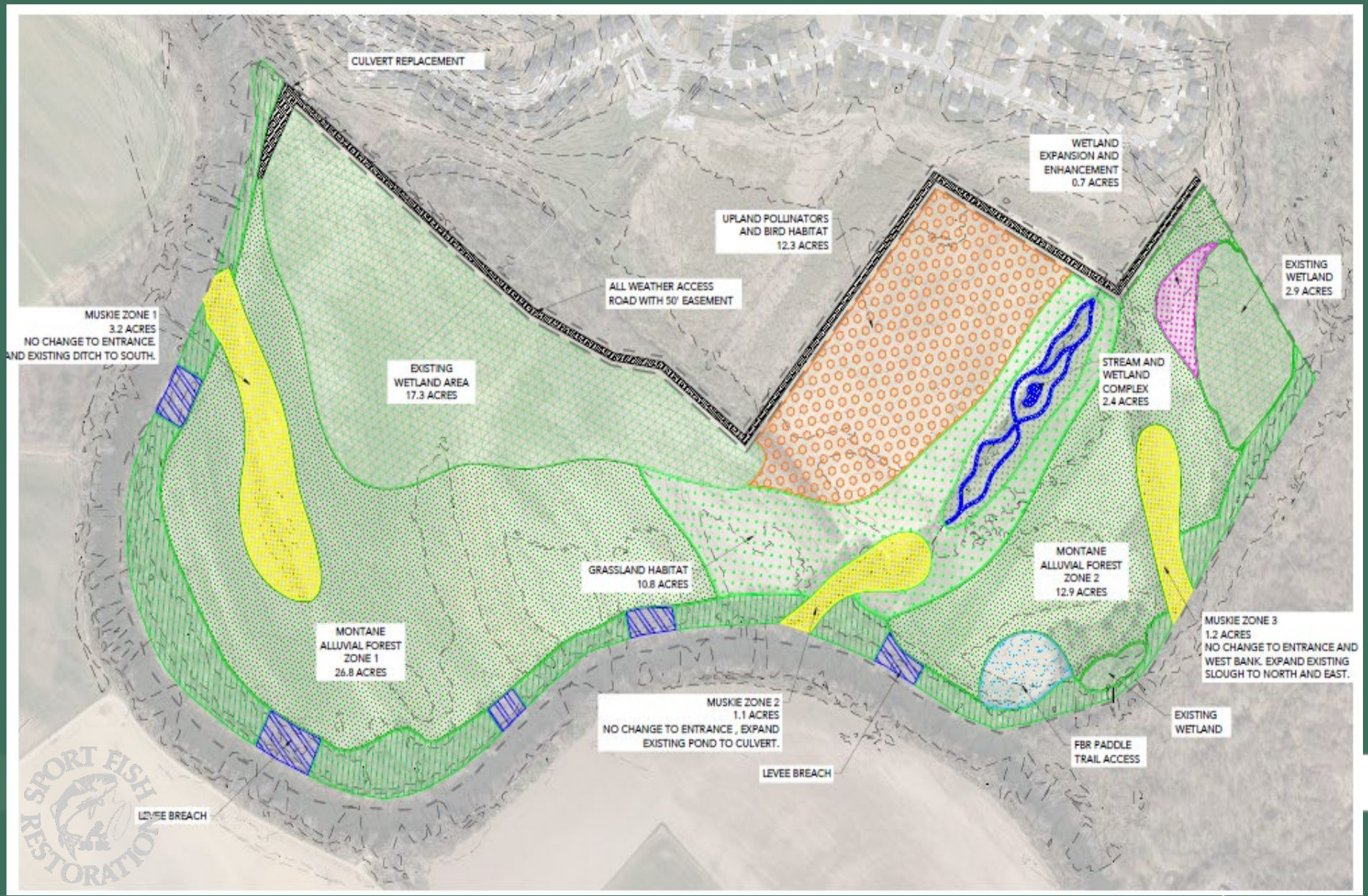
French Broad River Habitat

- Lack of spawning and nursery habitats
  - Little connectivity to floodplain features such as ephemeral depressions, remnant oxbows, and slack water sloughs
- Channelization, draining and filling floodplain waterways, sedimentation, elevated water velocities

Mud Creek Habitat Restoration



Muskellunge Sloughs

Slough 1

Slough 2

Muskellunge Sloughs

Objectives

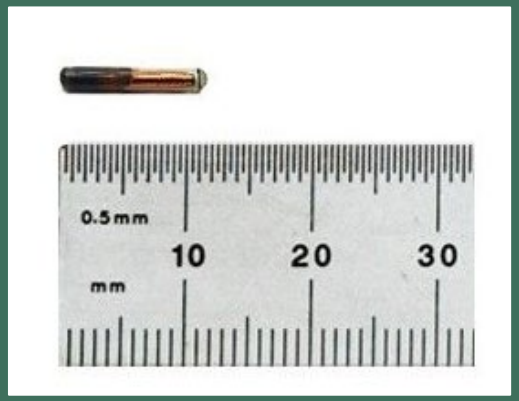
- Evaluate use of newly created Muskellunge sloughs
- Evaluate age structure, growth, condition, relative abundance and survival of stocked Muskellunge
- Determine any natural reproduction

Study Area
Upper French Broad

SPORT FISH RESTORATION

Tagging and Stocking

- 2018-2022
- 550 Muskellunge
  - 8-14 inches
- Passive integrated transponder (PIT) tag
- Coded Wire Tag (CWT)

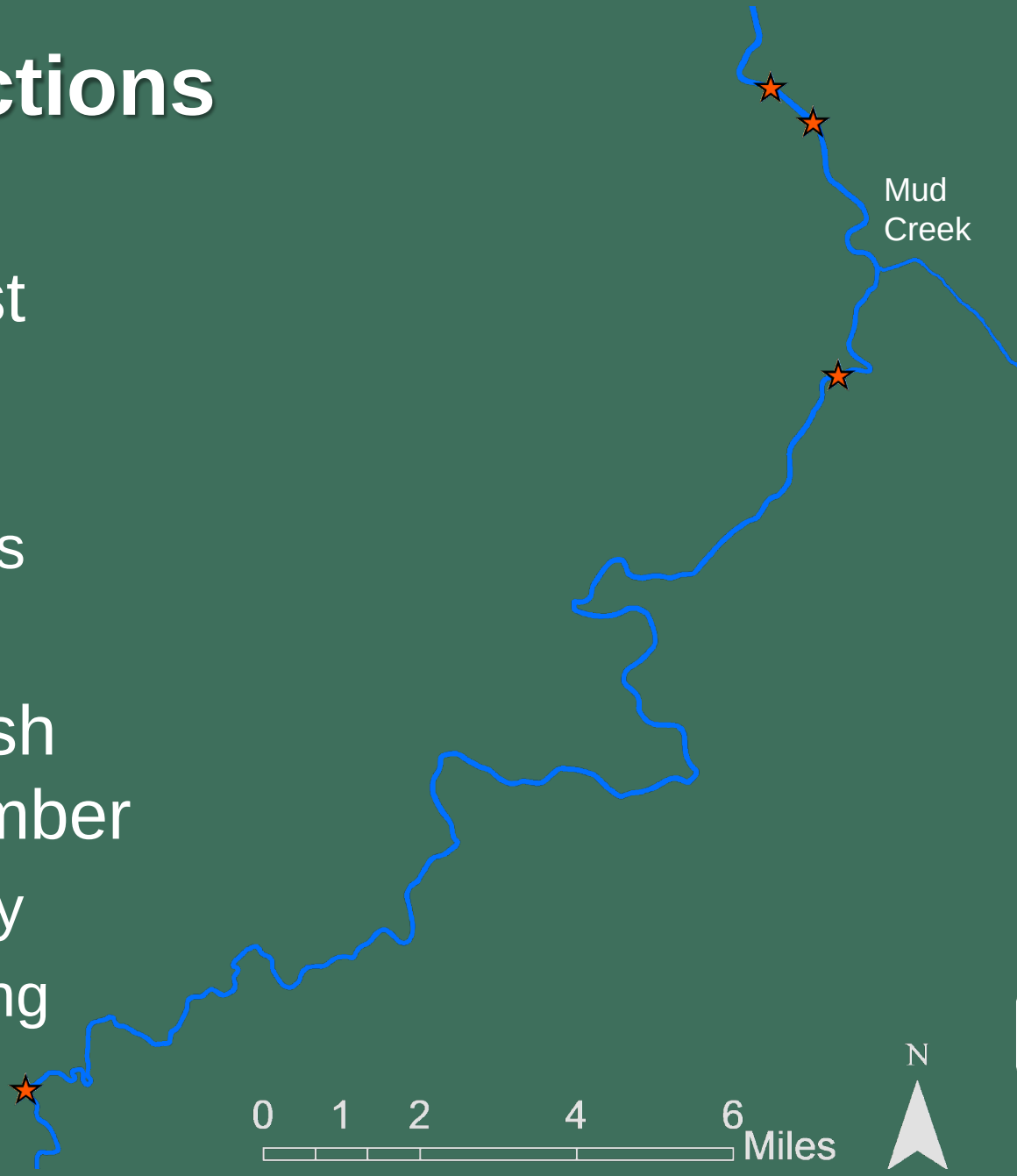


Mud Creek Habitat Evaluation

- Biomark IS1001 auto-tuning reader
- Pass-over detection
- Year-round
- Deployed slough 1
  - Aug 19th, 2020

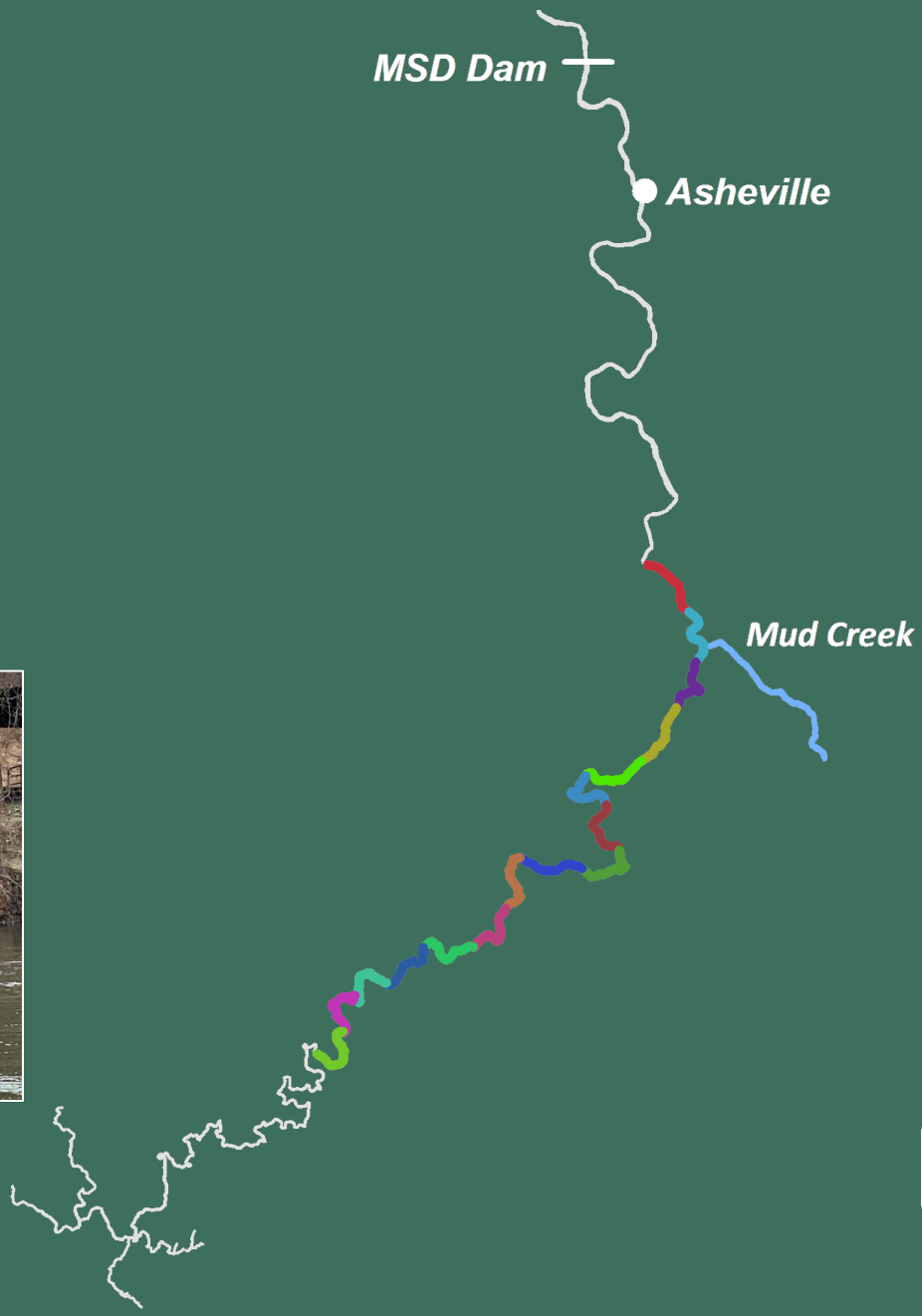
Slough 1 Detections

- Adult Muskellunge detected within first week
  - Detected on four separate occasions
- Three additional fish detected in September
  - 25 river-miles away from original tagging location



Population Metrics

- 16 sites
  - 2 miles each
- Jan/Feb 2020 – 2023



Population Metrics

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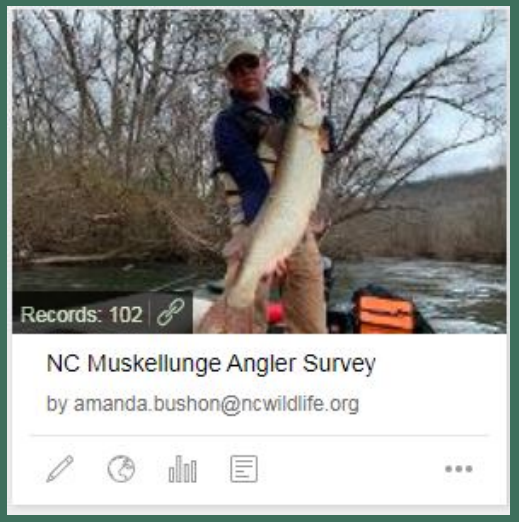
Population Estimate

- Estimate abundance of catchable Muskellunge within study sites
  - 2021-2023
  - Jolly-Seber capture-recapture open population model
- Increase number of recaptures
  - Angling survey with Western North Carolina Muskie Club
  - Within one month of electrofishing survey each year

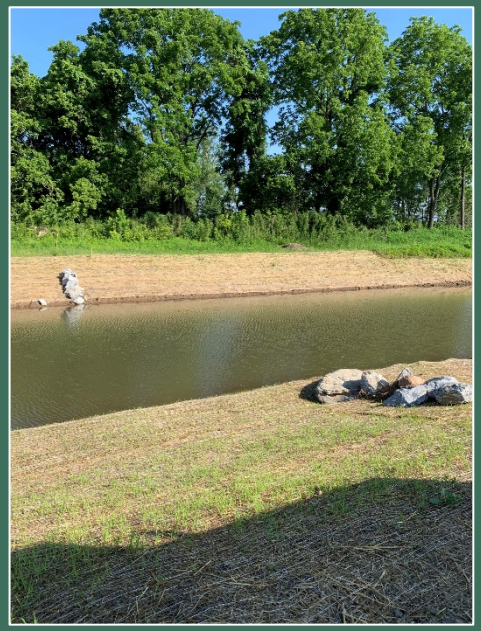
Angler Diary

- Western North Carolina Muskie Club
- Have kept angling records dating back to 2010
  - Up to 85 Muskie from French Broad in one year
- Build upon that and update platform to Survey123
  - 2 PIT Tag readers
- Help with growth data



What's next

- Install antenna in slough 2 (October 2020) and 3 (Summer/Fall 2021)
- Tag and stock in October 2020-2022
- Angling and electrofishing surveys in winter 2020-2023



Questions?

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SPORT FISH RESTORATION

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Management using F-1 Largemouth Bass

Lawrence Dorsey
Piedmont Region Fisheries Research Coordinator

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Outline

- **What are F-1 Largemouth Bass?**
- **Stocking F-1 Largemouth Bass in Lake Norman.**

What are F-1 Largemouth Bass?

- F-1 Largemouth Bass are produced by crossing a northern Largemouth Bass with a Florida Largemouth Bass.

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How are F-1 Largemouth Bass Produced ?

F-1 Largemouth Bass are produced by crossing a northern Largemouth Bass with a Florida Largemouth Bass in a hatchery.

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What is the Advantage of Stocking F-1 Largemouth Bass ?

F-1 Largemouth Bass have been shown to grow faster and to larger sizes than wild spawned Largemouth Bass.

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Will Stocked F-1 Largemouth Bass Produce More F-1 Largemouth Bass ?

Once an F-1 Largemouth Bass spawns with any other Largemouth Bass, it is no longer an F-1 and the growth advantage is not carried over to its offspring.

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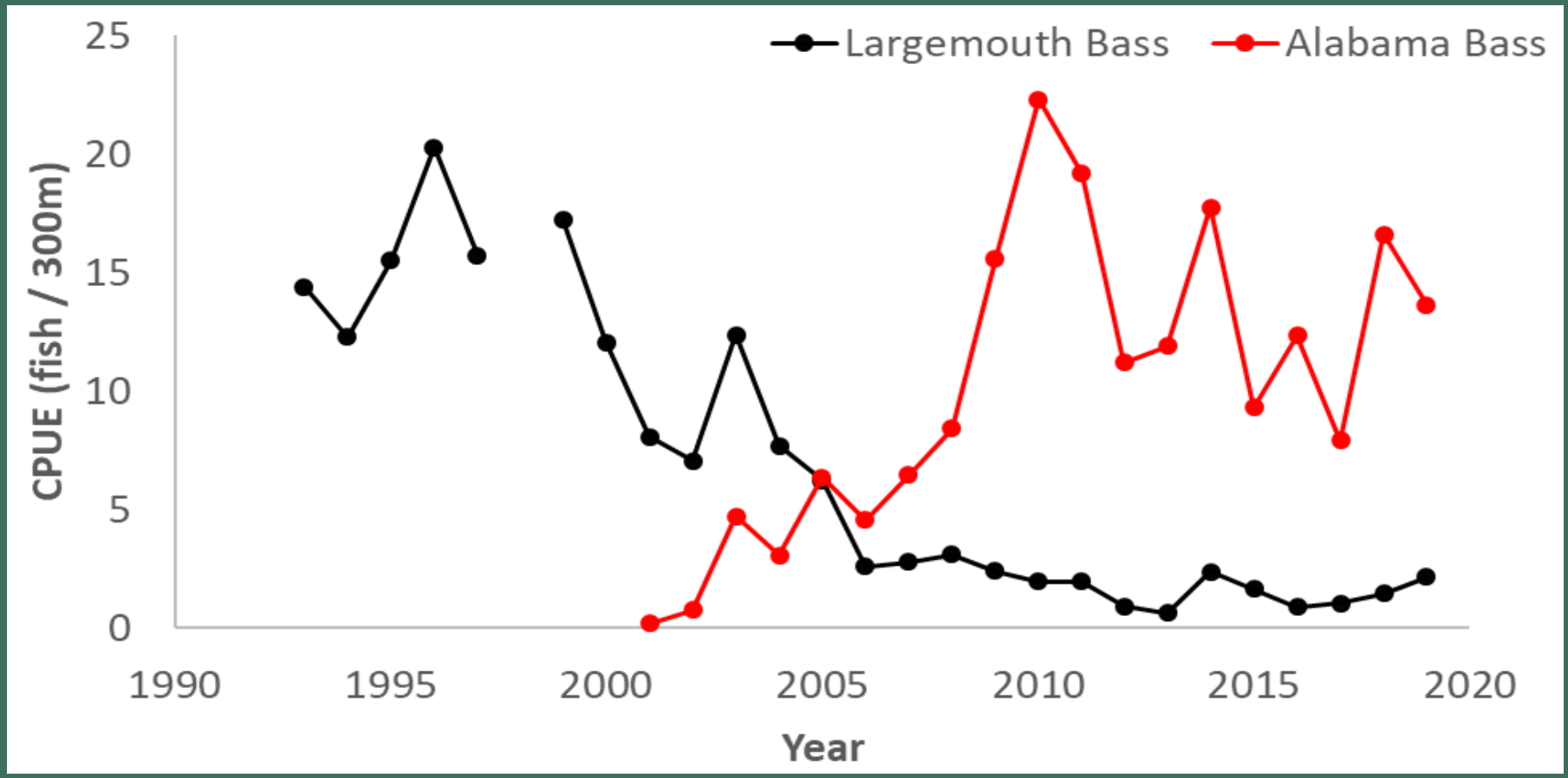
F-1 Stockings in Neighboring States

- **Virginia – Multiple waterbodies over the past 10 years including Smith Mountain Lake.**
- **Tennessee – Plan to stock F-1 Largemouth Bass in Boone Reservoir (East Tennessee) in 2021.**

Decline of Largemouth Bass in Lake Norman



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Lake Norman Largemouth Bass Enhancement Plan

- **Local Anglers have raised funds to purchase 2,000 F-1 Largemouth Bass. Fish will be delivered to McKinney Lake Hatchery during late October.**
- **Fish will be implanted with a wire tag in their cheek muscle at the hatchery and then moved to Lake Norman for stocking.**
- **Intention to add additional fingerling F-1 Largemouth Bass in Spring 2021.**

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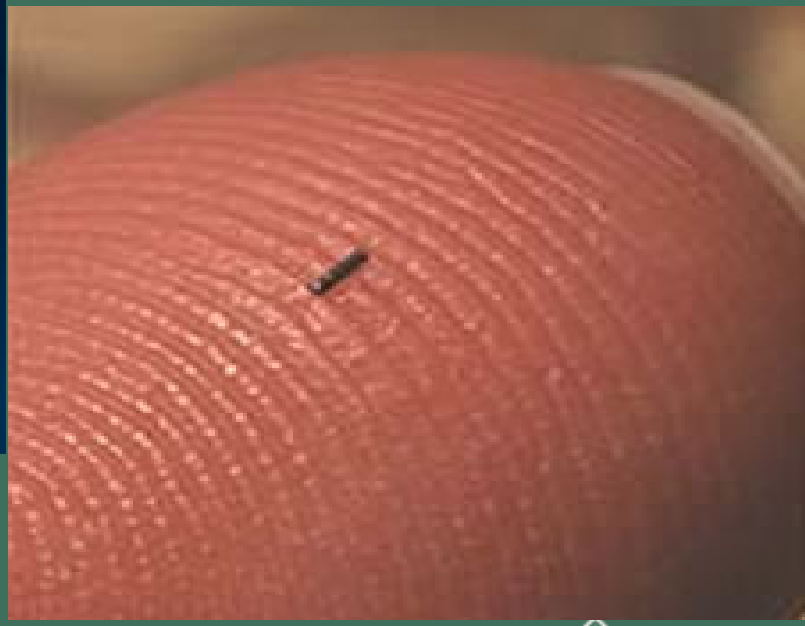
Coded Wire Tagging



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Field Evaluation

- **Fish Stocked in Fall 2020**
- **Electrofishing in Spring 2021 – 2023**

Desired Outcomes

- Enhanced Largemouth Bass Fishery
- Establishing and Maintaining Relationships with Bass Anglers

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Questions?

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