

*ISSUES  
& REPORTS*

*DOCUMENTS ARE  
FORTHCOMING*



# *Reclassification of Jurisdictional Waters*

Potential Science-Based Approach

*NCDEQ, DIVISION OF MARINE FISHERIES*

WRC/MFC Joint Committee on Delineation of Water Boundaries May 1, 2019



# Objectives

- Describe science-based approach to determine the transition between Coastal and Inland Fishing Waters.
- Agency staff asked by JCDFW to collaborate to provide information for a more “robust discussion” of the issue
- Consider biological and statutory factors, as well as timeline:
  - Define estuary from peer reviewed literature
  - Describe species use of estuarine salinity zones
  - Describe salinity zones based on fish assemblage techniques using NC fish data
  - Show salinity maps for two of four CHPP regions
- Identify specific estuarine waters of concern not conforming to statute.

# *Statutory Definitions*

## **G.S. 113-129 (4) Coastal Fishing Waters -**

The Atlantic Ocean; the various coastal sounds; and estuarine waters up to the dividing line between coastal fishing waters and inland fishing waters agreed upon by the MFC and the WRC.

## **G.S. 113-129 (9) Inland Fishing Waters. –**

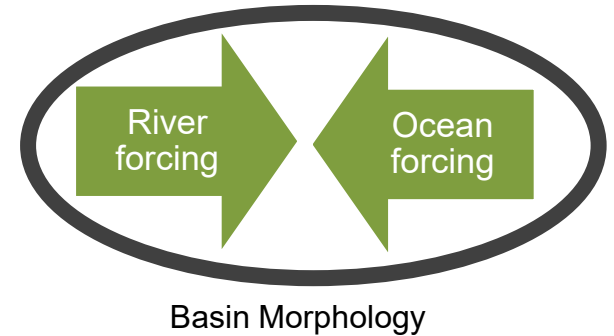
All inland waters except private ponds; and all waters connecting with or tributary to coastal sounds or the ocean extending inland or upstream from the dividing line between coastal fishing waters and inland fishing waters agreed upon by the Marine Fisheries Commission and the Wildlife Resources Commission.

## **G.S. 113-129 (10a) – Joint Fishing Waters -**

Those coastal fishing waters in which are found a significant number of freshwater fish, as agreed upon by the Marine Fisheries Commission and the Wildlife Resources Commission in accordance with G.S. 113-132 (e).

# *Upper Limit of Estuary*

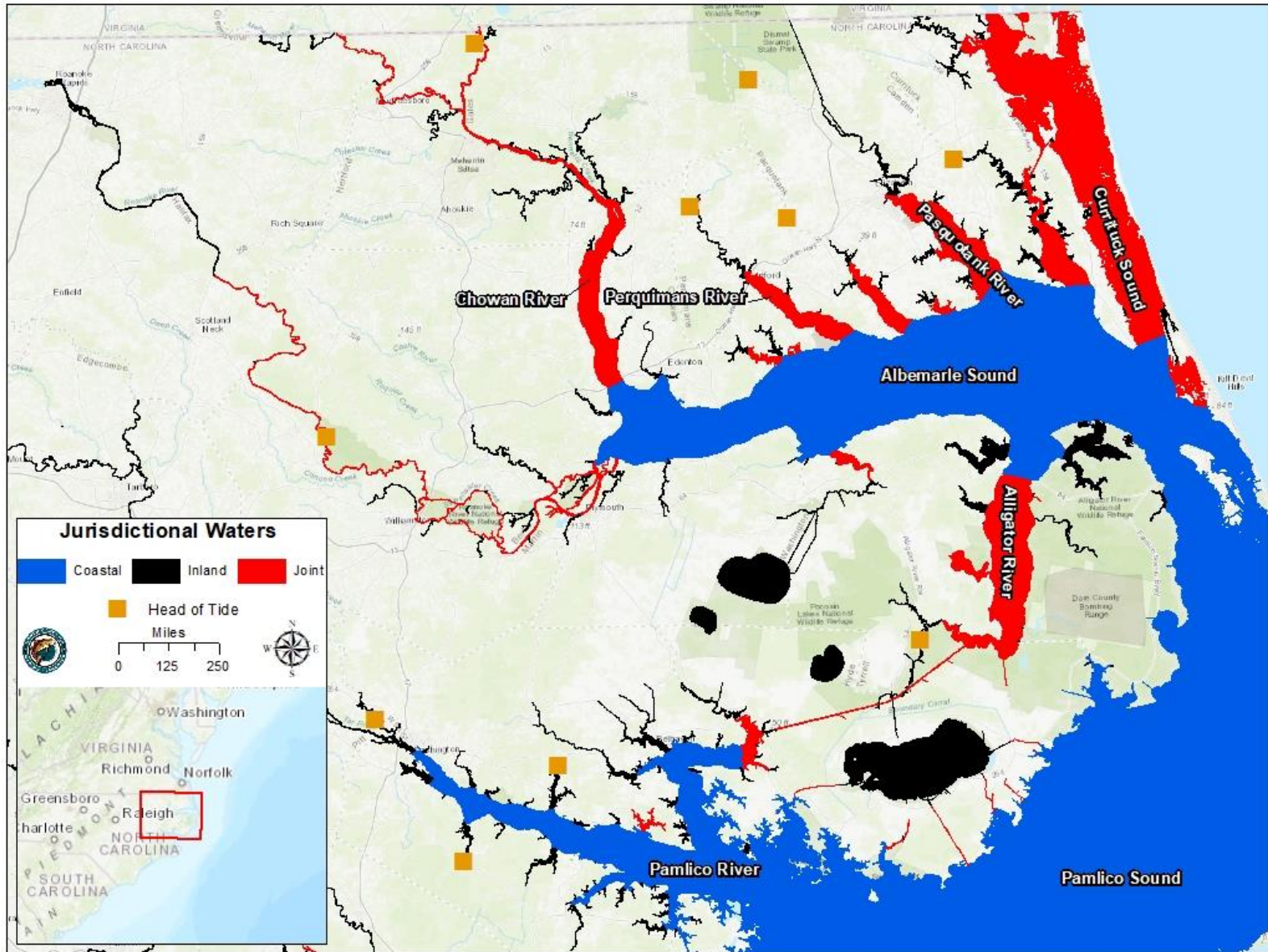
- Upper limit of salinity intrusion under average tidal and river flow conditions = Head of Tide



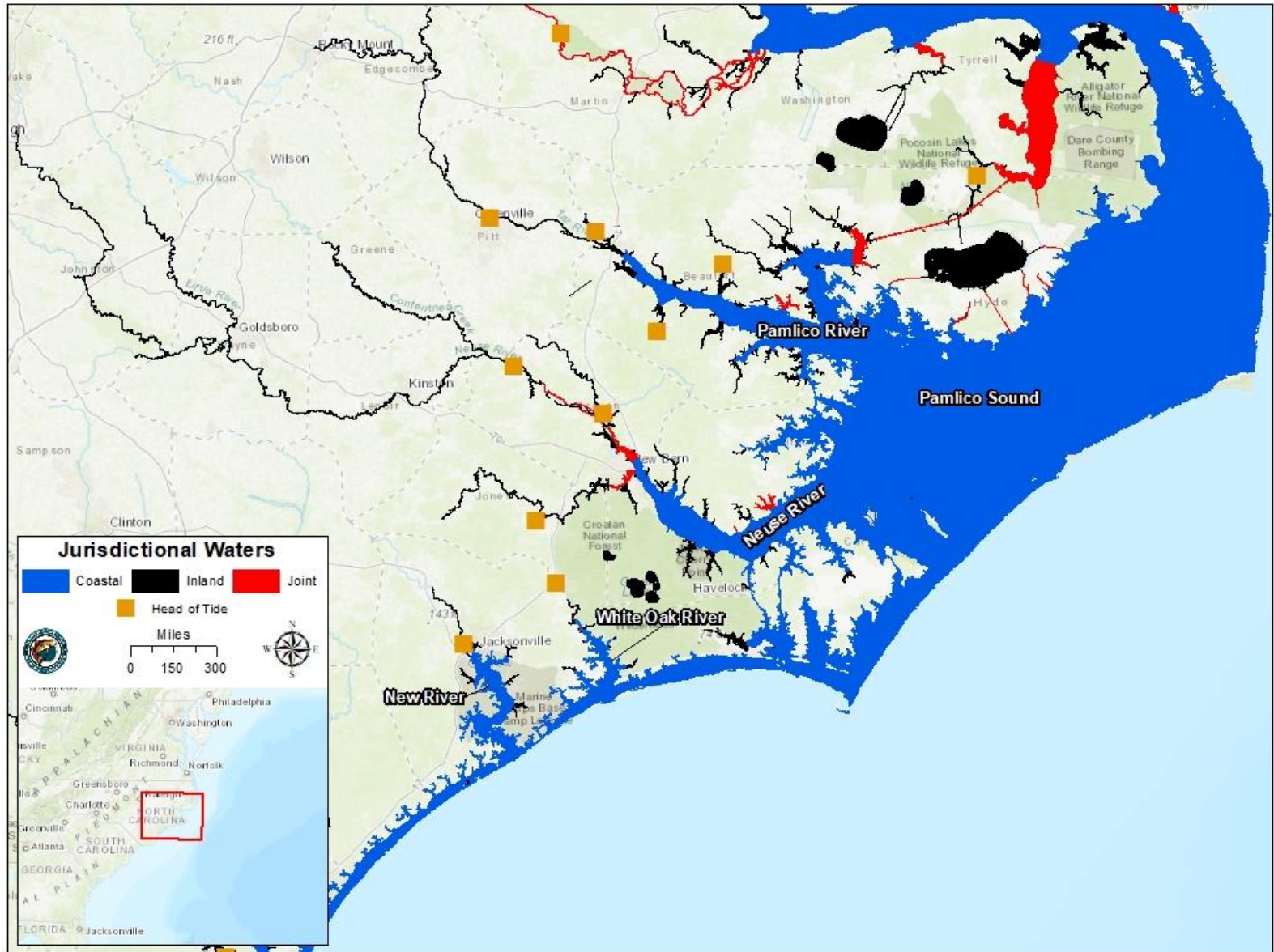
## Head of Tide

- Inland or upstream limit of water affected by the tide
- Determined by limited tidal range (< 0.2 ft), changes in flow, geomorphology, wetland vegetation, and salinity < 0.5 ppt (NOAA; Dusterhoff et al. 2014; Ensign et al. 2013)
- Used by several states as dividing line between inland and coastal fishing waters – MD, VA, DE
- Other states use highways that align with Head of Tide or tidewater physiographic boundaries – SC, GA, CT

# Head of Tide in North Carolina – Albemarle System

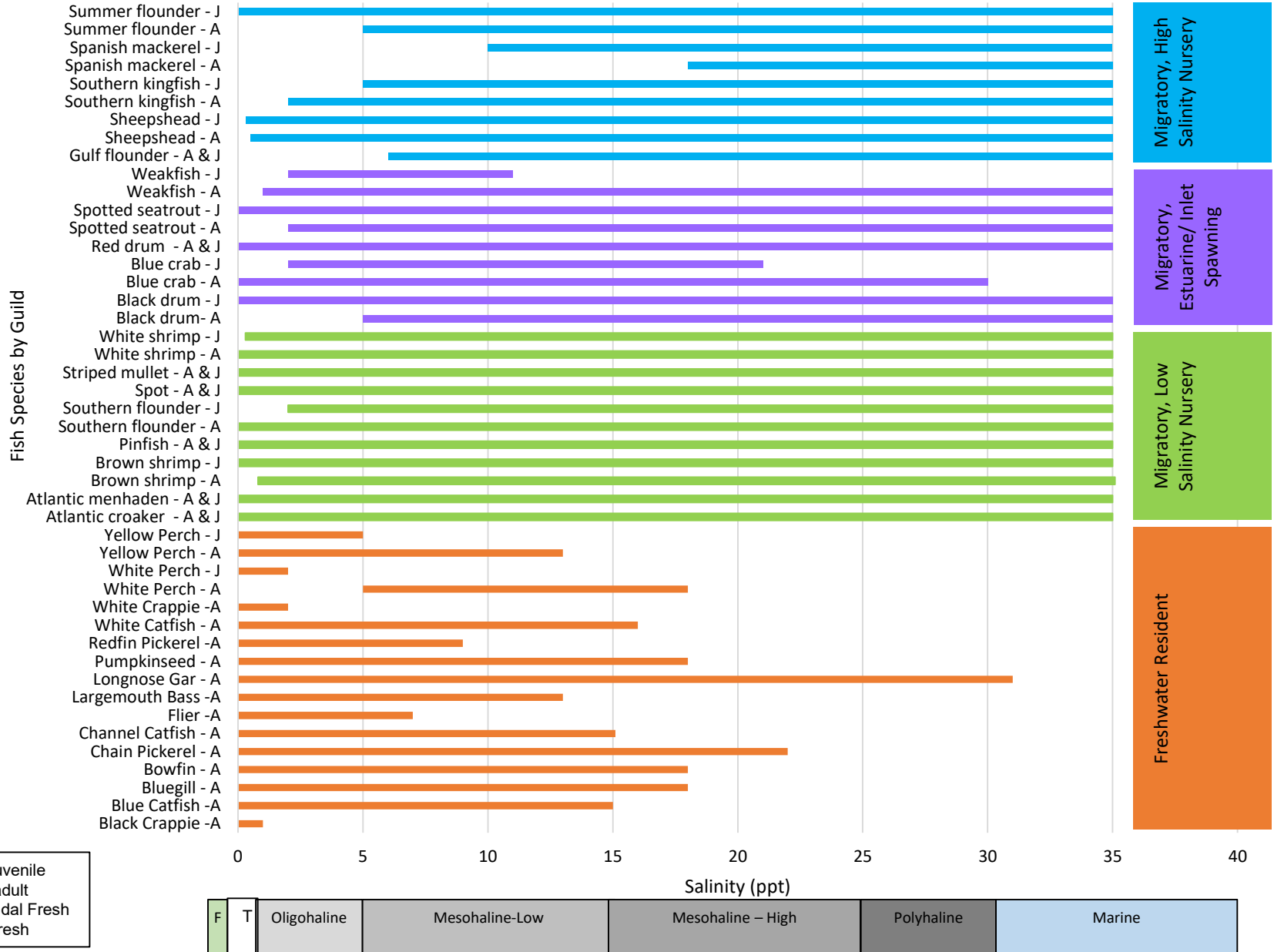


# Head of Tide in North Carolina – Pamlico System





# Use of Fish Salinity Tolerances



# *Use of Biologically Based Salinity Zones*

Relates fish assemblages to salinity or other conditions

## Bulger et al. 1993

- Example of how to classify an estuary by salinity zones using fish data from that estuary and statistical analysis
- Defined five overlapping salinity zones:

*0-4 ppt; 2-15 ppt; 11-19 ppt; 15-28 ppt; 23-35+ ppt*

- Based on data from Chesapeake and Delaware bays
- Bulger method has been used in other estuaries and resulted in different salinity zones:

*Gulf of Mexico- 0-8 ppt; Tampa Bay- 0.1-1 ppt; St. John's River, FL- no clear zones except 0.1-1 ppt*

*(Christensen et al. 1997; Greenwood 2007; Guenther and MacDonald 2012)*

# *Use of Biologically Based Salinity Zones*

- Salinity ranges used by fish species vary across estuaries (Christensen et al. 1997)
- Availability of preferred salinity habitat had larger influence on salinity used by fish than temporal distribution (will stay in preferred salinity when available, move to edge of salinity range if not available)
- The Bulger method did not accurately reflect the community structure or distinct salinity zones in some cases

## **Conclusion**

Biologically based salinity zones identified in Bulger are specific to those waters and should not be applied to other systems. (M. Nelson pers. comm., Taupp and Wetzel 2014; Bulger et al. 1993)

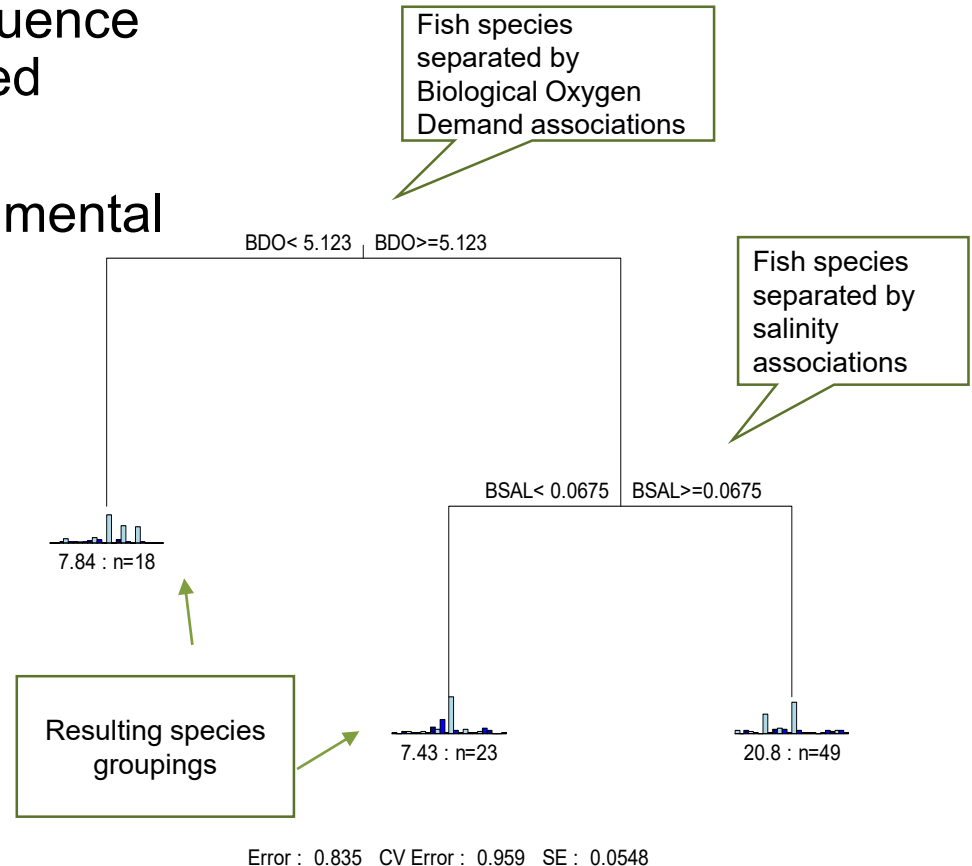
# Fish Community Assessment

## Multivariate Regression Trees (MRTs)

- What environmental variables influence the relative abundance of observed species?
- Groups species based on environmental thresholds

## Indicator Species Analysis

- Builds on Regression Tree
- Identifies species significantly associated with the splits in the tree
- Indicator species can be used to predict or assess the environmental conditions at a given site



# *Fish Community Assessment – Data Used*

## NCDMF Program 100

- 2015 – year of average flow conditions
- Seine and trawl data

## SURVEY GOALS

1. To determine relative abundance, growth, and distribution of juvenile (young-of-year) alosine fishes and Striped Bass (*Morone saxatilis*) in the Albemarle Sound and tributaries.

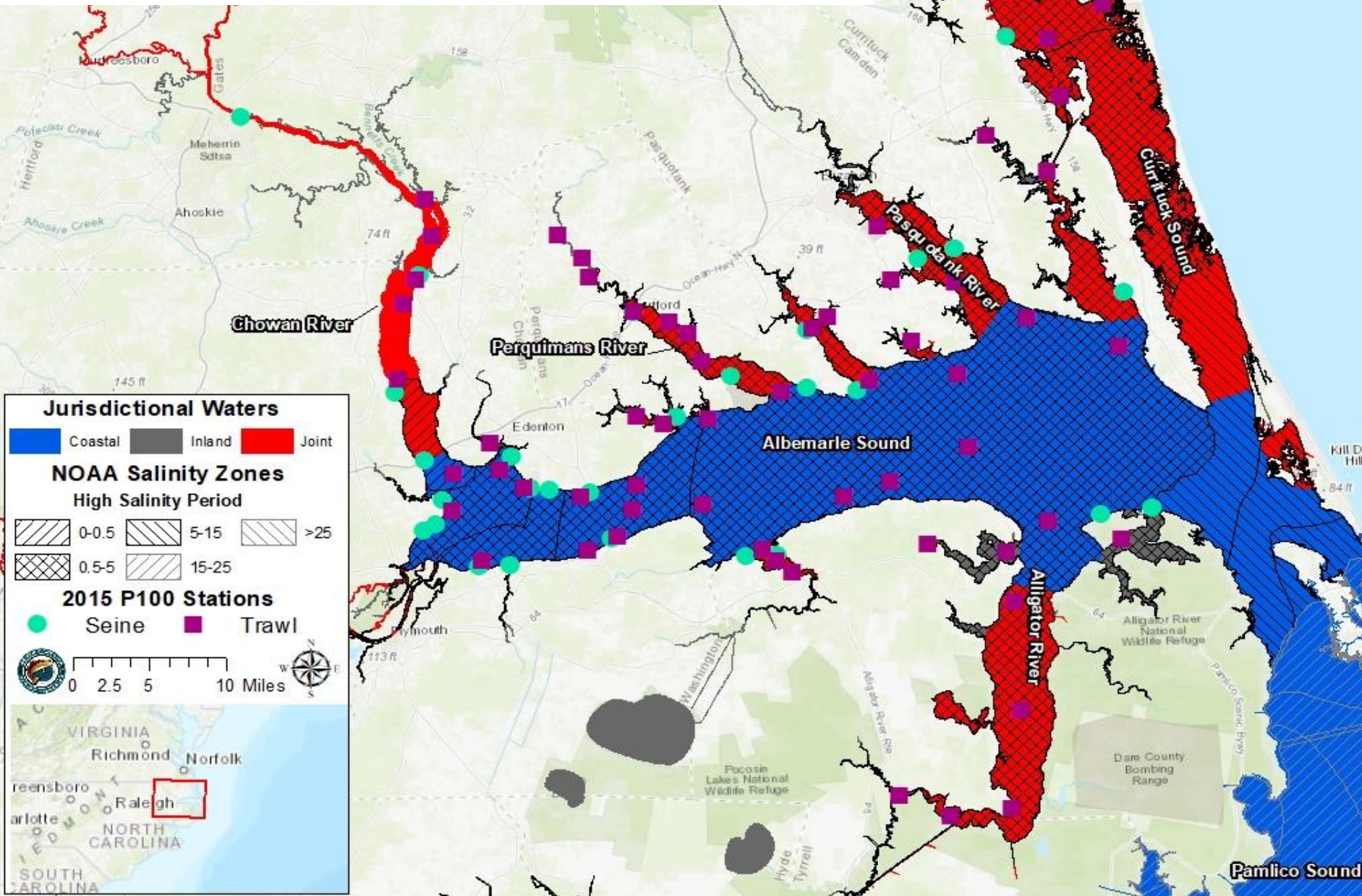
## SURVEY DESIGN

1. Beach seine survey, 9 fixed stations, western Albemarle Sound, 1993-present, samples for six weeks, Jun-Jul
2. Hassler trawls; 7 fixed stations, western Albemarle Sound, 1955-present, samples bi-weekly for eight weeks, 3<sup>rd</sup> week of Jul-Oct
3. Central Albemarle Sound trawls, 12 fixed stations, bi-weekly for seven weeks, 1984-present, 4<sup>th</sup> week of Jul-Oct

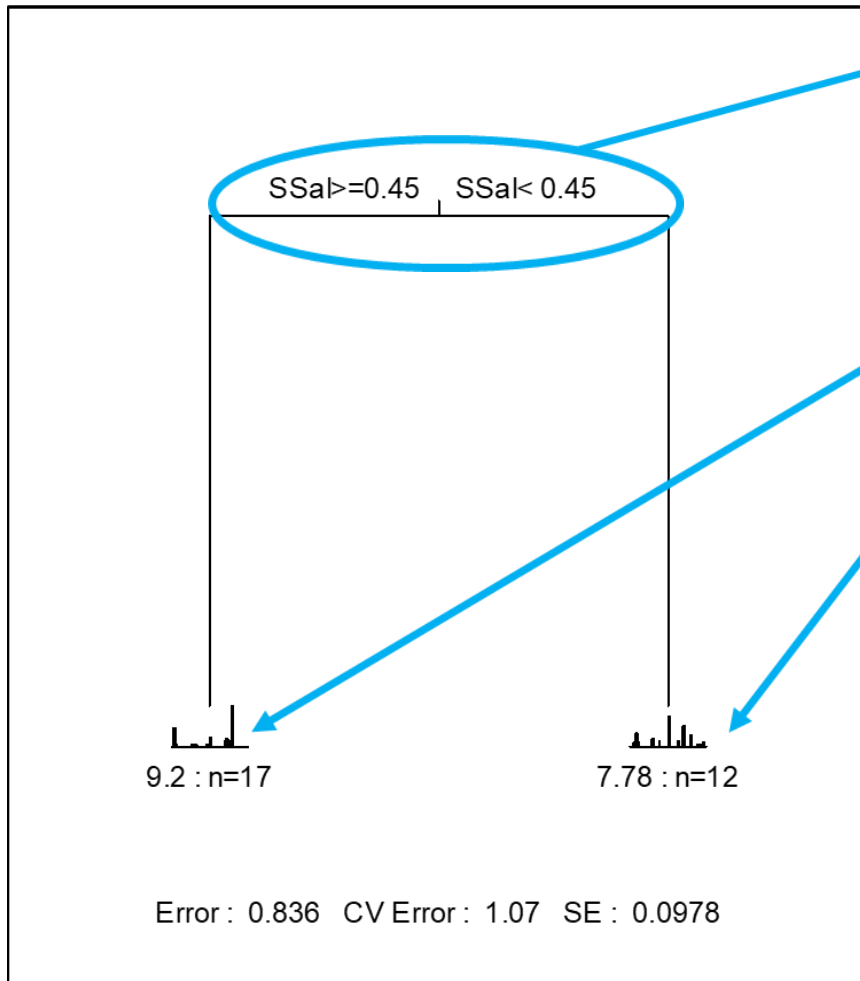
## VARIABLES RECORDED

- Water quality parameters - temperature, salinity, DO
- Biological data - Fork length (mm), total length (mm), and weight (0.1 grams)

# 2015 Program 100 Stations Used in Fish Analysis



# *P100 Seine Results*



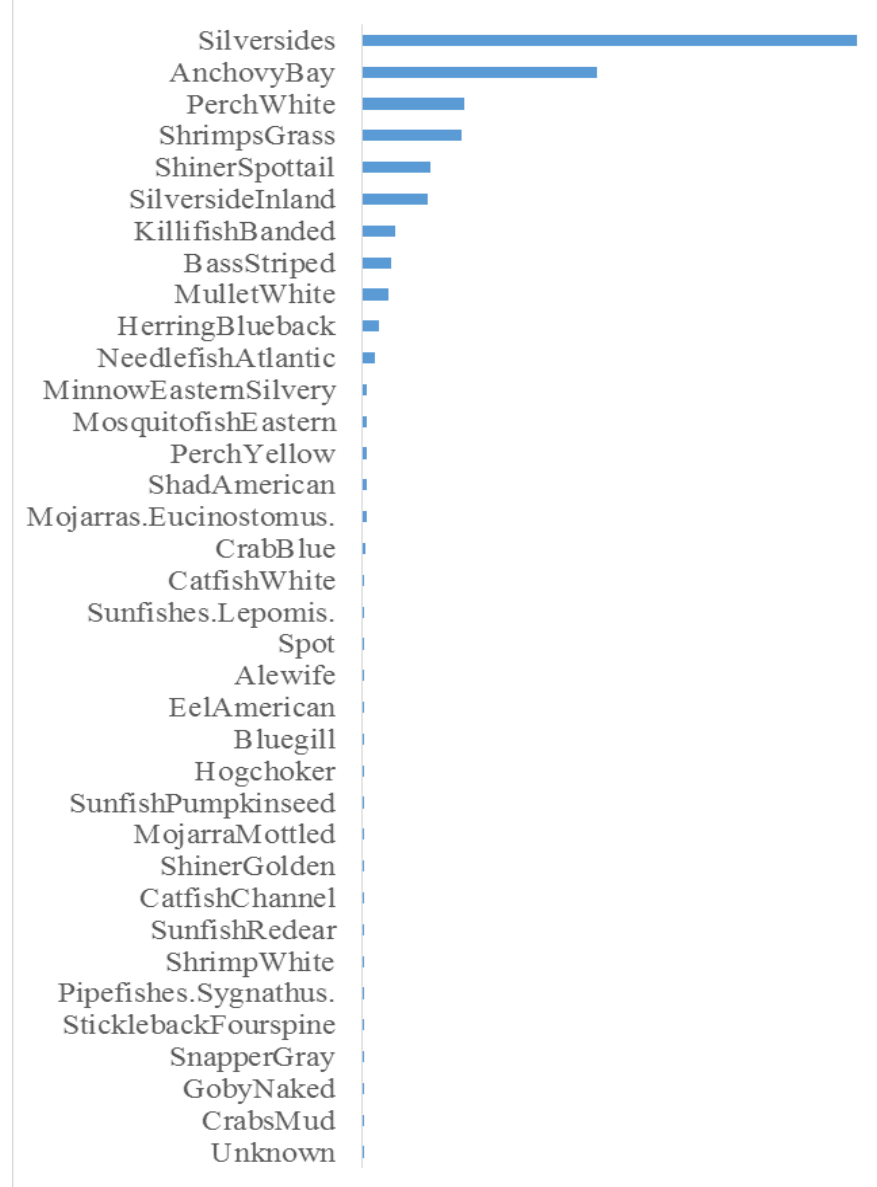
Major predictor variable and cut-off value

Species composition of each leaf

# *P100 Seine Results*

## *Left Leaf ( $\geq 0.45$ ppt) Species Composition*

|                        |                      |                       |
|------------------------|----------------------|-----------------------|
| Silversides spp.       | Eastern Mosquitofish | Pumpkinseed           |
| Bay Anchovy            | Yellow Perch         | Mottled Mojarra       |
| White Perch            | American Shad        | Golden Shiner         |
| Grass Shrimps          | Mojarras spp.        | Channel Catfish       |
| Spottail Shiner        | Blue Crab            | Redear Sunfish        |
| Inland Silverside      | White Catfish        | Pipefish spp.         |
| Banded Killifish       | Lepomis spp.         | White Shrimp          |
| Striped Bass           | Spot                 | Mud Crabs             |
| White Mullet           | Alewife              | Fourspine Stickleback |
| Blueback herring       | American eel         | Gray Snapper          |
| Atlantic Needlefish    | Bluegill             | Naked Goby            |
| Eastern Silvery Minnow | Hogchoker            | Unidentified          |

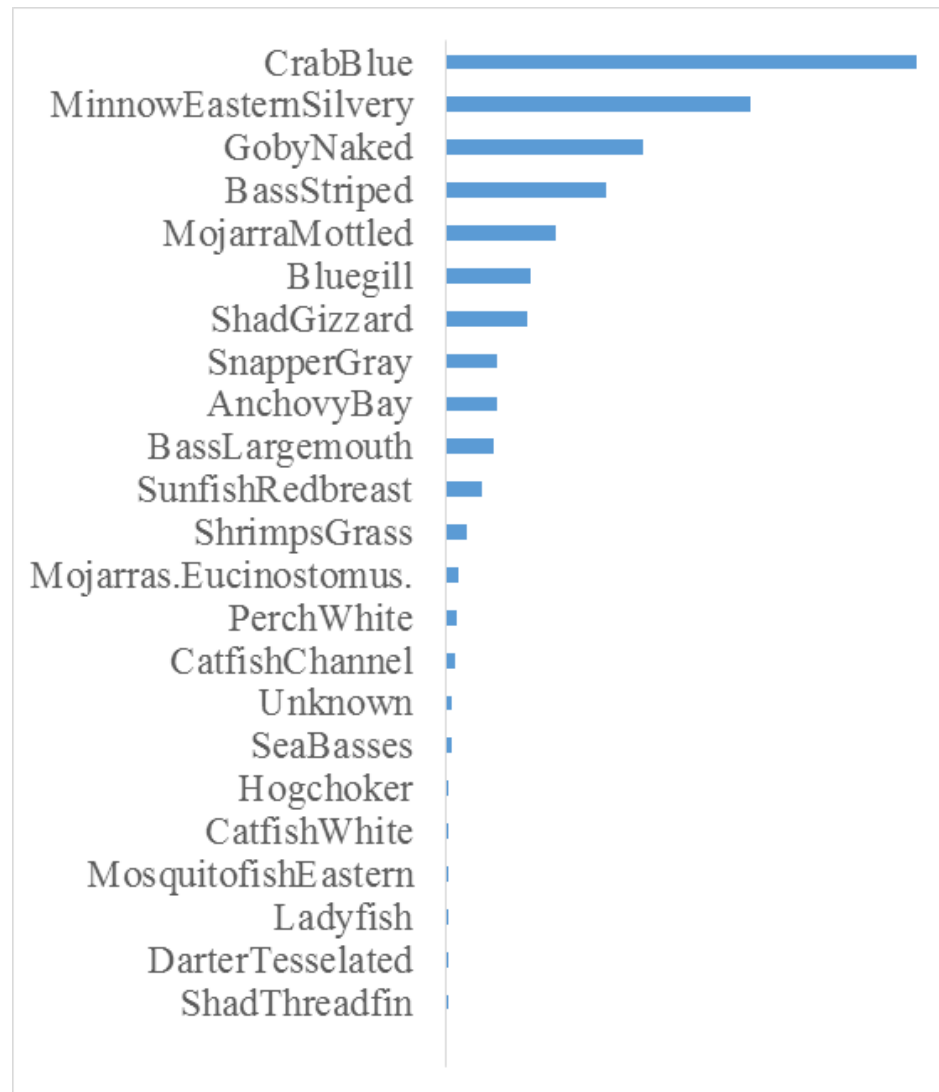




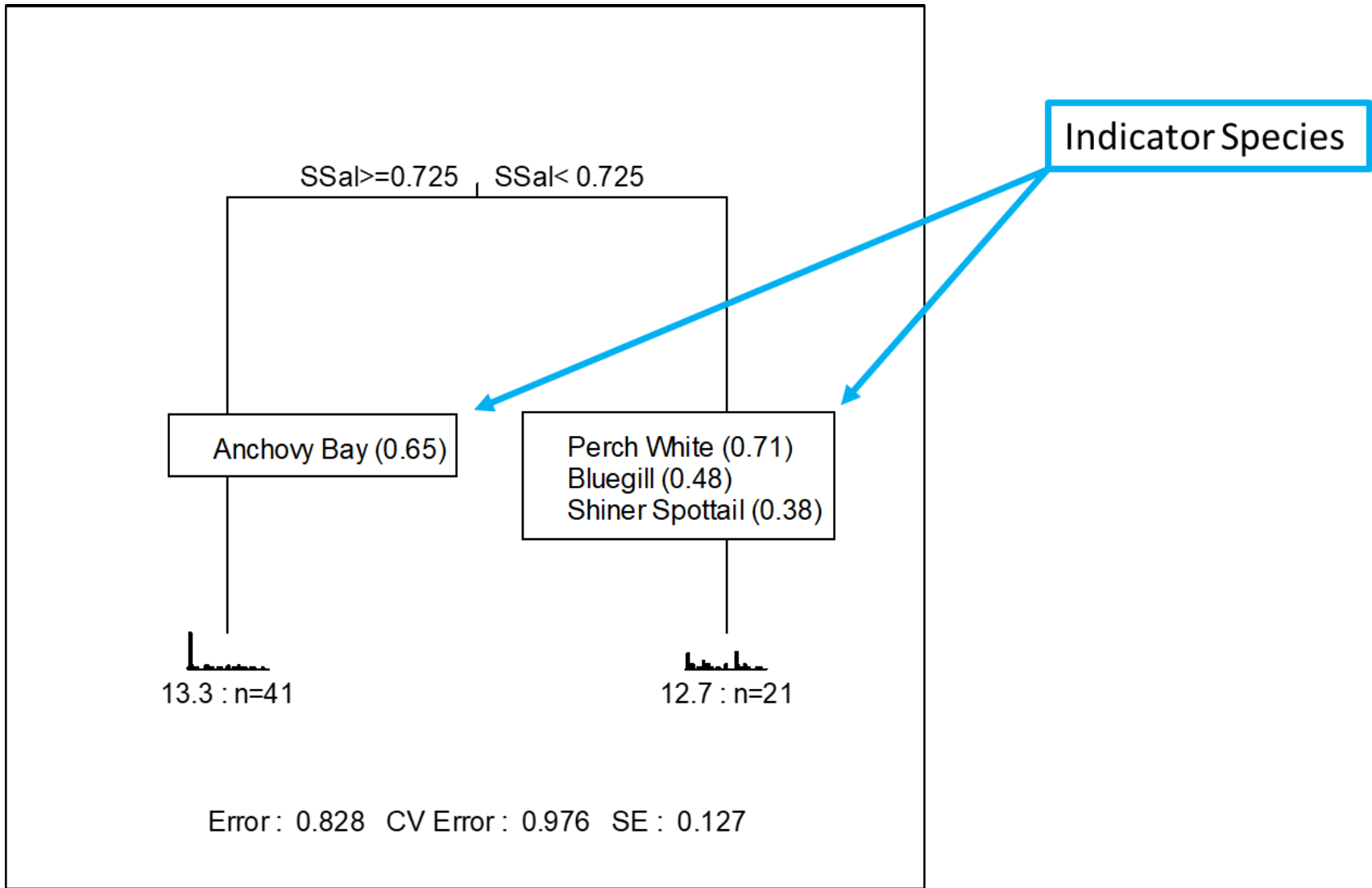
# *P100 Seine Results*

## *Right Leaf (<0.45 ppt) Species Composition*

|                        |                      |
|------------------------|----------------------|
| Blue Crab              | Mojarra spp.         |
| Eastern Silvery Minnow | White Perch          |
| Naked Goby             | Channel Catfish      |
| Striped Bass           | Unidentified         |
| Mottled Mojarra        | Sea Bass spp.        |
| Bluegill               | Hogchoker            |
| Gizzard Shad           | White Catfish        |
| Gray Snapper           | Eastern Mosquitofish |
| Bay Anchovy            | Tessellated Darter   |
| Largemouth Bass        | Ladyfish             |
| Redbreast Sunfish      | Threadfin Shad       |
| Grass Shrimp           |                      |



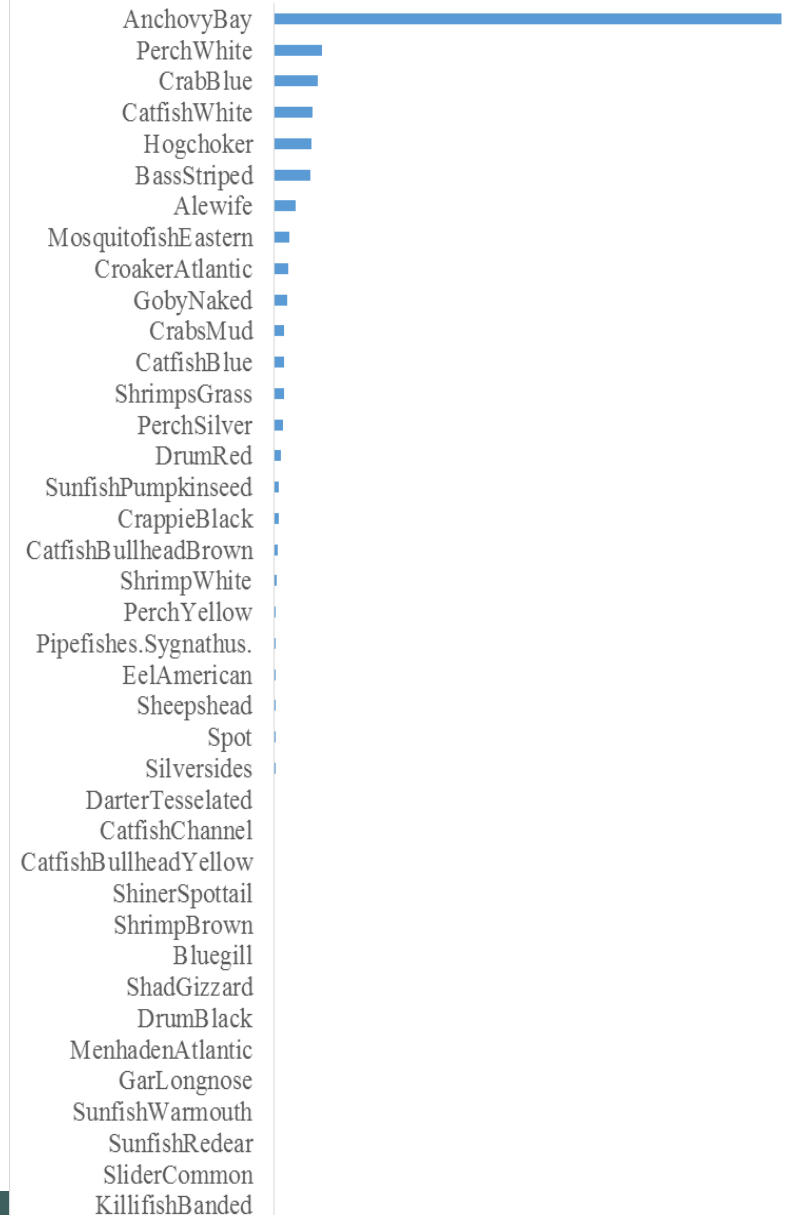
# *P100 Trawl Results*



# P100 Trawl Results

## Left Leaf ( $\geq 0.725$ ppt) Species Composition

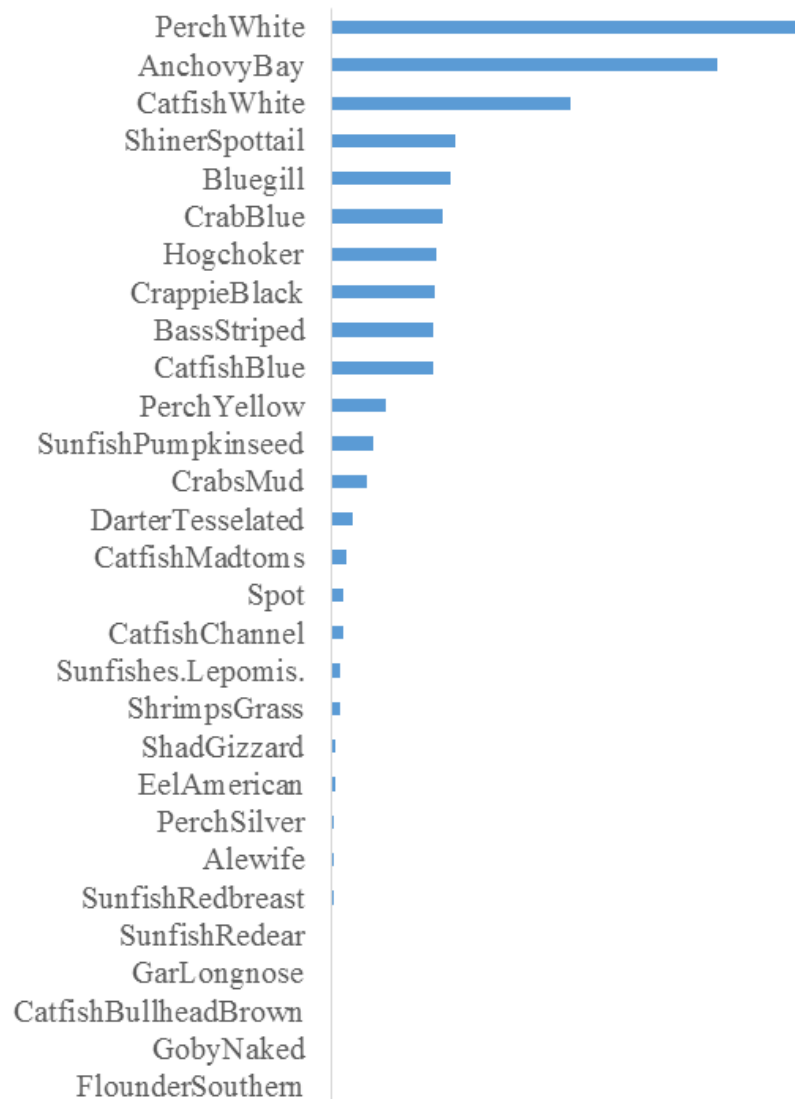
|                      |                        |                         |
|----------------------|------------------------|-------------------------|
| Bay Anchovy          | Grass Shrimp spp.      | Silverside spp.         |
| White Perch          | Silver Perch           | Tessellated Darter      |
| Blue Crab            | Red Drum               | Channel Catfish         |
| White Catfish        | Pumpkinseed            | Yellow Bullhead Catfish |
| Hogchoker            | Black Crappie          | Spottail Shiner         |
| Striped Bass         | Brown Bullhead Catfish | Brown Shrimp            |
| Alewife              | White Shrimp           | Bluegill                |
| Eastern Mosquitofish | Yellow Perch           |                         |
| Atlantic Croaker     | Pipefish spp.          |                         |
| Naked Goby           | American eel           |                         |
| Mud Crabs            | Sheepshead             |                         |
| Blue catfish         | Spot                   |                         |



# *P100 Trawl Results*

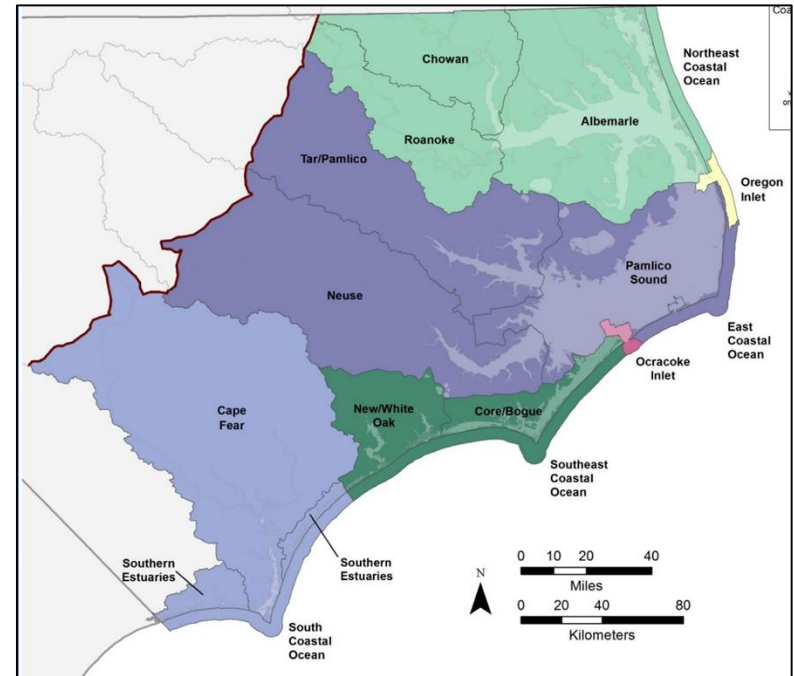
## *Right Leaf (<0.725 ppt) Species Composition*

|                 |                    |                        |
|-----------------|--------------------|------------------------|
| White Perch     | Mud Crabs          | Longnose gar           |
| Bay Anchovy     | Tessellated Darter | Redear Sunfish         |
| White Catfish   | Madtom spp.        | Brown Bullhead Catfish |
| Spottail Shiner | Spot               | Naked Goby             |
| Bluegill        | Channel Catfish    | Southern Flounder      |
| Blue Crab       | Lepomis spp.       |                        |
| Hogchoker       | Grass Shrimp spp.  |                        |
| Black Crappie   | Gizzard Shad       |                        |
| Striped Bass    | American Eel       |                        |
| Blue Catfish    | Silver Perch       |                        |
| Yellow Perch    | Alewife            |                        |
| Pumpkinseed     | Redbreast Sunfish  |                        |

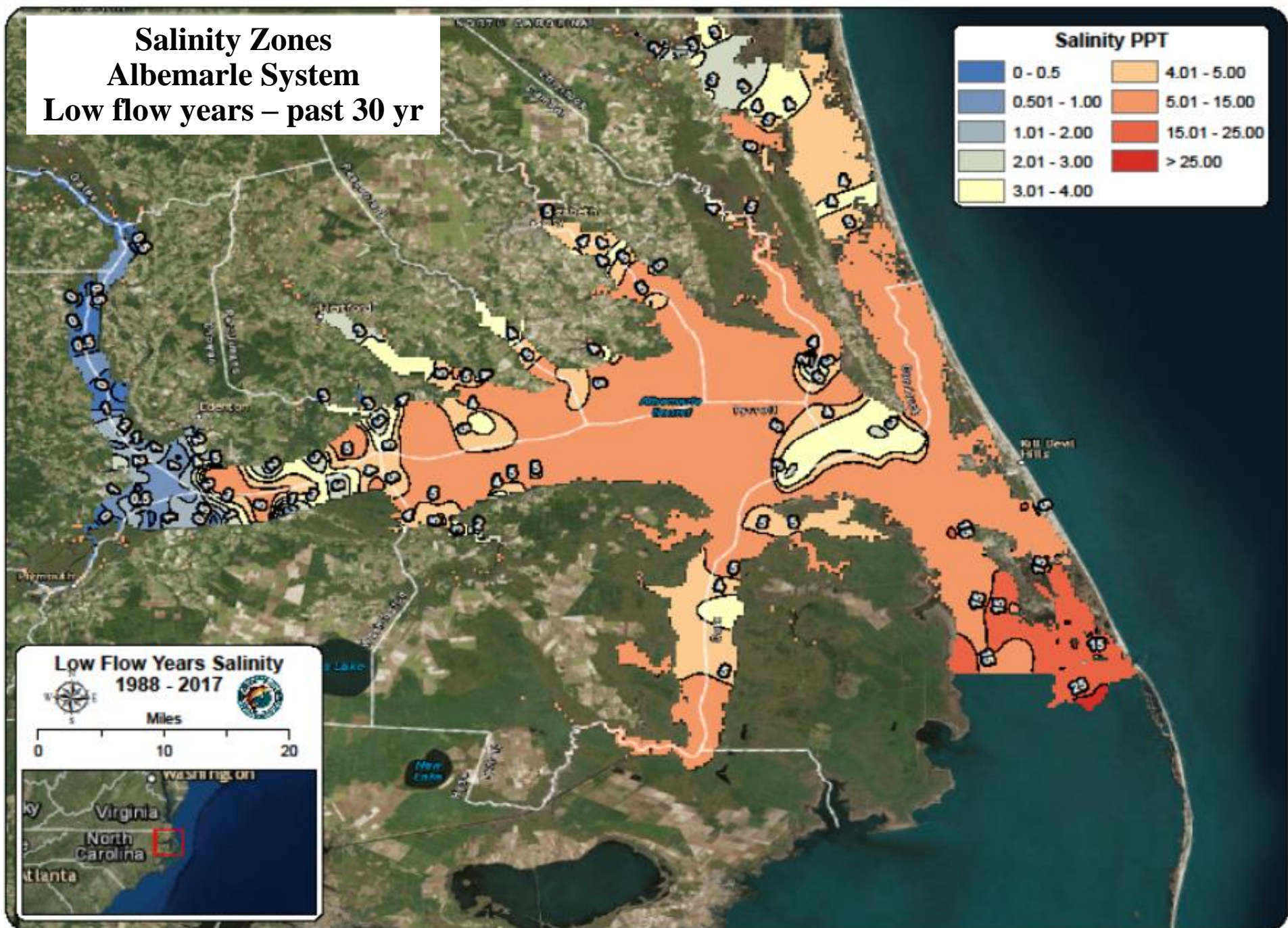
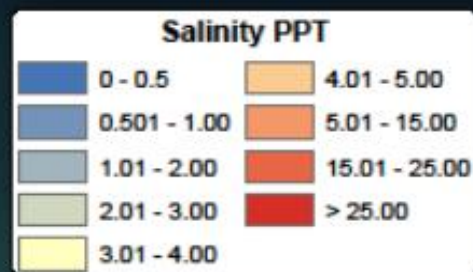


# Salinity Data

- Regional approach using CHPP regions
  - Region 1 - Albemarle
  - Region 2 – Pamlico
  - Region 3 – Core/Bogue
  - Region 4 – Cape Fear
- Interpolation method
  - Spline with barriers
  - Barrier = jurisdictional waters
- Time Series = 1988 to 2017 (30 years)
- Flow years (high, normal, low) determined by +/- 1 SD regional gauge average
- Data Inputs for Albemarle and Pamlico regions
  - DMF programs: 100, 115, 120, 123, 135, 146, 150, 160, 195, 365, 366, 635, 915, and Shellfish Sanitation
  - DWR Ambient Water Quality Monitoring
  - ModMon
  - WRC programs



# Salinity Zones Albemarle System Low flow years – past 30 yr



Low Flow Years Salinity  
1988 - 2017

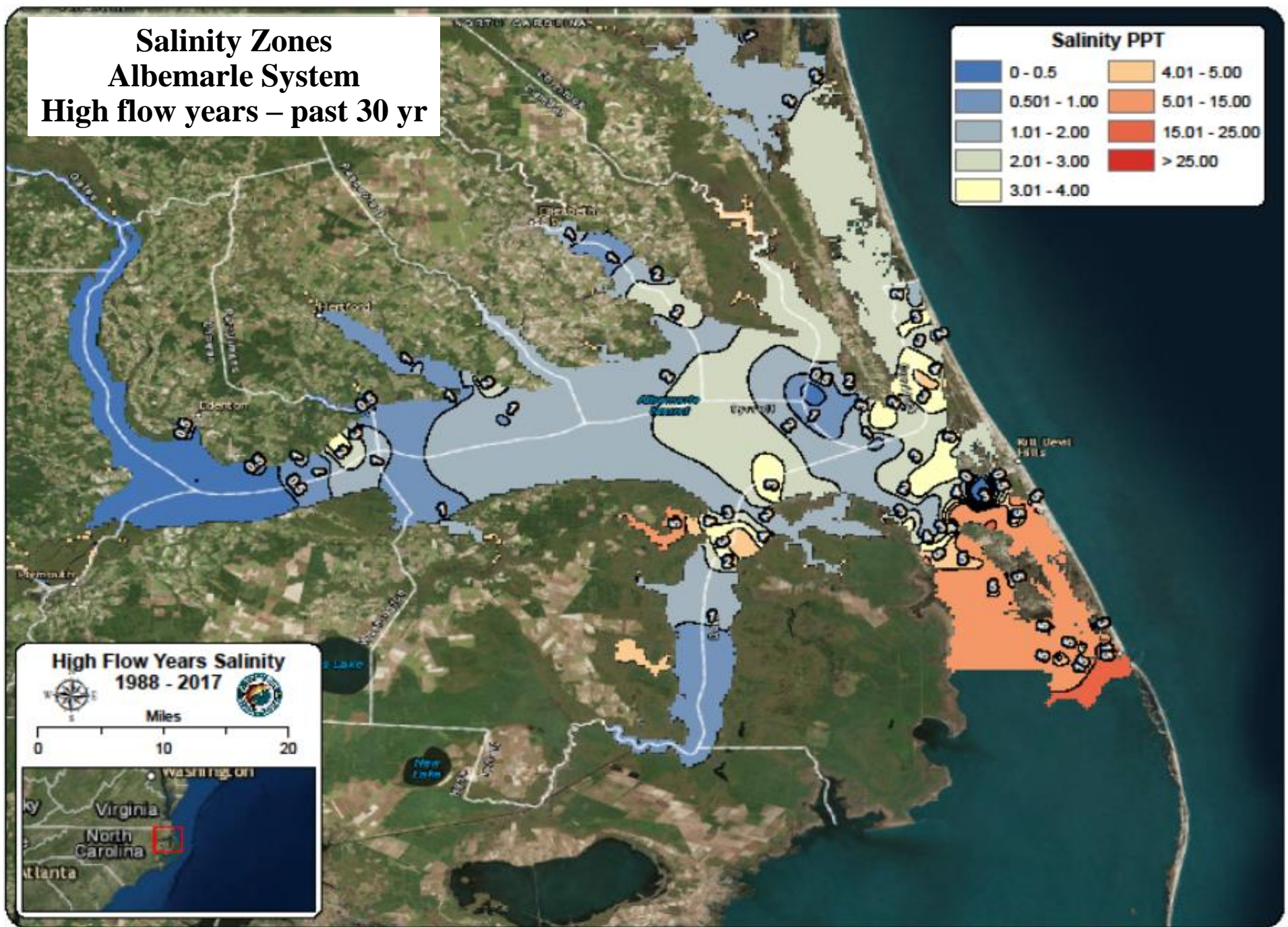
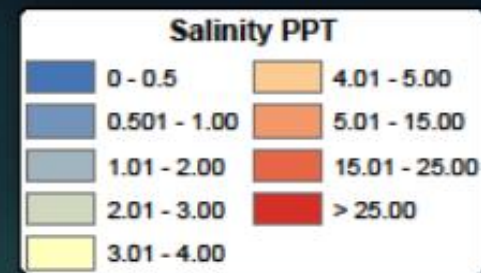


Miles

0 10 20



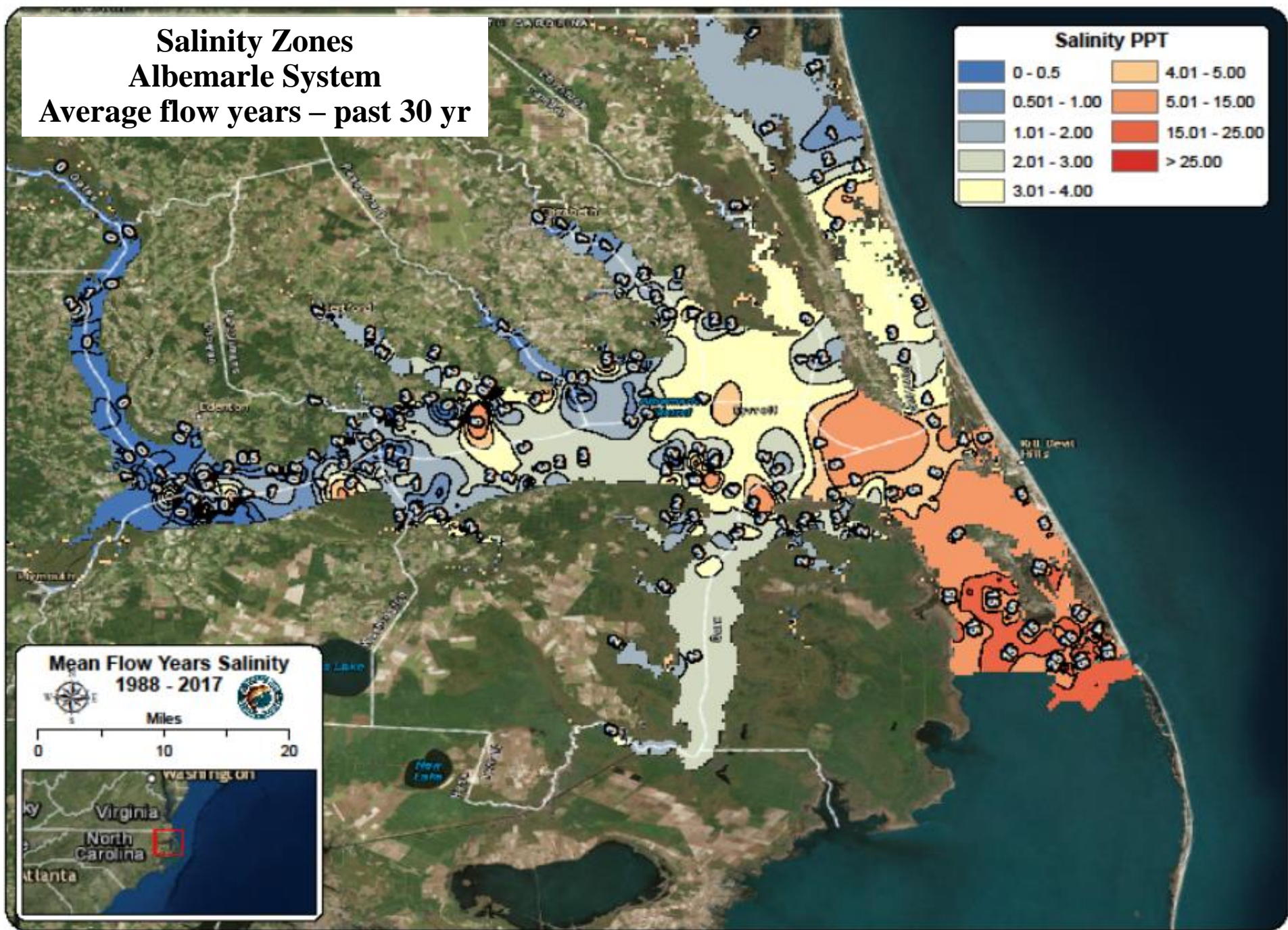
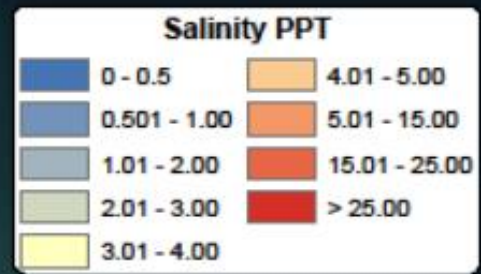
# Salinity Zones Albemarle System High flow years – past 30 yr



**High Flow Years Salinity  
1988 - 2017**

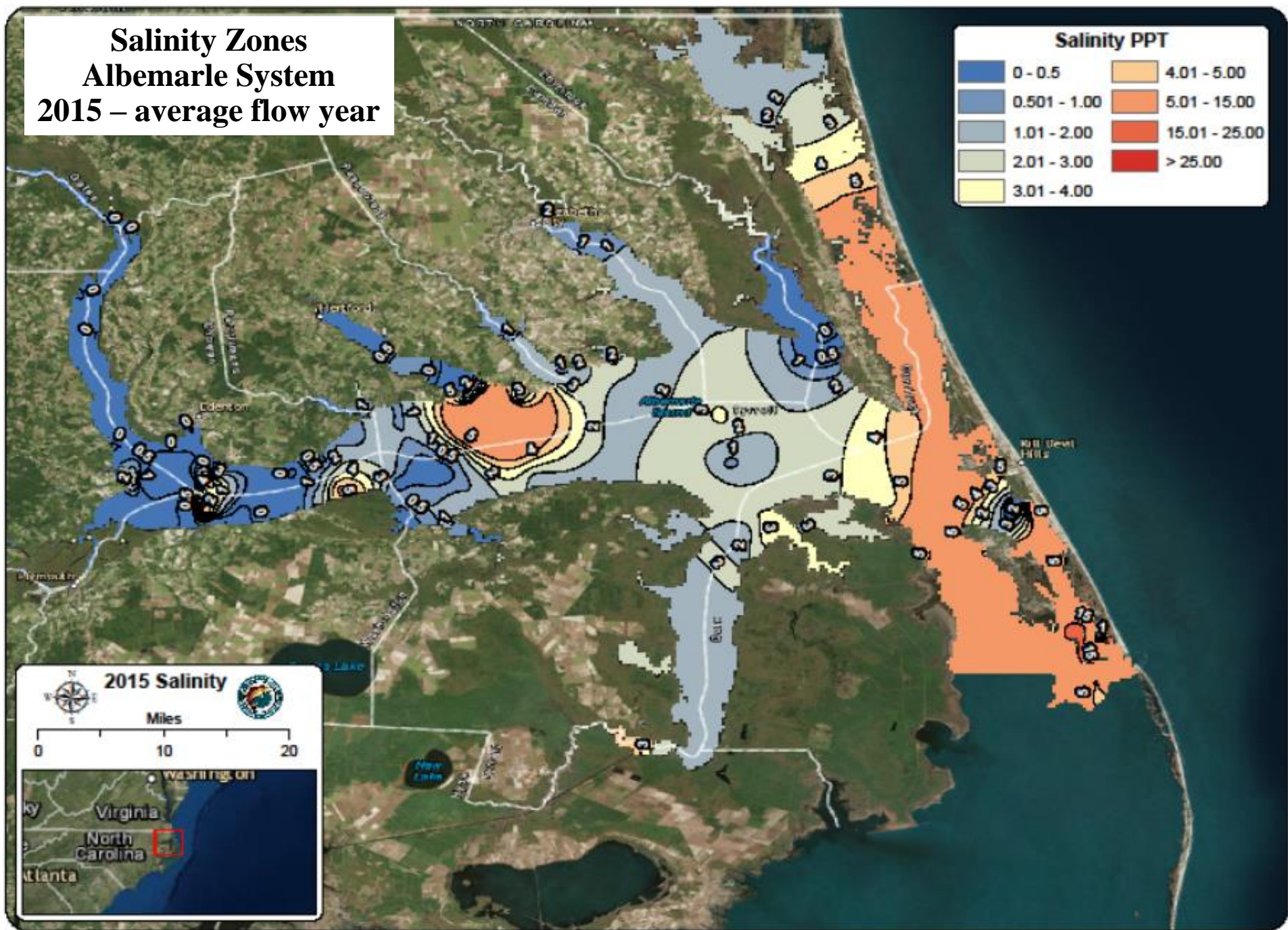
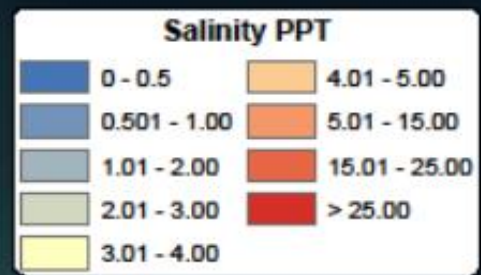
Miles  
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**Salinity Zones**  
**Albemarle System**  
**Average flow years – past 30 yr**

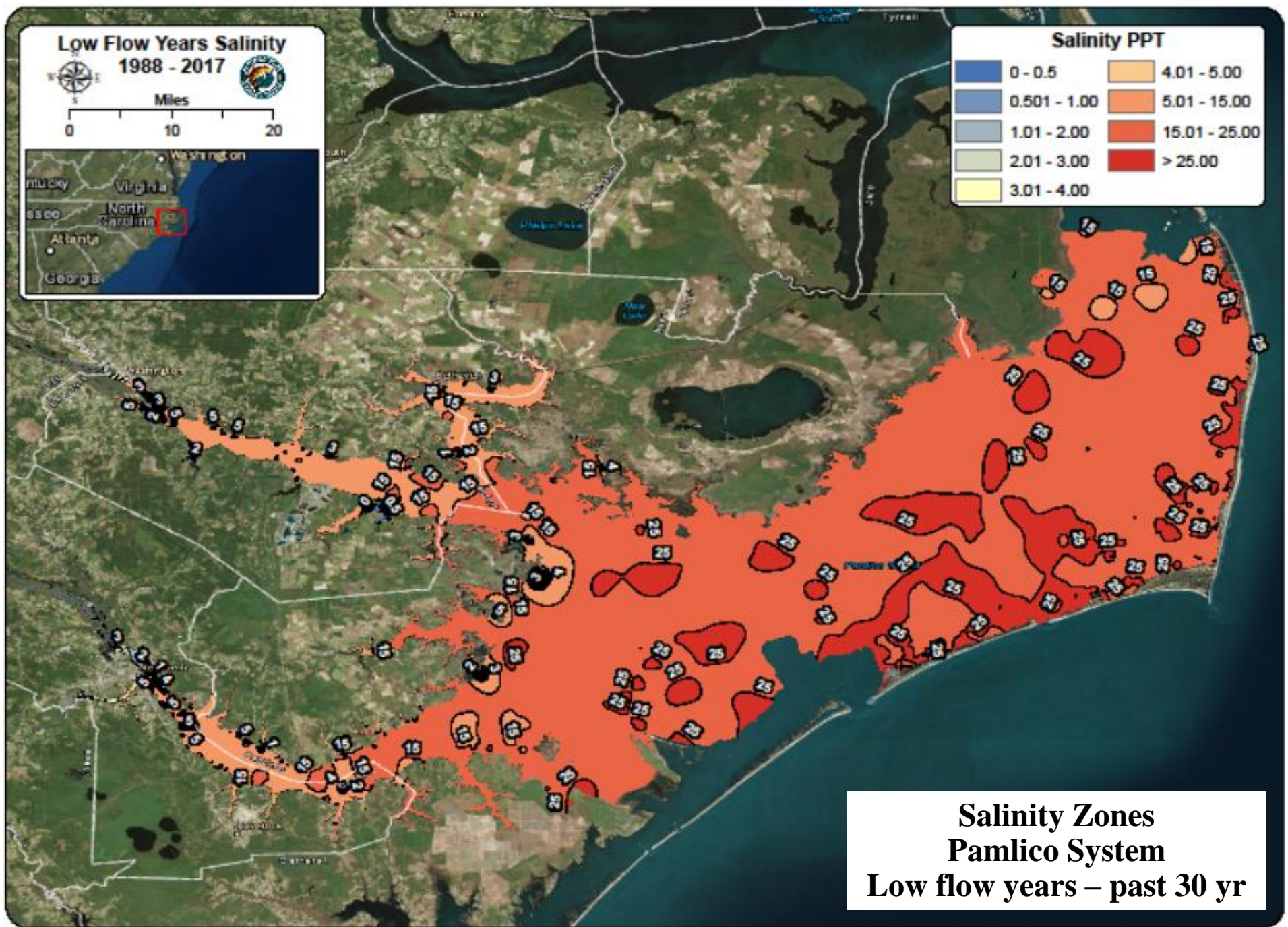
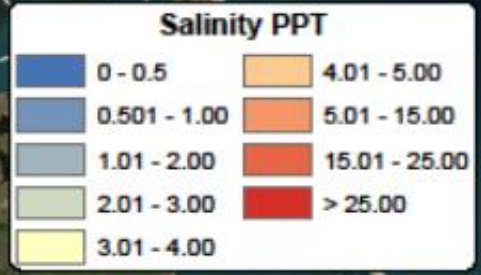
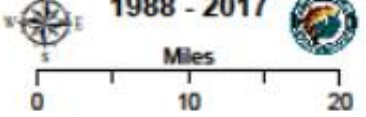




# Salinity Zones Albemarle System 2015 – average flow year



**Low Flow Years Salinity  
1988 - 2017**



**Salinity Zones  
Pamlico System  
Low flow years – past 30 yr**

# High Flow Years Salinity 1988 - 2017

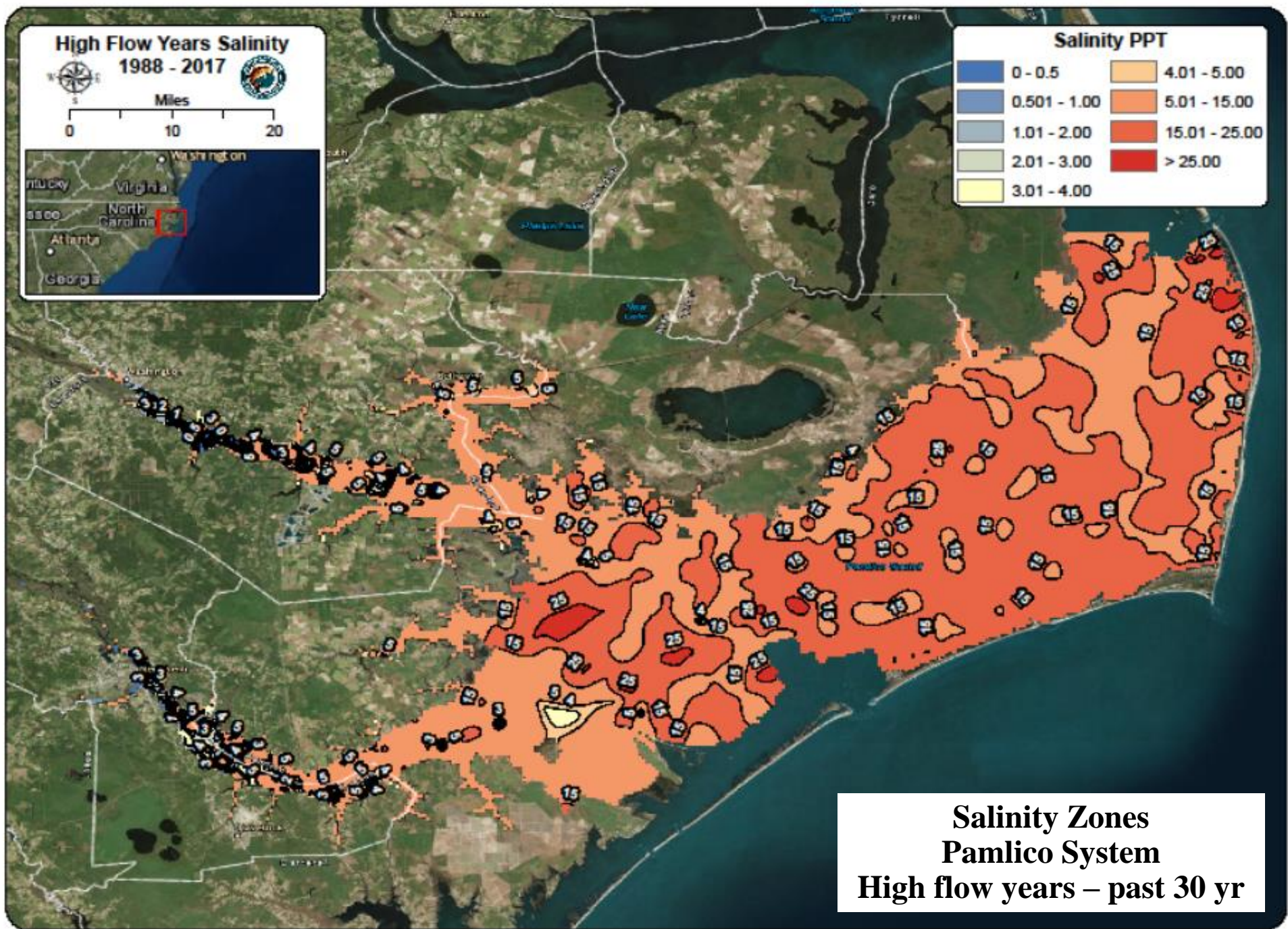


Miles

0 10 20

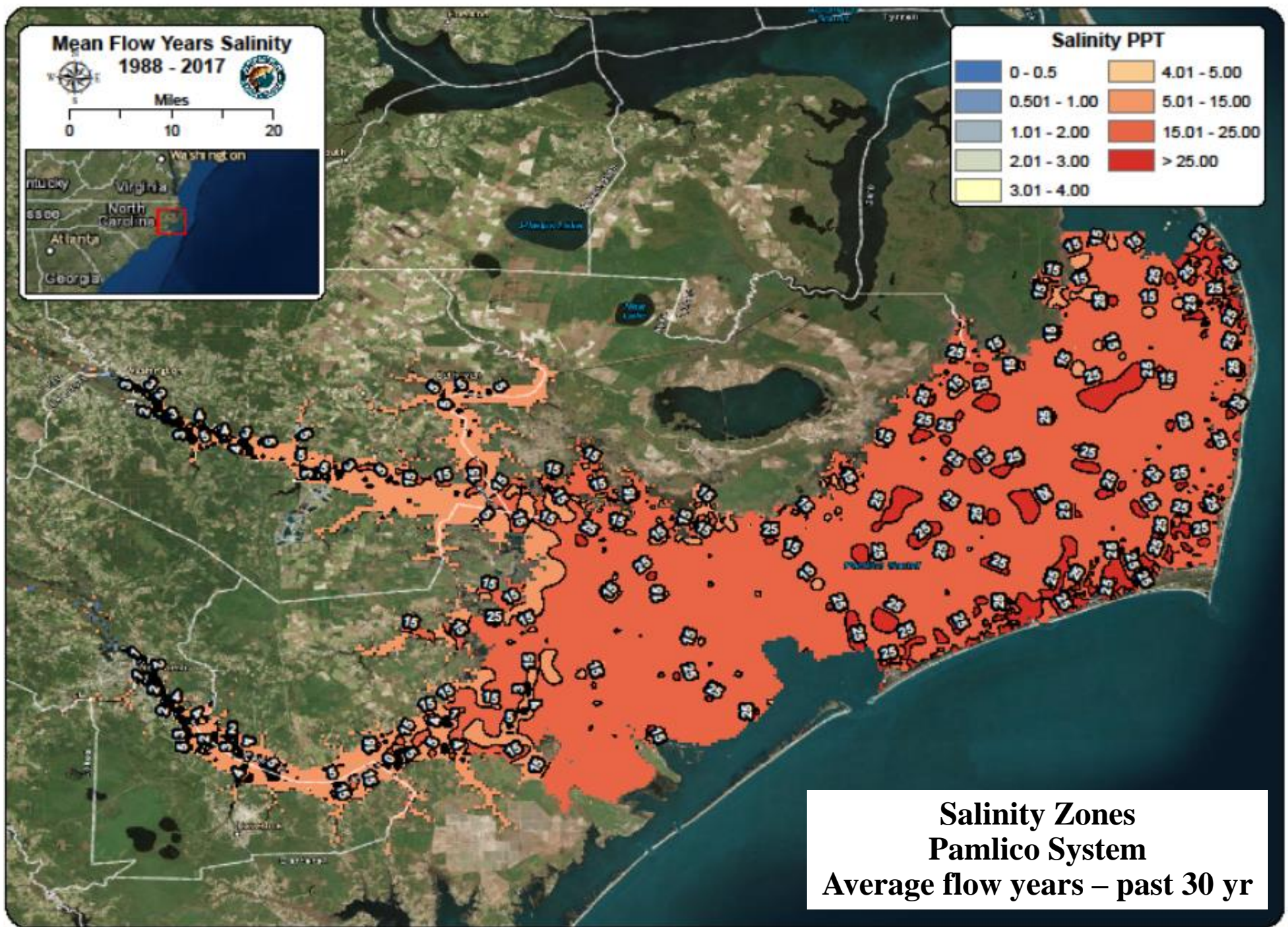
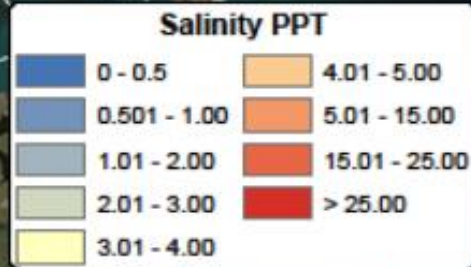
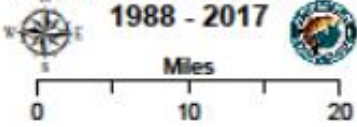


## Salinity PPT

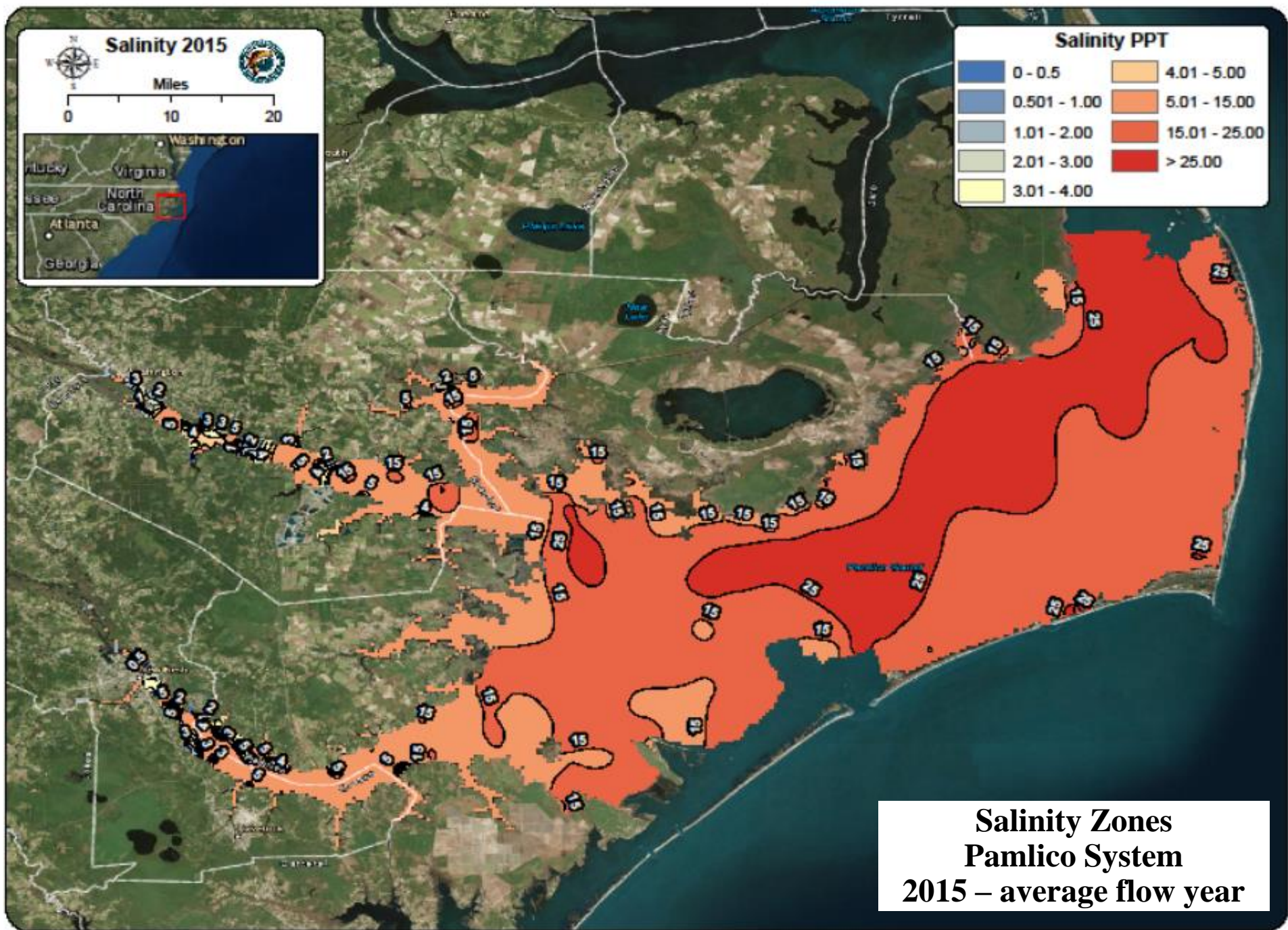
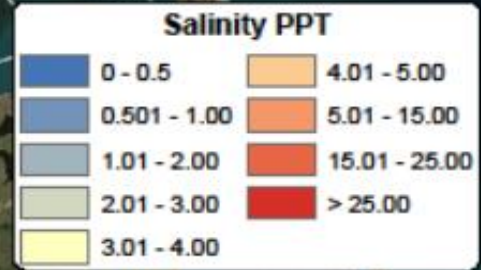


**Salinity Zones  
Pamlico System  
High flow years – past 30 yr**

**Mean Flow Years Salinity  
1988 - 2017**



**Salinity Zones  
Pamlico System  
Average flow years – past 30 yr**



**Salinity Zones  
Pamlico System  
2015 – average flow year**

# *Problematic Coastal Fishing Waters*

WRC Delineation Background Jan 23 Meeting Handout:

*“There are waters currently designated as Coastal Fishing Waters that do not meet any of the following statutory criterion:*

- *Atlantic Ocean*
- *Coastal Sounds*
- *Estuarine waters*

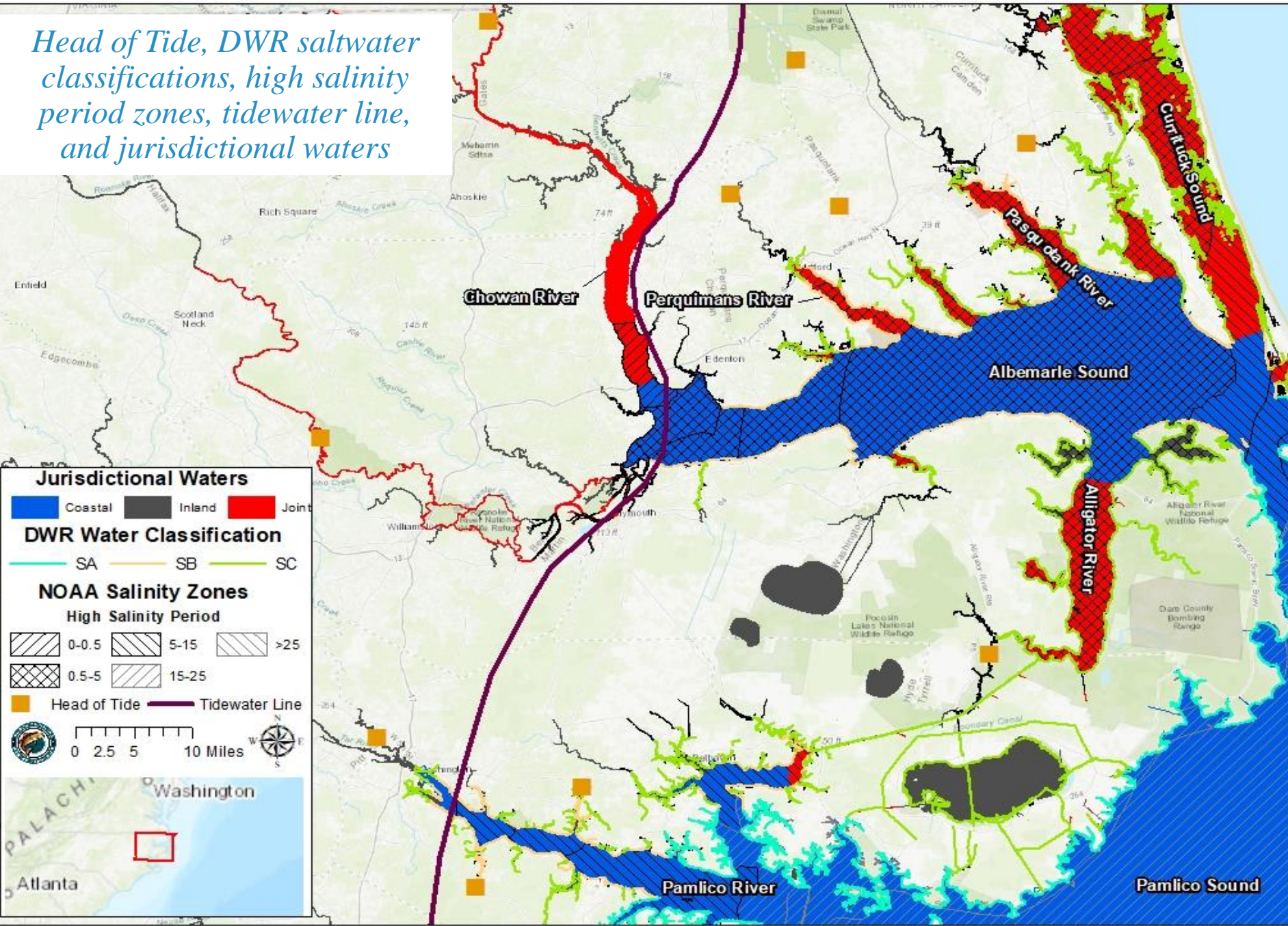
*As a result the WRC 10C .0108 rule referencing MFC 03Q .0202 cannot be readopted without modification.”*

- The specific estuarine waters of concern have not been identified
- Few commission mission critical issues with jointly agreed to ICJ boundaries for past 53 years.
- Phased approach to address specific locales and increase likelihood of rule adoption within the APA timeline

## *Use of 0.5 ppt salinity contour to separate inland and coastal fishing waters*

- Head of tide (0 ppt) is far upstream of 0.5 ppt salinity contour.
- 0.5 ppt line is in estuarine waters (boundary approximately between tidal fresh and oligohaline zones)
- Similar to Division of Water Resources criteria for Saltwater classification - 0.9 ppt
- Similar to joint waters boundaries in the Albemarle system (will simplify and accelerate rule change process)
- Similar to the Tidewater Physiographic Line
- Based on the Venice system- most applied and accepted salinity classification system (Orlando et al. 1994; Taupp and Wetzel 2014; Guenther and MacDonald 2012)
- Venice system categories used in National Estuary Inventory and many other places
- Aligns with results from fish assemblage analysis results for Albemarle Sound (biologically based salinity zone)

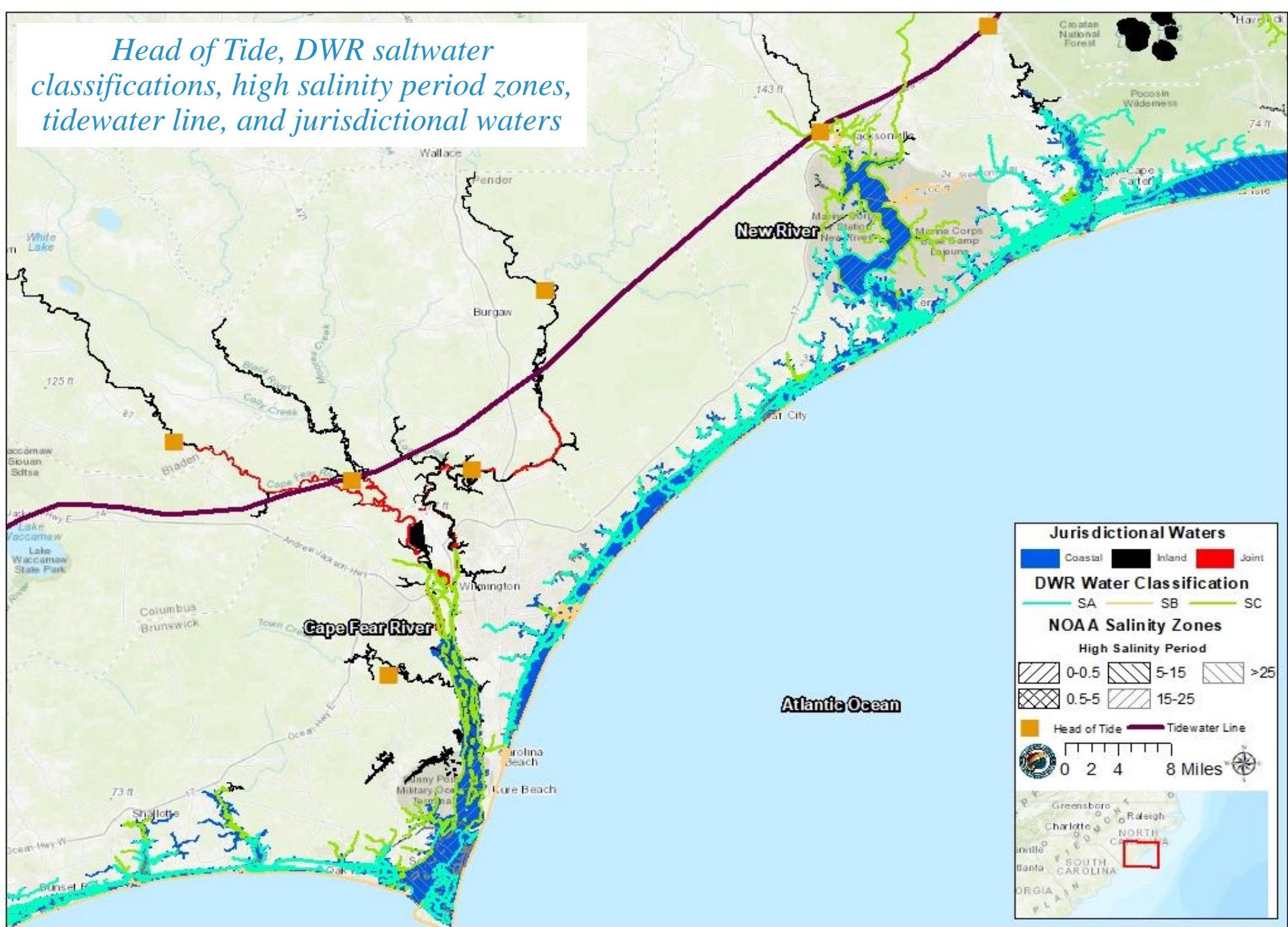
*Head of Tide, DWR saltwater classifications, high salinity period zones, tidewater line, and jurisdictional waters*







*Head of Tide, DWR saltwater classifications, high salinity period zones, tidewater line, and jurisdictional waters*



**Jurisdictional Waters**

- Coastal (Blue)
- Inland (Black)
- Joint (Red)

**DWR Water Classification**

- SA (Light Blue)
- SB (Yellow)
- SC (Green)

**NOAA Salinity Zones**

**High Salinity Period**

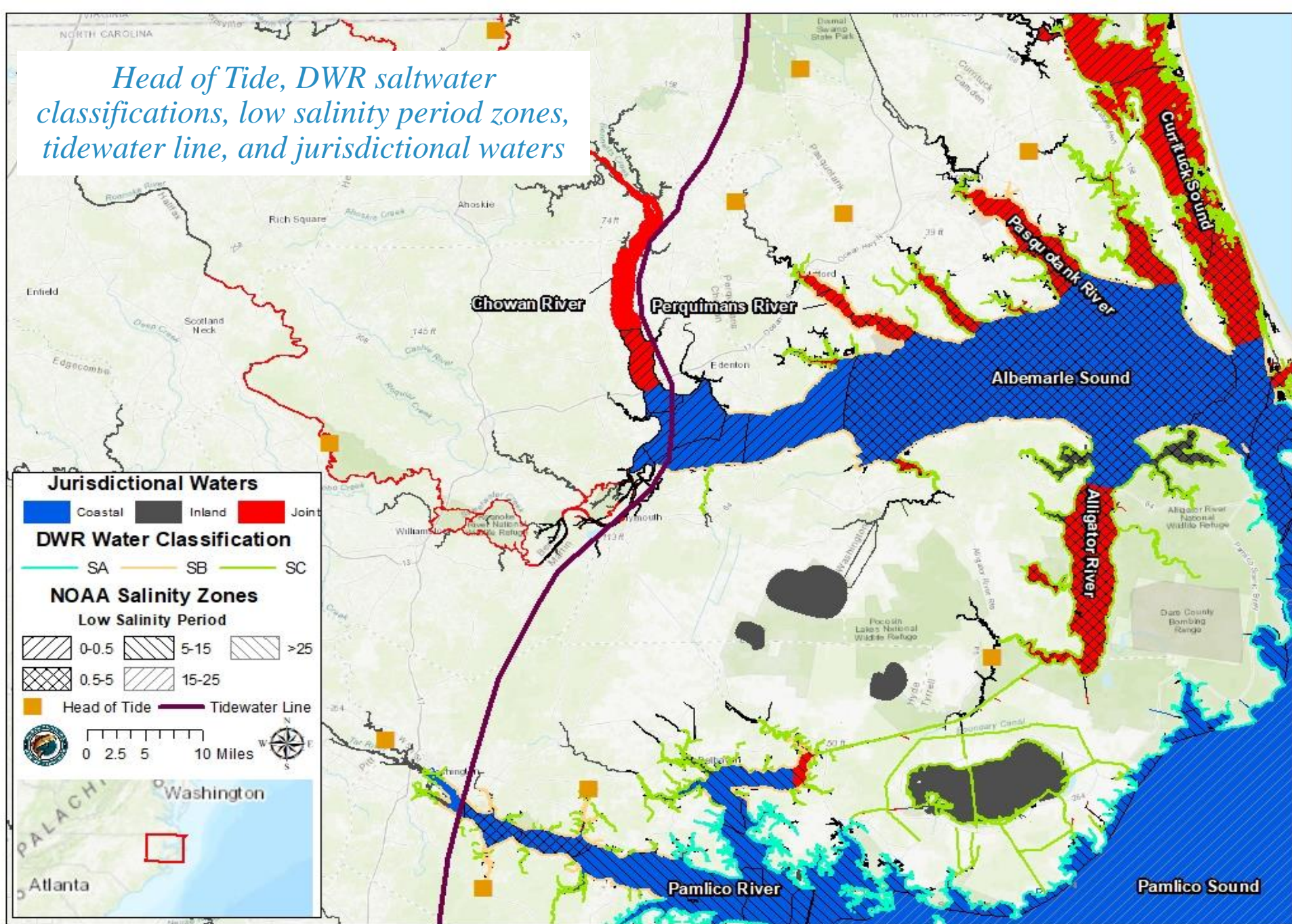
- 0-0.5 (Diagonal lines /)
- 0.5-5 (Diagonal lines \)
- 5-15 (Diagonal lines /)
- 15-25 (Diagonal lines \)
- >25 (Diagonal lines /)

Head of Tide (Orange square)    Tidewater Line (Purple line)

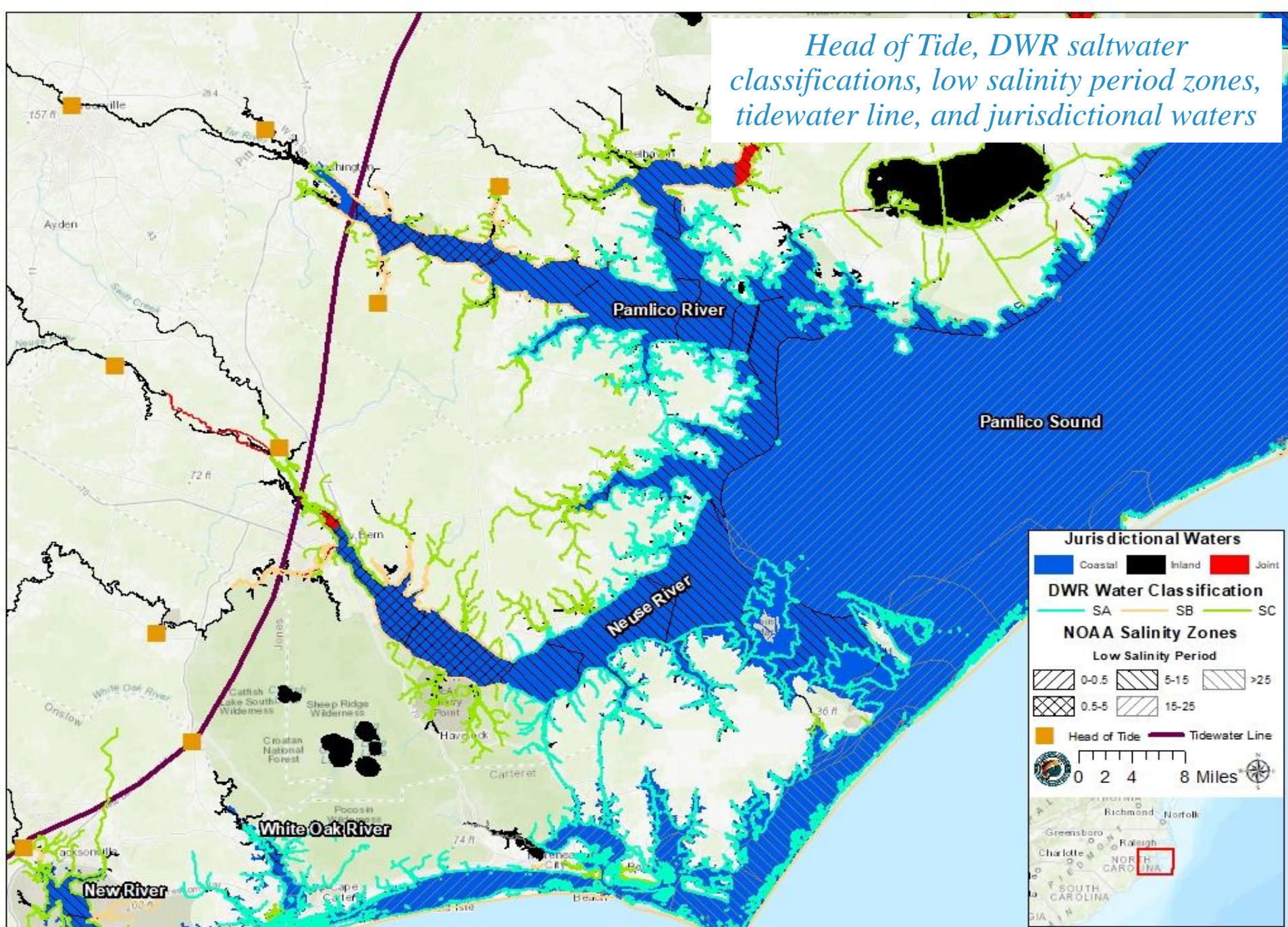
0 2 4 8 Miles

Map of North Carolina showing the study area in the southeast corner.

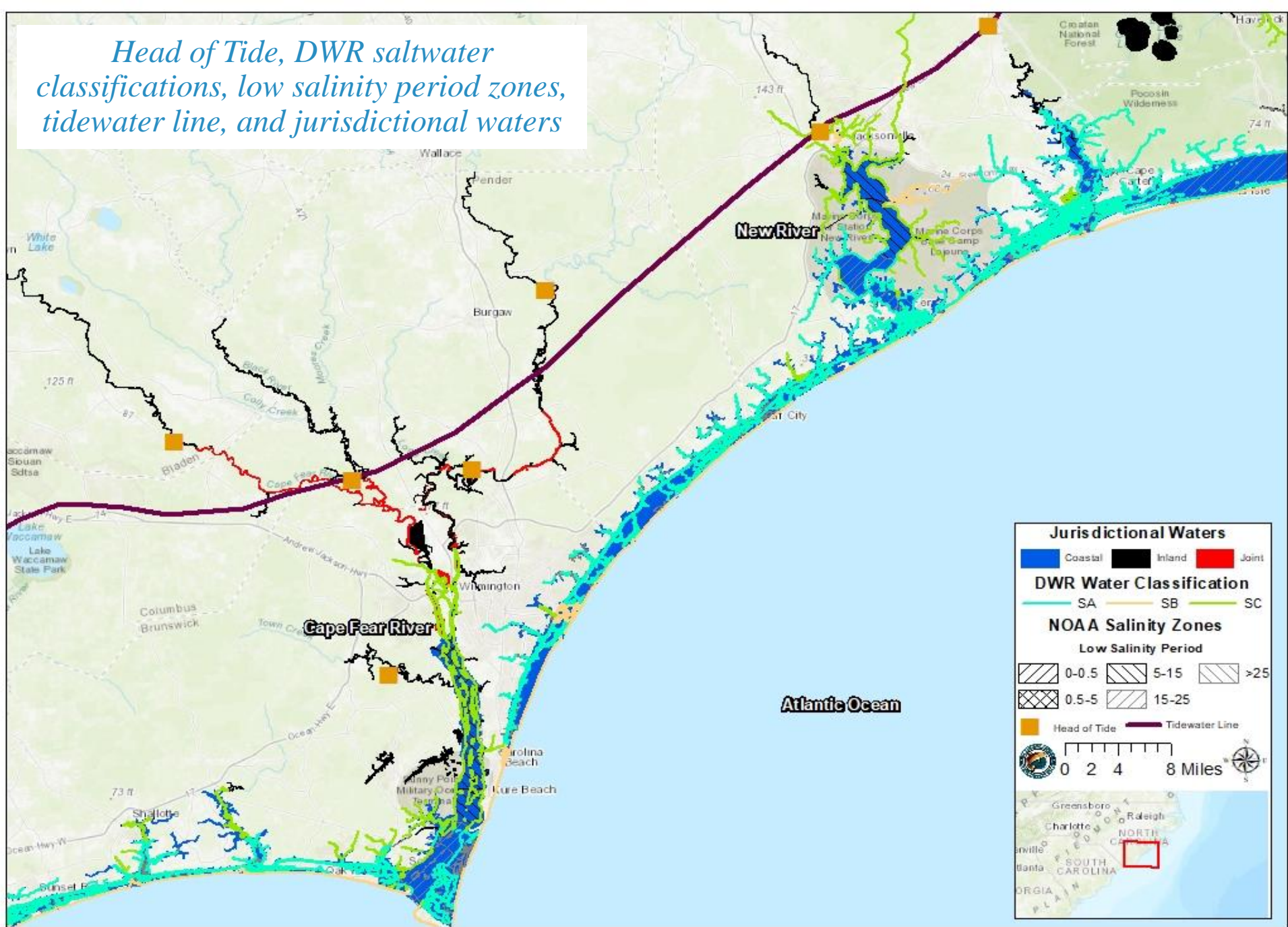
*Head of Tide, DWR saltwater classifications, low salinity period zones, tidewater line, and jurisdictional waters*



*Head of Tide, DWR saltwater classifications, low salinity period zones, tidewater line, and jurisdictional waters*



*Head of Tide, DWR saltwater classifications, low salinity period zones, tidewater line, and jurisdictional waters*



**Jurisdictional Waters**

- Coastal
- Inland
- Joint

**DWR Water Classification**

- SA
- SB
- SC

**NOAA Salinity Zones**

**Low Salinity Period**

- 0-0.5
- 0.5-5
- 5-15
- 15-25
- >25

Head of Tide    Tidewater Line

0 2 4 8 Miles

Map of North and South Carolina with a red box indicating the study area.

# *QUESTIONS?*

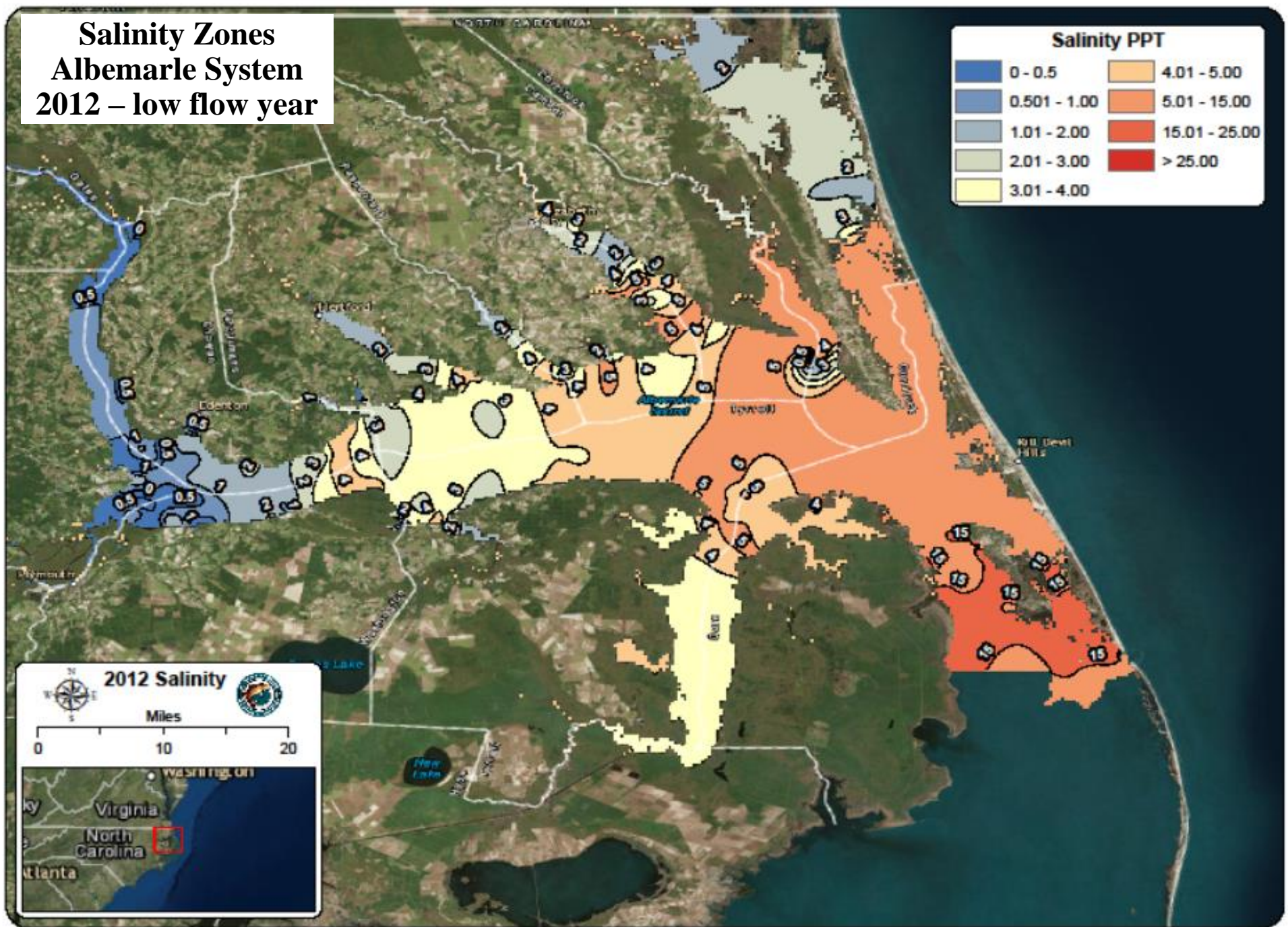
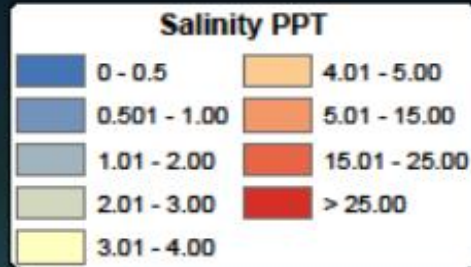
AGOL Mapviewer:

<https://ncdenr.maps.arcgis.com/apps/webappviewer/index.html?id=f71a0552c6bb4df79bea4be45816c003>



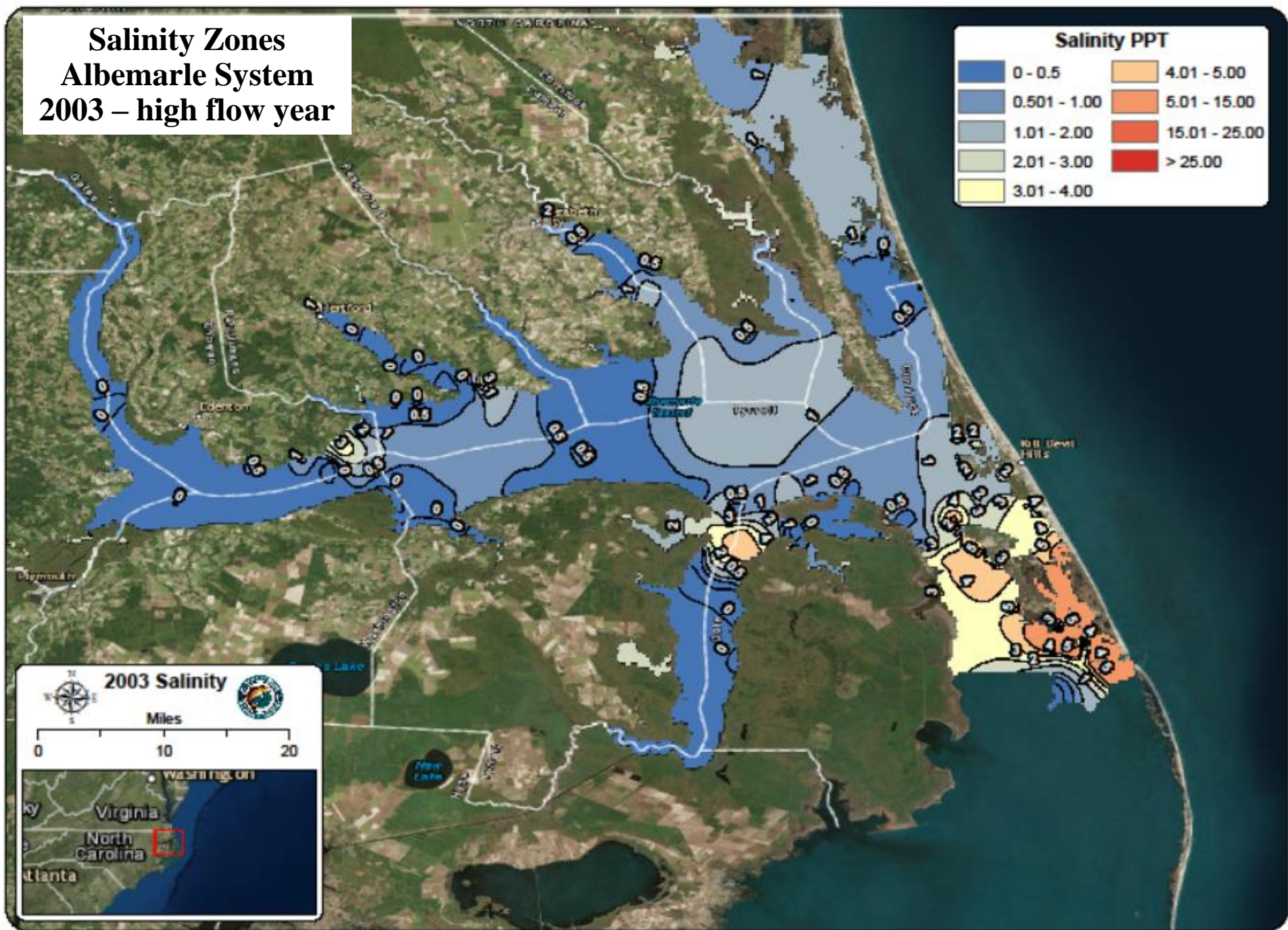
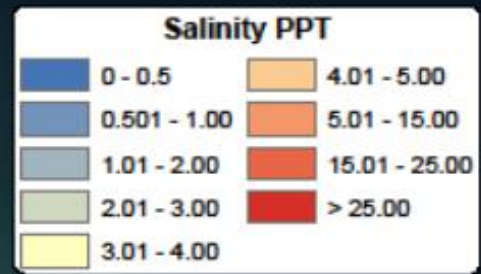
*Extra Salinity Slides if Needed*

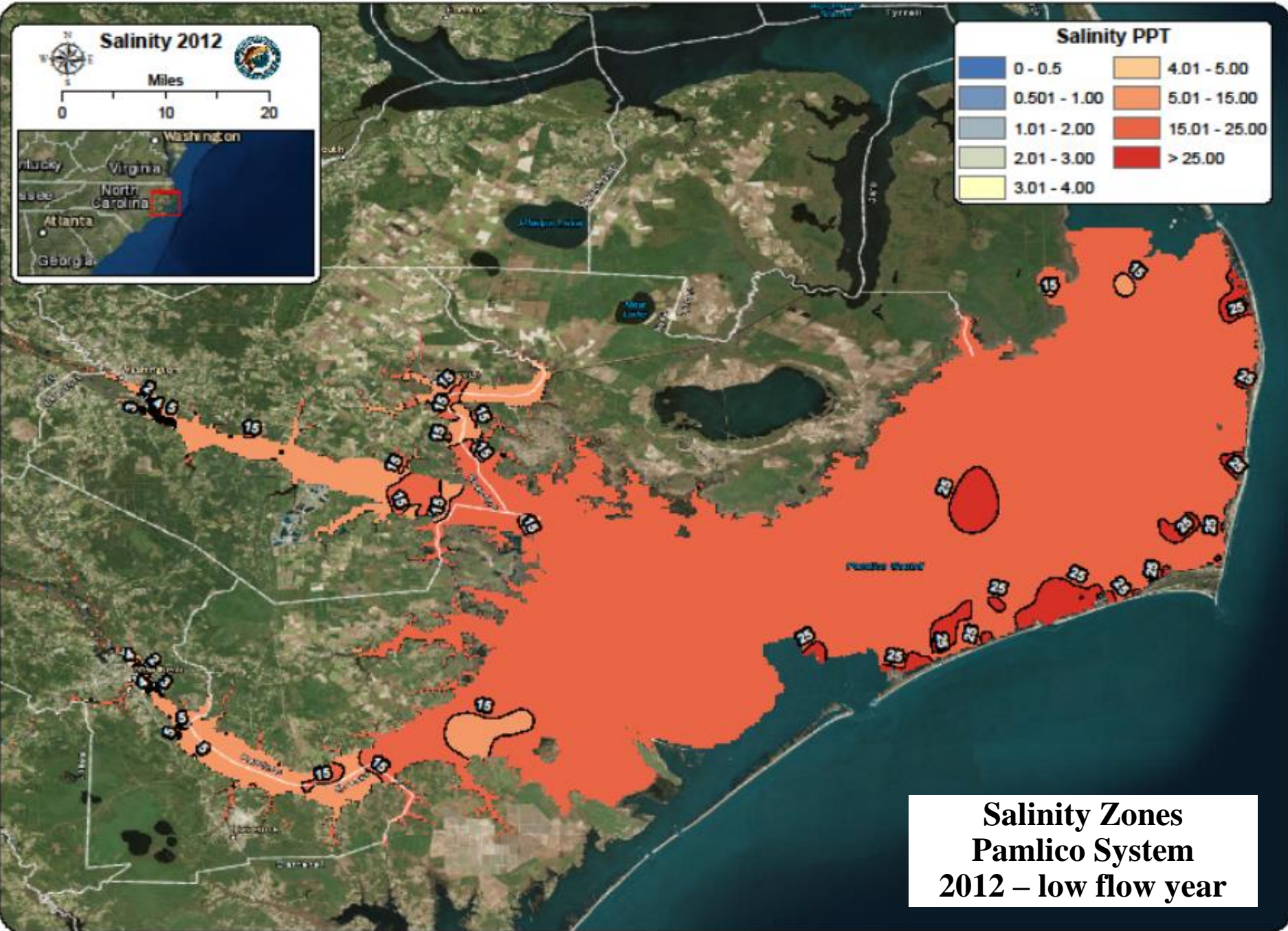
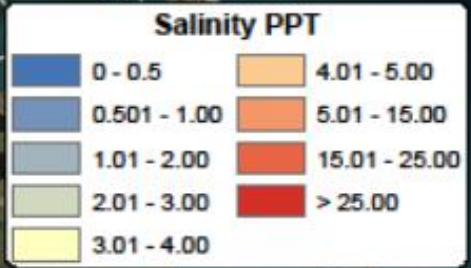
# Salinity Zones Albemarle System 2012 – low flow year



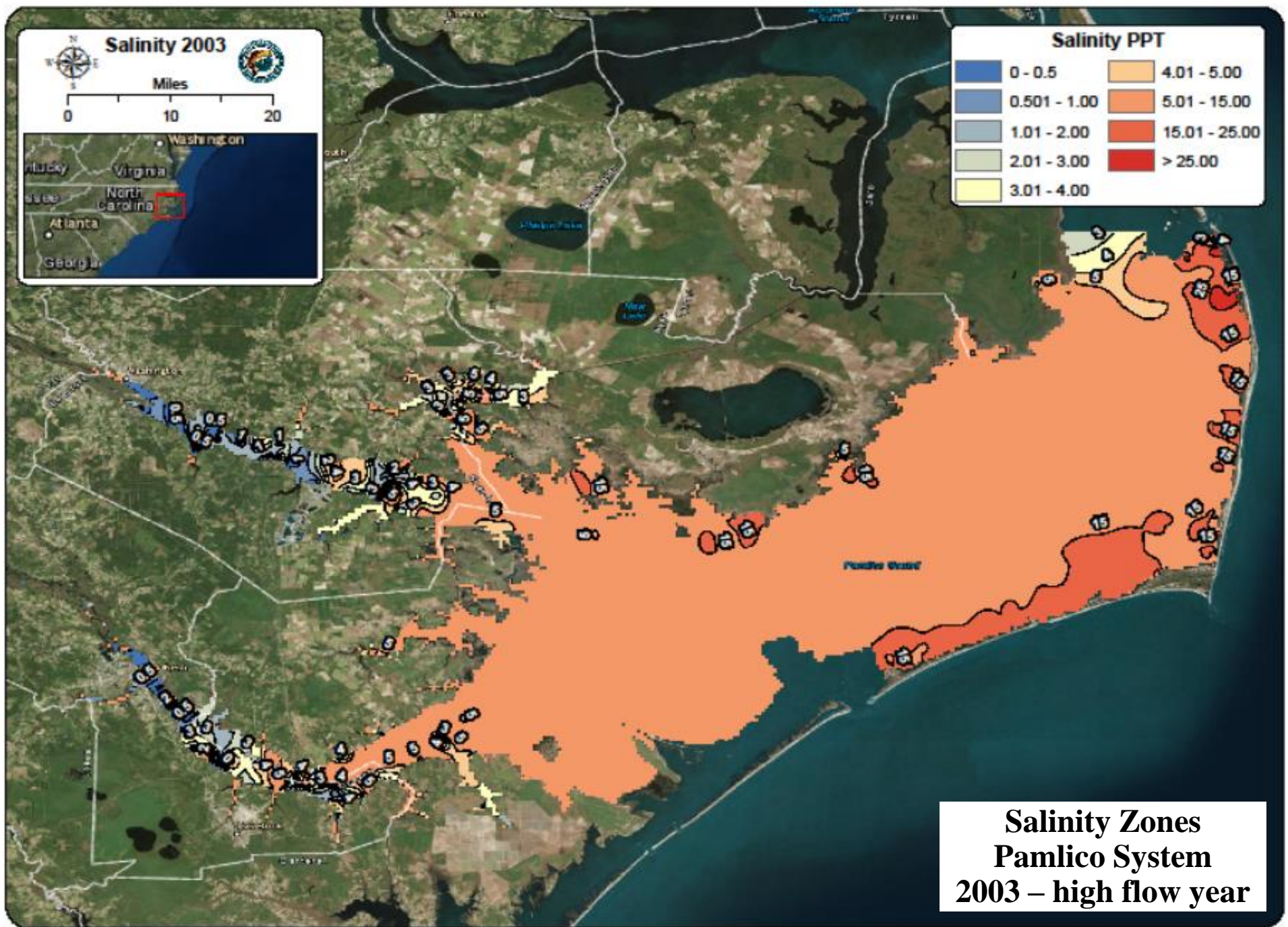
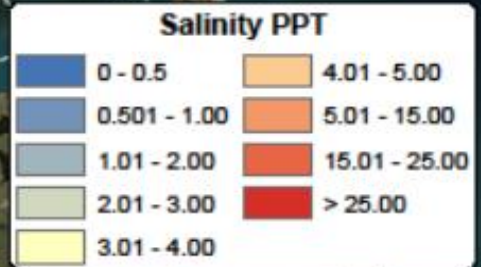


# Salinity Zones Albemarle System 2003 – high flow year

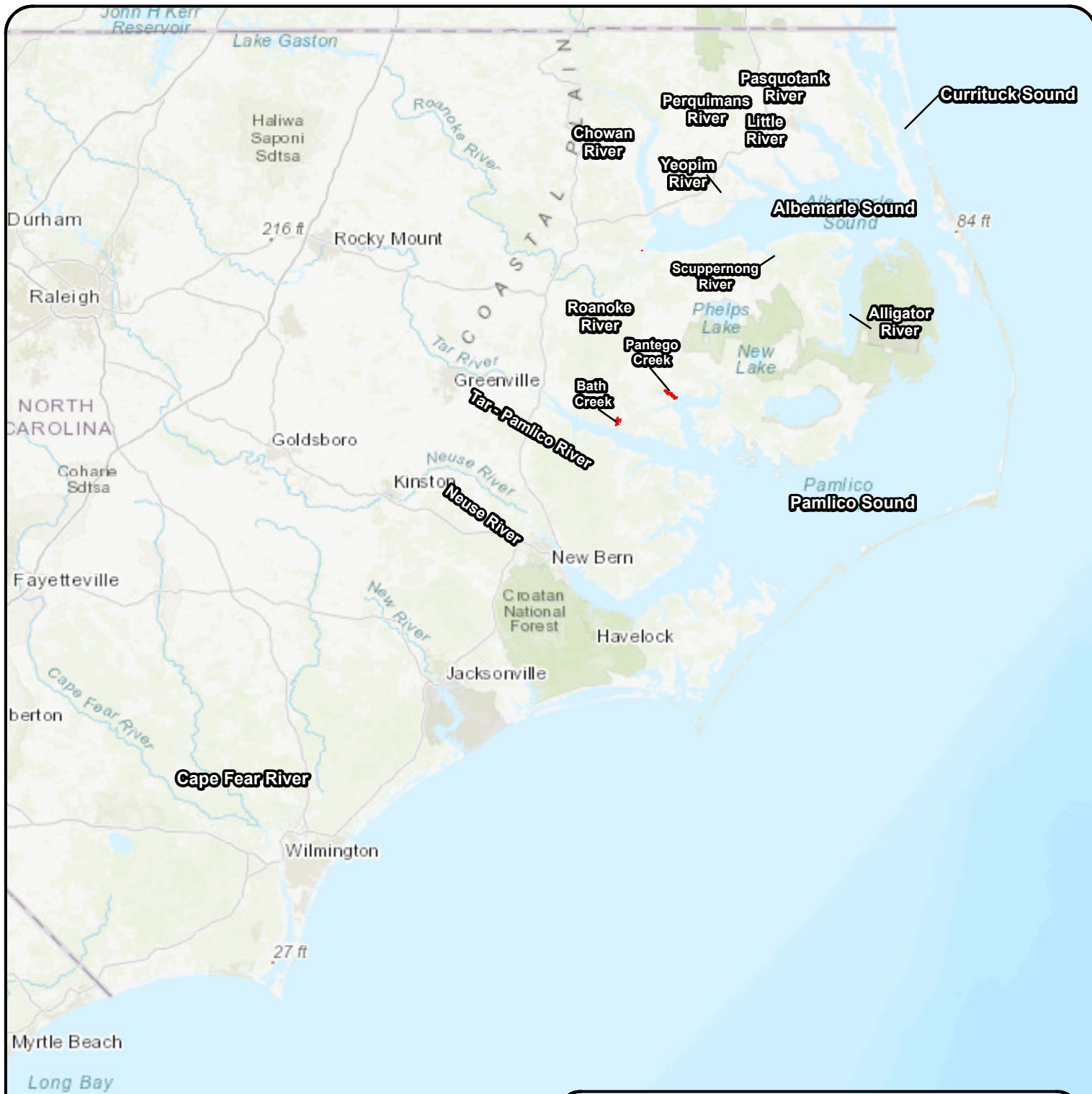




**Salinity Zones  
Pamlico System  
2012 – low flow year**

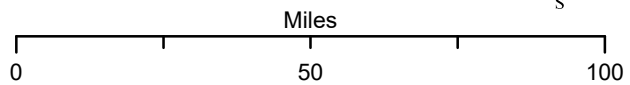


**Salinity Zones  
Pamlico System  
2003 – high flow year**

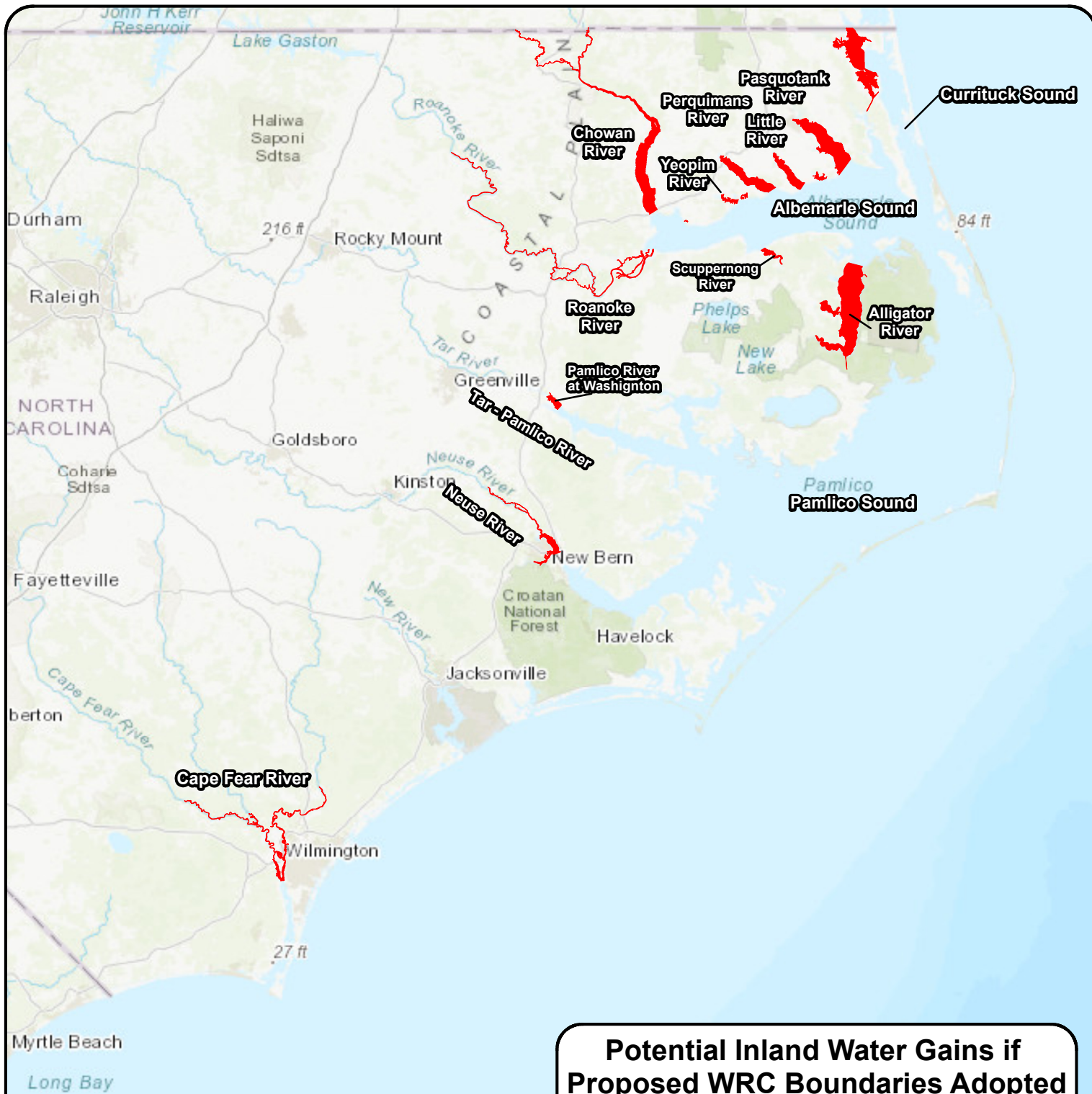


### Potential Coastal Water Gains if Proposed WRC Boundaries Adopted

 WRC Proposed Coastal Water Gains

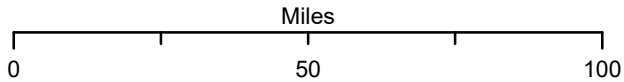


| Designation          | Acreage   |
|----------------------|-----------|
| Current Coastal      | 2,703,533 |
| WRC Proposed Coastal | 2,701,291 |
| Acreage Lost         | -2,243    |

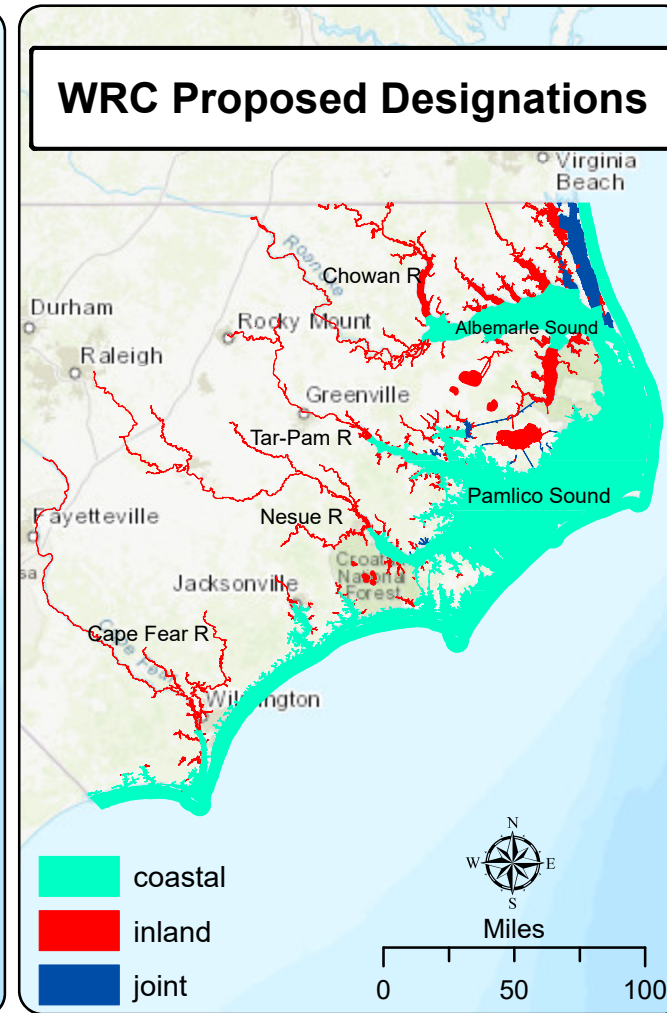
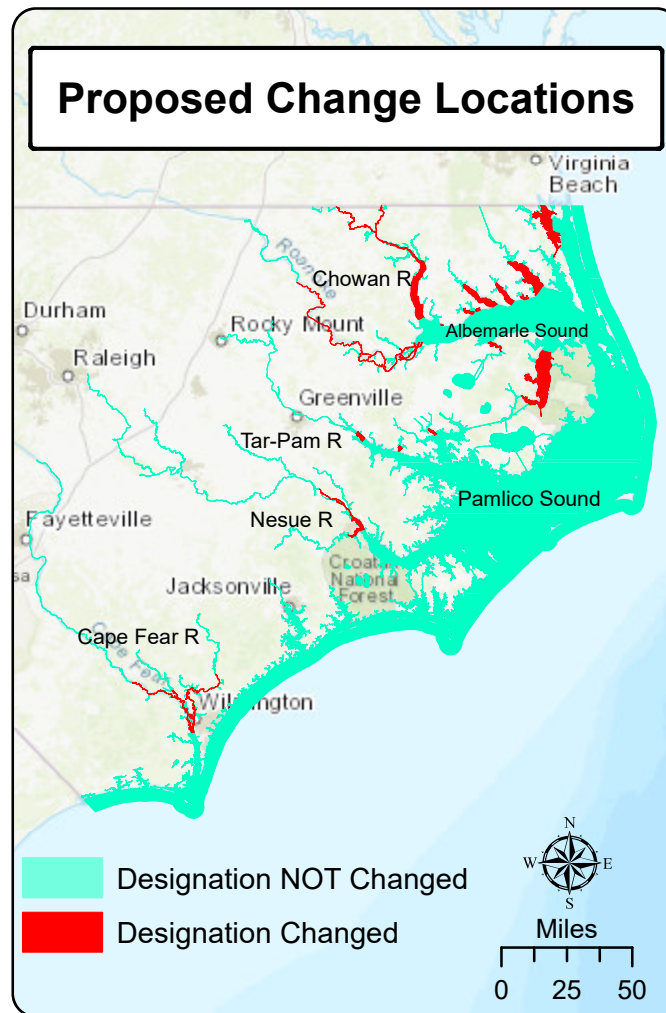
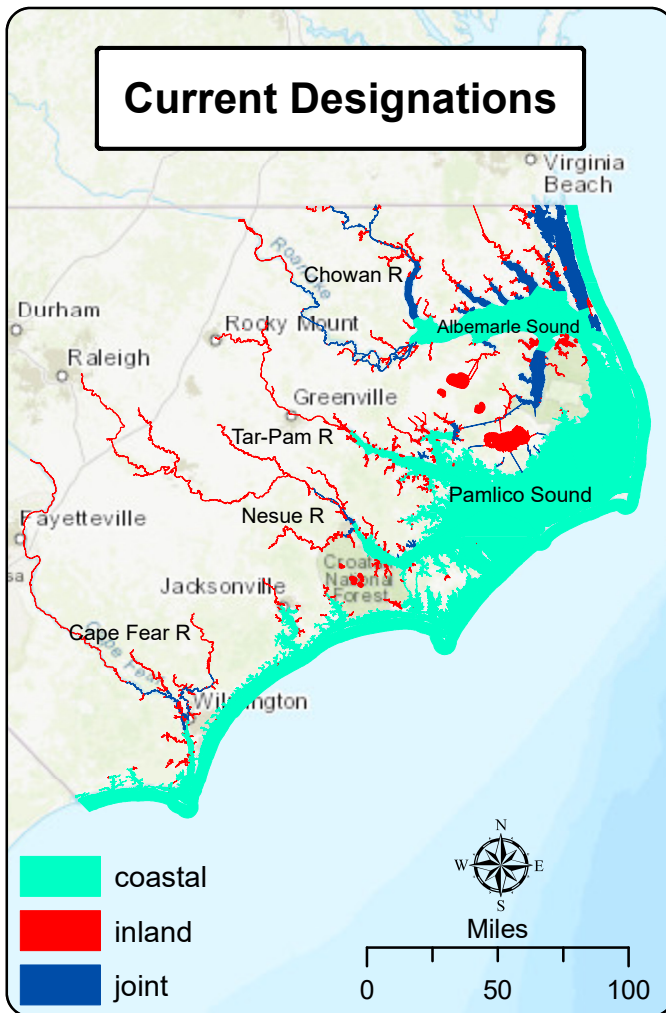


### Potential Inland Water Gains if Proposed WRC Boundaries Adopted

■ WRC Proposed Inland  
■ Water Gains Taken from Existing Joint and Coastal Waters



| Designation                    | Acreage |
|--------------------------------|---------|
| Current Inland                 | 133,609 |
| WRC Proposed Inland            | 278,394 |
| Acreage Gained (Depicted Here) | 144,785 |
| Percent Gained                 | 108     |



### DMF DBCJIW Layer

| Designation  | Acreage          |
|--------------|------------------|
| Coastal      | 2,703,533        |
| Inland       | 133,609          |
| Joint        | 242,642          |
| <b>Total</b> | <b>3,079,785</b> |

### Proposed Difference

| Designation | Acreage          | % Change |
|-------------|------------------|----------|
| Coastal     | 2,242 Decrease   | -0.08%   |
| Inland      | 144,784 Increase | 108.37%  |
| Joint       | 142,542 Decrease | -58.75%  |

### WRC Proposed Layer

| Designation  | Acreage          |
|--------------|------------------|
| Coastal      | 2,701,291        |
| Inland       | 278,394          |
| Joint        | 100,100          |
| <b>Total</b> | <b>3,079,785</b> |

*A PRESENTATION  
WILL BE GIVEN AT  
THE MEETING*



ROY COOPER  
*Governor*

MICHAEL S. REGAN  
*Secretary*

STEPHEN W. MURPHEY  
*Director*

Oct. 25, 2019

## MEMORANDUM

**TO:** N.C. Marine Fisheries Commission

**FROM:** Catherine Blum, Fishery Management Plan and Rulemaking Coordinator  
Fisheries Management Section

**SUBJECT:** Fishery Management Plan Update

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### Issue

Update the Marine Fisheries Commission (MFC) on the status of ongoing North Carolina fishery management plans (FMPs).

### Action Needed

For informational purposes only; **no action is needed at this time.**

### Overview

This memo provides an overview on the status of the North Carolina FMPs for the November 2019 MFC business meeting.

At the MFC's August 2019 business meeting, staff provided an update on changes being implemented that are designed to achieve efficiencies in the FMP process. Changes include the timing of the steps in initial development of draft FMPs, how the division works with the FMP advisory committee and how the committee operates, and what the FMP documents look like. Before the initial development of a draft FMP, a scoping period will be held to notice the public that the review of the FMP is underway, inform the public of the stock status (if applicable), solicit input from the public on the list of potential management strategies to be developed, and recruit advisers to serve on the FMP advisory committee. These changes are being incorporated beginning with Amendment 3 to the Southern Flounder FMP.

### Blue Crab FMP

The review of the Blue Crab FMP is ongoing. A stock assessment was completed in 2018 and determined the North Carolina blue crab stock\* is overfished\* and overfishing\* is occurring. Reductions in total removals of blue crab are required by state law to achieve a sustainable harvest\*, end overfishing within two years, and recover the stock from an overfished condition within 10 years. An advisory committee was formed and assisted the division with development of Amendment 3 to the FMP that contains management measures to meet these requirements. At its November 2019 business meeting, the MFC is scheduled to review recommendations from the public, advisory committees, and the division; vote to select its preferred management options; and vote to send the draft FMP to the Department of Environmental Quality Secretary for review. Final approval of the FMP by the MFC is scheduled for February 2020. Adaptive management measures adopted in 2016 will remain in place until the next amendment is adopted. For more information, please refer to the [Blue Crab FMP](#) section of the briefing materials.



### **Southern Flounder FMP**

The MFC adopted Amendment 2 to the Southern Flounder FMP at its August 2019 business meeting. Amendment 2 moved quickly through the process of development and adoption to address the overfished\* and overfishing\* status of the southern flounder stock\* that was determined by the 2019 coast-wide stock assessment. The season closures resulting from Amendment 2 were deemed critical to the successful rebuilding of the southern flounder stock, while other, more robust management strategies are examined and developed in Amendment 3. The Southern Flounder FMP Advisory Committee is assisting the division with development of Amendment 3 to end overfishing and rebuild the stock. Lead staff will provide a summary at the November 2019 MFC business meeting on how the new changes to the process are being incorporated and the progress of draft Amendment 3.

### **Shrimp FMP**

The review of the Shrimp FMP was scheduled to begin in 2018; however, the process was not able to start any sooner than mid-2019 due to the availability of staff. At its August 2019 business meeting, the MFC voted to deny a petition for rulemaking that would have established new shrimp trawl management areas, as well as gear and time restrictions. If the petition had been approved, the review of the Shrimp FMP would have been further delayed. The review has since commenced with the formation of the staff plan development team that has started meeting to discuss potential management strategies for Amendment 2. The MFC directed the division to consider many of the issues the petition raised for the review of the FMP. Lead staff will provide a summary at the November 2019 MFC business meeting on the progress of draft Amendment 2.

### **Estuarine Striped Bass FMP**

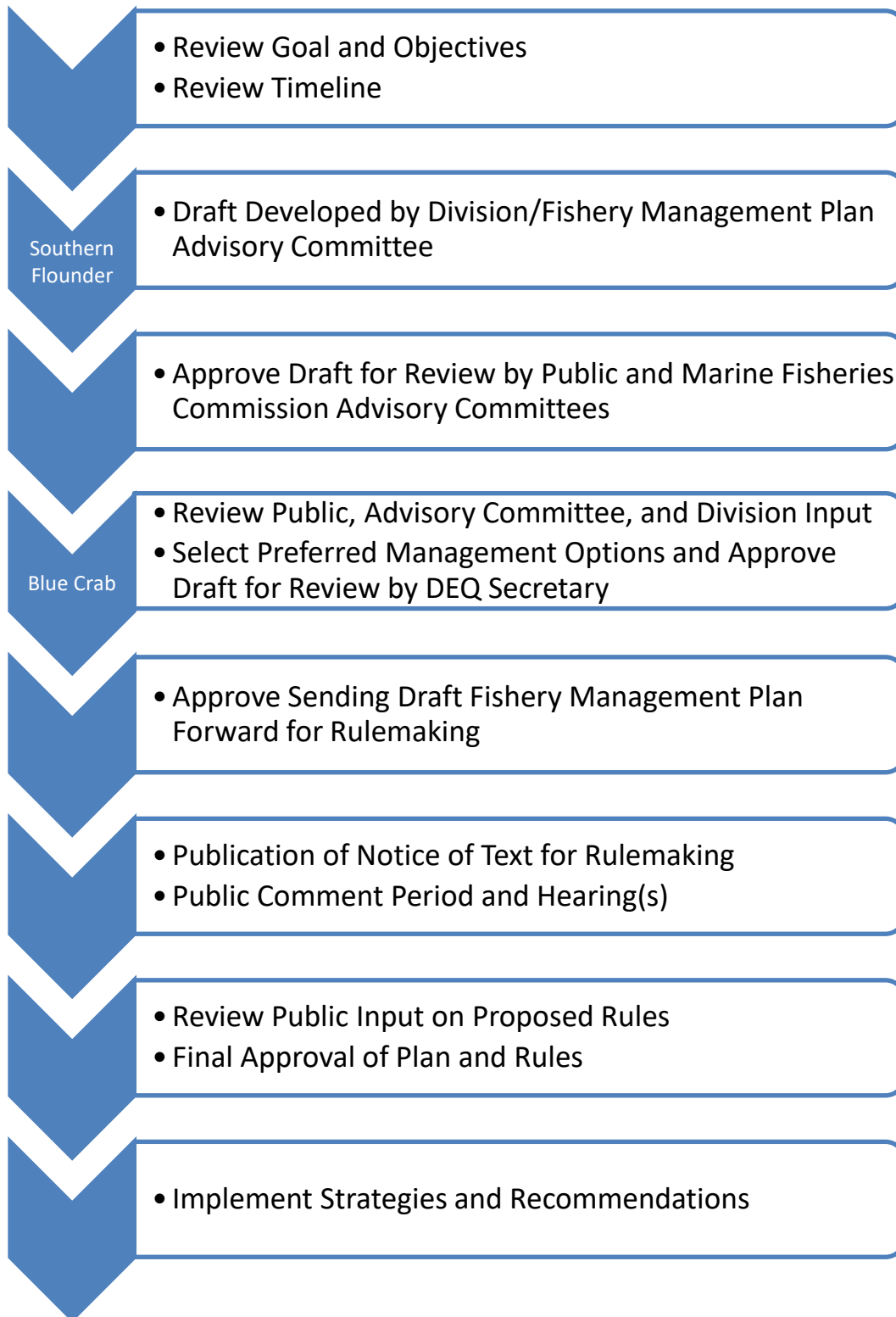
For the review of the Estuarine Striped Bass FMP, stock assessments for the Central Southern Management Area stocks\* and the Albemarle Sound-Roanoke River stock that began in 2017 are nearing completion. Multiple assessment techniques were used, given the number of systems to assess and the variety of data sources for each system. The plan development team met in September and October to continue working towards completion of the stock assessments to inform the review of the FMP and development of Amendment 2. The Peer Review Workshop for the stock assessments is scheduled to be held Dec. 2-5, 2019 in New Bern. This is a joint FMP with the Wildlife Resources Commission, so all updates and reviews are joint efforts by both agencies.

### **Spotted Seatrout FMP**

A benchmark stock assessment for spotted seatrout is underway coinciding with the scheduled Spotted Seatrout FMP review. The prior stock assessment from 2014 indicated that the stock\* is not overfished\* and is not experiencing overfishing\*. The plan development team met in June for the stock assessment Planning Workshop and in September for the Data Workshop. The Methods Workshop is tentatively scheduled for February 2020.

# NORTH CAROLINA FISHERY MANAGEMENT PLANS

November 2019





ROY COOPER  
*Governor*

MICHAEL S. REGAN  
*Secretary*

STEPHEN W. MURPHEY  
*Director*

Oct. 25, 2019

## MEMORANDUM

**TO:** N.C. Marine Fisheries Commission

**FROM:** Jason E. Rock and Corrin L. Flora, Blue Crab Fishery Management Plan Co-Leads

**SUBJECT:** Draft N.C. Blue Crab Fishery Management Plan Amendment 3 Division Recommendations & Public and Advisory Committee Review and Comment Outcomes

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### Issue

The division has completed the public and advisory committee (AC) review of the draft N.C. Blue Crab Fishery Management Plan (FMP) Amendment 3. Following this review period, the division staff finalized recommendations to the Commission. Below are summary statements regarding those proceedings and included are documents relaying the detailed recommendations from all.

### Action Needed

- The Marine Fisheries Commission (MFC) will vote on their preferred management options.
- The MFC will vote on sending the draft FMP for departmental and legislative review.

### Recommendations

The full division recommendations are listed by issue in Table 1, along with the recommendations from the Blue Crab FMP AC and from the four MFC ACs. Also included is the % agreement for specific management strategies derived from the public comment via the Online Questionnaire. The division took into consideration input from the AC's and public comment when finalizing its recommendations.

### Changes of note to the division recommendations from the August 2019 MFC meeting:

- The harvest reductions needed can potentially be met with various management options, to afford the MFC the flexibility to utilize the suite of management options available, the division has recommended a minimum reduction of 2.2%, while encouraging at least a 5.9% reduction.
  - 2.2% reduction has a 50% probability of success
  - 5.9% reduction has a 90% probability of success
- The division incorporated the Blue Crab FMP AC's recommendation to allow the opportunity for management measures to be relaxed if the stock assessment indicates it's possible.
- The division incorporated the recommendation by the FMP AC and the majority of the MFC ACs to have the division report back to the Habitat and Water Quality and the Shellfish/Crustacean ACs with progress on each water quality management option.

### Advisory Committee Meetings and Public Comment Summary Outcomes:

- There was broad support among the ACs for:
  - Prohibiting immature female hard crab harvest implemented in 2016 Revision;
  - Maintaining the 5% cull tolerance implemented in 2016 Revision;
  - Addressing water quality issues;
  - Moving the Drum Inlet crab spawning sanctuary to encompass Ophelia Inlet;
  - Designating new crab spawning sanctuaries in southern inlets (Beaufort through Tubbs); and
  - March 1 – Oct. 31 closure for southern crab spawning sanctuaries
- Public comment summary from AC meetings:
  - A total of 22 public comments were received during the five AC meetings.
  - Generally, there was little public support for any of the proposed measures in Amendment 3.
  - A major point was a March closure period would be devastating because prices are high and March is also when crabbers stock up Jimmie (male) crabs to use as peeler bait.
  - Another major point was water quality is the biggest issue facing the blue crab stock.
  - Concerns were also raised about increased effort in the blue crab fishery due to recent changes in flounder regulations.
- Online questionnaire results:
  - 51 total responses to the online questionnaire (see Appendix 1, 2, and 4).
  - 41% of respondents were in support of Amendment 3.
  - Of those respondents supporting Amendment 3:
    - Sustainable harvest, water quality, and spawning sanctuaries were issues of highest concern.
    - Favored options for achieving sustainable harvest were: mature female size limit and limiting the harvest of immature female hard crabs.
    - Qualitative management measures favored were: limiting the harvest of sponge crabs, a minimum size limit for peeler and soft crabs, and pot limits
    - Addressing water quality concerns was overwhelmingly supported
    - Establishing new spawning sanctuaries and designating a migration corridor in Croatan Sound were also supported
    - Most respondents supported the criteria for designating Diamondback Terrapin Management Areas
    - Also supported additional limits on crab harvest from both targeted crab dredging and oyster dredging
- One mailed public comment was received that urged for blue crab to be stocked rather than placing additional regulations on fishermen (Appendix 3).

***For more information, please refer to the following documents:***

- Appendix 1: Online Questionnaire Results
- Appendix 2: List of Online Questionnaire Narrative Comments Received
- Appendix 3: Public Comment Delivered to NCDMF
- Appendix 4: Raw Online Questionnaire Responses (available upon request)
- Northern Regional Advisory Committee Memo
- Southern Regional Advisory Committee Memo
- Shellfish/Crustacean Advisory Committee Memo
- Habitat and Water Quality Advisory Committee Memo
- Blue Crab FMP Advisory Committee Memo
- Draft Blue Crab FMP Amendment 3

Table 1. Summary of the NCDMF, Blue Crab FMP and standing and regional AC, and online questionnaire recommendations for Amendment 3 to the Blue Crab FMP. Highlighted text denotes changes to the NCDMF and Blue Crab FMP AC recommendations since the last commission meeting in August 2019. **Bolded** items are measures currently in effect through the 2016 Revision to Amendment 2 of the Blue Crab FMP. \*Only management options supported by more than 50% of respondents were included for the online questionnaire.

| Issue               | NCDMF  | Blue Crab FMP AC  | Northern Regional AC   | Southern Regional AC  | Shellfish/Crustacean AC   | Habitat and Water Quality AC | Online Questionnaire*                             |
|---------------------|--|---|--|---|---|------------------------------|---|
| Sustainable Harvest | Minimum harvest reduction of 2.2% (50% probability of success). The division encourages the commission to consider a reduction of at least 5.9% (90% probability of success) and to include: 1) <b>prohibit immature female hard crab harvest</b> , 2) 5-inch minimum size limit for mature females, and 3) a continuous closure period that results in a reduction of at least 4.6% to make up the remainder of the preferred reduction | Option 18.3: 1) North of the Highway 58 Bridge: January 1 through January 31 closed season, 6.75" mature female hard crab maximum size limit, and <b>prohibit immature female hard crab harvest</b> and 2) South of the Highway 58 Bridge: March 1 through March 15 closed season and prohibit immature female hard crab harvest (3.2% harvest reduction; 50% probability of success) | Support Blue Crab AC recommendation                            | Recommend Dec.-Jan. closure North of Hwy 58 Bridge and a Jan. closure South of Hwy 58 Bridge; 5-inch mature female minimum size limit; <b>prohibit harvest of immature female hard crabs</b> (4.3% harvest reduction; 67% probability of success) | Recommend tabling FMP process until the stock assessment is updated with data through 2019 to see the effects of the 2016 regulations | No position                  | Mature female size limit (67%)                    |
|                     | Recommended closure period will replace current pot closure period and will remain closed for the entire period  | Recommended season closure will replace current pot closure period and will remain closed for the entire time period  | Support NCDMF recommendation for adaptive management framework | <b>Maintain 5% cull tolerance</b>   | Support consideration of habitat as part of the overall strategy for management of the blue crab fishery                              |                              | Limit harvest of immature female hard crabs (67%) |
|                     | <b>Maintain 5% cull tolerance established in 2016 Revision</b>   | <b>Maintain 5% cull tolerance established in 2016 Revision</b>  |  | Leave adaptive management decision to MFC   |   |                              |   |
|                     | Adopt proposed adaptive management framework which was updated to allow management measures to possibly be relaxed if the assessment update shows the stock is not overfished and overfishing is not occurring   | Adopt proposed adaptive management framework and allow measures to be relaxed is assessment update says stock is not overfished and overfishing is not occurring  |  |   |   |                              |   |
|                     |  | Recommend updating the stock assessment once 2019 data is available   |  |   |   |                              |   |

| Issue                  | NCDMF  | Blue Crab FMP AC  | Northern Regional AC                | Southern Regional AC   | Shellfish/Crustacean AC  | Habitat and Water Quality AC   | Online Questionnaire*   |
|------------------------|--|---|-------------------------------------|--|--|--|---|
| Qualitative Management | Option 2a: increase number of cull rings in pots to 3  | Leave in existing rules put in in 2016 and do not adopt anything else at this time, except with 2 options on cull rings: 1) 2 cull rings in proper corner placement or 2) keeping the 3 cull rings with 1 in proper placement | Support Blue Crab AC recommendation | Support Blue Crab AC recommendation regarding number and placement of cull rings | No position  | No position  | Limit the harvest of sponge crabs (100%)                        |
|                        | Option 3b: two cull rings placed within one full mesh of corner and the apron on opposite outside panels in the upper chamber                                |   |                                     |  | Support NCDMF recommendation for option 4c (remove cull ring exemptions)           |  | Minimum size limit for soft and peeler crabs (61%)              |
|                        | Option 4c: remove cull ring exemptions for Newport River and eastern Pamlico Sound and prohibit designation of exempt areas in future                        |   |                                     |  | <b>Support option 7a (prohibit dark sponge crab harvest during month of April)</b> |  | Impose a limit on the number of crab pots fished (61%)          |
|                        | Option 7c: prohibit harvest of sponge crabs year-round   |   |                                     |  |  |  |   |
|                        | Option 8a: establish 3" minimum size limit for peeler and soft crabs   |   |                                     |  |  |  |   |
| Water Quality          | Support all management options presented   | Support all management options in this paper  | Support Blue Crab AC recommendation | Support NCDMF and Blue Crab AC recommendations                                   | No position  | Recommend accepting the water quality recommendation from the Blue Crab AC and adding the Habitat and Water Quality AC to the reporting groups | Support recommendations to address water quality concerns (89%) |
|                        | Recommend Option 4 as the highest priority   | Support making the highest priority option four tasking the CHPP steering committee to what is suggested here and follow up with each of the other recommendations as that step is justified                                  |                                     |  |  |  |   |
|                        | Division habitat staff shall regularly report back to the Habitat and Water Quality and the Shellfish/Crustacean ACs with progress on each management option | Have the habitat staff report back to the Shellfish/Crustacean AC with progress   |                                     |  |  |  |   |

# Spawning Sanctuaries

| Issue  | NCDMF | Blue Crab FMP AC  | Northern Regional AC   | Southern Regional AC                 | Shellfish/Crustacean AC | Habitat and Water Quality AC   | Online Questionnaire*   |
|--|-------|---|--|--------------------------------------|-------------------------|--|---|
| Expand boundaries as presented for Oregon, Hatteras, Ocracoke, and Barden inlets   |       | Keep Oregon, Hatteras, and Ocracoke the same and change Drum and Barden to proposed boundaries  | Split consensus on whether to expand or keep boundaries for existing spawning sanctuaries  | Support Blue Crab AC recommendations | No position             | Recommend keeping Oregon, Hatteras, and Ocracoke spawning sanctuary boundaries the same  | Establish new crab spawning sanctuaries at all inlets without a crab spawning sanctuary (61%) |
| Move boundary for Drum Inlet crab spawning sanctuary as presented  |       | Add spawning sanctuaries from Beaufort through Tubbs inlets using AC recommended boundaries with a closure period of March 1 through Oct. 31 with same restrictions as existing sanctuaries | Support NCDMF and Blue Crab AC recommendation to move Drum Inlet spawning sanctuary  |                                      |                         | Support NCDMF and Blue Crab AC recommendation to move Drum Inlet spawning sanctuary  | Establish a crab spawning sanctuary to serve as a migration corridor in Croatan Sound (56%)   |
| Concur with AC recommendations for Beaufort, Bogue, Bear, Browns, New River, Topsail, Rich, Mason, Masonboro, Carolina Beach, Shallotte, Lockwood Folly, and Tubbs inlets  |       |   | Support Blue Crab AC recommendation for southern spawning sanctuary boundaries (excluding Cape Fear River)   |                                      |                         | Support Blue Crab AC recommendation for southern spawning sanctuary boundaries (excluding Cape Fear River)   |   |
| Use NCDMF recommended boundary for Cape Fear River Inlet crab spawning sanctuary   |       |   | Support NCDMF recommended boundary for Cape Fear River spawning sanctuary  |                                      |                         | Support NCDMF recommended boundary for Cape Fear River spawning sanctuary  |   |
| Concur with AC recommendation of a March 1 through October 31 closure for Beaufort Inlet through Tubbs Inlet sanctuaries with same restrictions as existing crab spawning sanctuaries  |       |   | Recommend March 1 - Oct. 31 closure for spawning sanctuaries south of the Hwy 58 Bridge (Bogue through Tubbs inlets). Beaufort Inlet would have same closure period as existing spawning sanctuaries (March 1 - Aug. 31) |                                      |                         | Recommend March 1 - Oct. 31 closure for spawning sanctuaries south of the Hwy 58 Bridge (Bogue through Tubbs inlets). Beaufort Inlet would have same closure period as existing spawning sanctuaries (March 1 - Aug. 31) |   |
| Establish a crab spawning sanctuary to serve as a migration corridor on the east side of Croatan Sound, as presented and in conjunction with expanding the Oregon Inlet spawning sanctuary, closed to blue crab harvest from May 16 through July 15 and with the same restrictions as existing sanctuaries |       |   | Do not support a spawning sanctuary (migration corridor) in Croatan Sound  |                                      |                         | Do not support a spawning sanctuary (migration corridor) in Croatan Sound  |   |

| Issue                  | NCDMF   | Blue Crab FMP AC  | Northern Regional AC  | Southern Regional AC                | Shellfish/Crustacean AC | Habitat and Water Quality AC                       | Online Questionnaire*   |
|------------------------|---|---|---|-------------------------------------|-------------------------|--|---|
| Diamondback Terrapin   | Use the criteria as outlined in this paper for the establishment of Diamondback Management Areas (DTMAs)  | Use science on locally specific pot funnel design to reduce terrapins and identify individual creeks with terrapin population hot spots that would be closed to potting | Support NCDMF recommendation  | Support NCDMF recommendation        | No position             | No position  | Support criteria for designating Diamondback Terrapin Management Areas (59%)  |
| Bottom Disturbing Gear | <b>Option 1a: prohibit taking of crabs with crab dredges</b>  | Not adopt any of the recommended management options on crab dredge and leave crab trawl lines as is   | <b>Support NCDMF recommendation Option 1a (prohibit taking of crabs with crab dredges)</b>  | Support Blue Crab AC recommendation | No position             | <b>Recommend accepting NCDMF recommendation 1a</b> | Prohibit taking of crabs with crab dredges and oyster dredges (67%)   |
|                        | Option 1d: reduce the bycatch limit from oyster dredges to 10% of the total weight of the combined oyster and crab catch or 100 pounds, whichever is less |   | Do not support reducing bycatch limits in oyster dredges until landings are examined  |                                     |                         | Recommend accepting NCDMF recommendation 1d        | Reduce the bycatch limit of crabs from oyster dredges to 10% of the total weight of the combined oyster and crab catch or 100 pounds, whichever is less (78%) |
|                        | Option 2a: prohibit use of crab trawls in areas where shrimp trawls are already prohibited in the Pamlico, Pungo, and Neuse rivers                        |   | Split consensus on support of NCDMF recommendation Option 2a (prohibit use of crab trawls above shrimp trawl lines in Pamlico, Pungo, and Neuse rivers) |                                     |                         | Do not recommend accepting NCDMF recommendation 2a | Prohibit use of crab trawls coastwide (53%)   |



Appendix 1. Summary of online questionnaire results.

| <b>Question</b>   | <b>Response Choices</b> | <b>Response (number; %)</b> |
|---|-------------------------|-----------------------------|
| Do you support the goal to achieve sustainable harvest in the blue crab fishery contained in draft Amendment 3? | Yes                     | 21 (41%)                    |
|   | No                      | 30 (59%)                    |
|   | <b>Total</b>            | <b>51 (100%)</b>            |
| Rate your level of concern (high, medium, low, none) related to each blue crab issue in draft Amendment 3.      |                         |                             |
| Achieve sustainable harvest in the North Carolina blue crab fishery   | High                    | 14 (82%)                    |
|   | Medium                  | 2 (12%)                     |
|   | Low                     | 1 (6%)                      |
|   | None                    | 0 (0%)                      |
|   | <b>Total</b>            | <b>17</b>                   |
| Management options beyond quantifiable harvest reductions   | High                    | 6 (35%)                     |
|   | Medium                  | 7 (41%)                     |
|   | Low                     | 2 (12%)                     |
|   | None                    | 2 (12%)                     |
|   | <b>Total</b>            | <b>17</b>                   |
| Addressing water quality concerns impacting the North Carolina blue crab stock                                  | High                    | 12 (71%)                    |
|   | Medium                  | 5 (29%)                     |
|   | Low                     | 0 (0%)                      |
|   | None                    | 0 (0%)                      |
|   | <b>Total</b>            | <b>17</b>                   |
| Expand spawning sanctuaries to improve spawning stock biomass   | High                    | 11 (65%)                    |
|   | Medium                  | 3 (18%)                     |
|   | Low                     | 1 (6%)                      |
|   | None                    | 2 (12%)                     |
|   | <b>Total</b>            | <b>17</b>                   |
| Establish a framework to implement the use of terrapin excluder devices in crab pots                            | High                    | 7 (41%)                     |
|   | Medium                  | 4 (21%)                     |
|   | Low                     | 3 (18%)                     |
|   | None                    | 3 (18%)                     |
|   | <b>Total</b>            | <b>17</b>                   |
| Bottom disturbing gear in the blue crab fishery   | High                    | 9 (53%)                     |
|   | Medium                  | 4 (24%)                     |
|   | Low                     | 1 (6%)                      |
|   | None                    | 3 (18%)                     |
|   | <b>Total</b>            | <b>17</b>                   |

| <b>Question</b>  | <b>Response Choices</b>                                     | <b>Response (number; %)</b> |
|--|---|-----------------------------|
| If you support draft Amendment 3, mark the box(es) for each type of management measure you recommend for achieving sustainable harvest in the North Carolina blue crab fishery (see pages 89-109 of the amendment).  | Option A (mature female size limit)                         | 12 (67%)                    |
|  | Option B (limiting the harvest of immature females)*        | 12 (67%)                    |
|  | Option C (season closure)                                   | 9 (50%)                     |
|  | Option D (adjusting the cull tolerance)*                    | 9 (50%)                     |
|  | Option E (revising the adaptive management framework)       | 8 (44%)                     |
|  | None  | 1 (6%)                      |
|  | No Preference   | 1 (6%)                      |
|  | <b>Total</b>  | <b>18</b>                   |
| If you support draft Amendment 3, mark the box(es) for each type of management measure you recommend for management measures beyond quantifiable harvest reductions (see pages 110-129 of the amendment).  | Option A (increase cull ring size for crab pots)            | 7 (39%)                     |
|  | Option B (increase the number of cull rings in crab pots)*  | 6 (33%)                     |
|  | Option C (specify placement of cull rings in crab pots)*    | 5 (28%)                     |
|  | Option D (removing cull ring exemptions for certain areas)  | 7 (39%)                     |
|  | Option E (requiring degradable panels in crab pots)         | 7 (39%)                     |
|  | Option F (increasing mesh size for crab trawls)             | 8 (44%)                     |
|  | Option G (limiting the harvest of sponge crabs)*            | 18 (100%)                   |
|  | Option H (minimum size limit for soft and peeler crabs)     | 11 (61%)                    |
|  | Option I (impose a limit on the number of crab pots fished) | 11 (61%)                    |
|  | Option J (impose a fishing time restriction for crab pots)  | 5 (28%)                     |
|  | None  | 0 (0%)                      |
|  | No Preference   | 0 (0%)                      |
|  | <b>Total</b>  | <b>18</b>                   |
| If you support draft Amendment 3, mark the box indicating whether or not you agree with the recommendations for addressing water quality concerns impacting the North Carolina blue crab stock (see pages 130-144 of the amendment). Do you support the recommendations for the Marine Fisheries Commission to address water quality concerns impacting the blue crab stock? | Yes   | 16 (89%)                    |
|  | No  | 1 (6%)                      |
|  | No Preference   | 1 (6%)                      |
|  | <b>Total</b>  | <b>18</b>                   |

| <b>Question</b>   | <b>Response Choices</b>   | <b>Response (number; %)</b> |
|---|---|-----------------------------|
| If you support draft Amendment 3, mark the box(es) for each type of management measure you recommend for expanding crab spawning sanctuaries to improve spawning stock biomass (see pages 145-174 of the amendment).  | Option A (expand the boundaries of the five existing crab spawning sanctuaries)   | 7 (39%)                     |
|   | Option B (establish new crab spawning sanctuaries at all inlets without a crab spawning sanctuary)  | 11 (61%)                    |
|   | Option C (establish a crab spawning sanctuary to serve as a migration corridor in Croatan Sound)  | 10 (56%)                    |
|   | Option D (close crab spawning sanctuaries around inlets from March 1 through October 31 to the use of trawls, pots, and mechanical methods for oysters or clams and to the taking of crabs with any commercial fishing equipment) | 9 (50%)                     |
|   | Option E (close crab spawning sanctuaries around inlets year round to the use of trawls, pots, and mechanical methods for oysters or clams and to the taking of crabs with any commercial fishing equipment)                      | 9 (50%)                     |
|   | None  | 2 (11%)                     |
|   | No Preference   | 2 (11%)                     |
|   | <b>Total</b>  | <b>18</b>                   |
| If you support draft Amendment 3, mark the box indicating whether or not you agree with the recommendation for establishing a framework to implement the use of terrapin excluder devices in crab pots (see pages 175-220 of the amendment). Do you support the criteria developed for designating Diamondback Terrapin Management Areas? | Yes   | 10 (59%)                    |
|   | No  | 5 (29%)                     |
|   | No Preference   | 2 (12%)                     |
|   | <b>Total</b>  | <b>17</b>                   |

| Question  | Response Choices   | Response<br>(number; %) |
|---|--|-------------------------|
| <p>If you support draft Amendment 3, mark the box(es) for each type of management measure you recommend for bottom disturbing gear in the blue crab fishery (see pages 221-235 of the amendment).</p> | Limit the taking of crabs with dredges   | 9 (50%)                 |
|   | Option A (prohibit the taking of crabs with crab dredges)  | 9 (50%)                 |
|   | Option B (prohibit the taking of crabs as incidental bycatch during oyster dredging)   | 12 (67%)                |
|   | Option C (prohibit the taking of crabs with crab dredges and oyster dredges)   | 14 (78%)                |
|   | Option D (reduce the bycatch limit of crabs from oyster dredges to 10% of the total weight of the combined oyster and crab catch or 100 pounds, whichever is less) | 0 (0%)                  |
|   | None   | 1 (6%)                  |
|   | No Preference  | 18                      |
|   | Total  | 3 (18%)                 |
| Limit the use of crab trawls spatially  | Option A (prohibit the use of crab trawls in areas where shrimp trawls are prohibited in the Pamlico, Pungo, and Neuse rivers)                                     | 9 (53%)                 |
|   | Option B (prohibit the use of crab trawls coastwide)   | 1 (6%)                  |
|   | None   | 5 (29%)                 |
|   | No Preference  | 17                      |
|   | Total  |                         |

Appendix 2. List of online questionnaire narrative comments received for Amendment 3 to the Blue Crab FMP.

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### Comments Supporting Amendment 3

Blue crabs are an important player in our ecosystem. I enjoy eating blue crabs, and crabbing. In the several years I have been residing in Eastern NC, I have noticed a severe dwindling of the blue crabs. If we do not do something now, there blue crab fishery will disappear.

A lot of the area DMF wants to include in expanding the Crab Sanctuary at Oregon Inlet is where we catch male crabs, not sooks. The area east of the main channel from the current sanctuary boundary line north is area that we fish for male crabs. Closing that area will take one of the few places we catch Jimmies and force us to work areas where we will be catching sooks, which is the exact opposite of the stated goal. Yesterday I had 12 bushels #1, 300 pound #2 and half a bushel of sooks all in the area north of the current sanctuary but included in the proposed expansion. If I couldn't of fished there, it would have been 25 to 30 bushels of sooks. Including that area in the crab sanctuary doesn't accomplish what you're trying to do with regards to mature female crabs. I'm willing to take a DMF biologist or observer crabbing with us in that area if yall want to see what we catch there. It's not sooks. Please consider this before expanding the sanctuary at Oregon Inlet.

I am a recreational fisherman now , my dad and grandpa were commercial guys , but as the technology has gotten better the rules have stayed the same , my grandpa had a well boat with a Johnson 35 Hp , he caught lots of fish crabs and shrimp with that boat , now look at today's technology with yesterday's rules and it doesn't take a genius to figure out fishing technology has surpassed the rules that are set forth! I just want my kids and grandchildren to have a chance to catch fish crabs and shellfish! !!

Do not just limit your everyday fisherman, this needs to be on a commercial level as well. Commercial fisherman are decimating the population.

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### Comments Opposing Amendment 3

Enforce the law we have. Use the men and women you have to check so many people with so many hard shell crabs under 5 inches

Some of my family commercial crabs and for the past few years it hasn't been that great, ok, but not great. Most years losing money or barely making any profit. But by only keeping the larger ones and making sure most females and smaller crabs are not harvested it has improved this year. This has been the best year crabbing in probably 3 or 4 years. But to put more restrictions on a already highly restricted job is hurting the local seafood markets. I prefer eating fresh and not farm raised crap from other countries.

I've fished for a good 45 years and not seen where fishing is any different. Mother nature has more to do with it than any of the fishing, especially recreational fishing as far as being a good season or bad and by the Way the flounder are still plentiful. That was a foolish amendment too

It is a complete falsehood for North Carolina Marine Fisheries to say there is not an abundance of blue crab. If anything there is an overabundance! I have never seen as many blue crab as I have this year. Familie's welfare and livelihoods are at stake here. THIS IS A WAY OF LIFE! LEAVE IT ALONE!!

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### Comments Supporting Amendment 3

I do not agree with your drafted Amendment but i did answer most of the questions you asked. Yawl wont be happy till this state is catch and release state. From what i seen passed with the new flounder closure. You only care about making sure commercial fisherman have fish to sell and charter boats have enough fish for their customers. F\*\*\* the people who grew up here their whole lives living on this coast. Being a disabled paraplegic kayak angler i dont even get f\*\*\*\*\* started fishing for flounder till after sept. Once all the f\*\*\*\*\* tourist are gone. Cause i have no access except when i have help or can find help witch ends up mostly being on the weekends when boat traffic is at it highest and most dangerous for someone who is Disabled. Yawl a f\*\*\*\*\* joke juss like the NCWRC. Every one of yawl need to be fired cant even vote you crooked people out cause your appointed. First you took stripers, then you took hearing and shad netfishing away from us in town creek. Progress i guess

The main thing to consider is reduction in water quality especially due to runoff from development and agriculture. Unfortunately, the crab fishery suffers on biological, economical, and cultural levels. The most proactive approach to achieving a sustainable harvest would be to address concerns with water quality. Unfortunately, the economic drivers behind development and agriculture essentially steamroll policy to their benefit. I tried to look at each of the recommendations trying to consider the impacts on the harvest and fisherman that it would impact. I am skeptical about the selections I made such as prohibiting the take on sponge crabs due to research conducted at VIMS stating that stress on sponge crabs once caught reduces their chances of survival when released. I truly belief water quality is your main culprit. All these new regulations create tensions amongst the fishing community and law enforcement while ignoring the main contributor to the sustainability in the fishery.

Eliminate harvest of all female crabs until population stabilizes.

Require reporting of lost pots and their location due to storms.

Increase number of pots allowed to holders of recreational gear licenses.

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### Comments Opposing Amendment 3

I do not believe the crab is over fished at all I'm only using 200 pots commercially and I'm catching 1000 pounds every three days if there was a shortage of crab that wouldn't be happening. If you want to regulate the fishery of blue crab put a time limit on how long you can crab or day or a pot limit of 500 to 600 pots (per active fisherman) not wife's or sons of fisherman ones that are on the water everyday. To me it's unequal when a man has 4000 pots and fishies a 1000 everyday making two trips a day that's over fishing put a pot limit to the boat or License and enforce it! That my opinion

Not sure if there is an issue or just more of the same. Get rid of the gill nets and if you keep reducing the recreational catch you need to drop the price of licenses.

The problem with trying to regulate the coastal fisheries off knowledge collected from a study is its IMPOSSIBLE to calculate a shortage or surplus of any species in the ocean. In addition, the commercial and recreational fishing opportunities you're trying to regulate is costing people time, money and resources and possibly their homes because of your lack of ability to communicate with the people that spend the most time with these species. If you continue with the misinformed regulations you will crush the whole industry on the coast. I'm sure this will never make it to anyone as the people making these laws don't go outdoors and enjoy what God has given us so quit trying to regulate stuff you don't have experience with.

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## Comments Supporting Amendment 3

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If you really want to see what is happening to crab stocks, go check the water quality in Pungo Creek after a rain. It rained 3 days ago and now the water is dead from deep up to 5 ft. This has happened 5 times this summer. P.S the farmers upstream just sprayed cotton. Somebody has to start holding people accountable for chemical run off.

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Im not a biologist but....

Sponge crabs should not be harvested. I know she crab soup and the such. But if all sponge crabs were left to hatch you would see and explosion of crabs. (If thats what your after.)

Saw in Maine the lobster men self gov the taking of lobsters with eggs (At least when it aired on TV)

They said they in the report that the lobsters were over fished and concerned to the brink of closing it down. But once they stopped taking the egged females the population rebounded. At least that what I remember form the report.

What I think is one of the biggest issues concerning our crab population is the taking of all or many of the immature female crabs during soft crab season. It is the only place where wildlife is concerned, that all of the immature females are allowed to be taken out of the population. In my opinion that is a problem. I believe there should be some limits concerning the taking of peeler and soft crabs. How can a population of any animal survive if you remove many or all of the immature females?

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If nothing else, please end harvest of sponge crabs and put reasonable limits on pots- less than 1000.

Also end crab trawling and expand sanctuaries.

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I was raised near the Chesapeake bay in Maryland. Eating steamed crabs with family and friends is an important part of our culture. We would never eat female crabs. If females were caught they would be thrown back in the water. We all understand that females are essential to maintaining a healthy population as they lay millions of eggs in a lifetime. Prohibit the catching and sale of female crabs and I bet you wouldn't have to do all the other interventions! If you gave people a choice of doing all the other regulations or simply give up the catching of female crabs, I bet many would choose the latter.

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## Comments Opposing Amendment 3

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Crabbing is a living for me if you close it or limit it it will take the food out of my children's mouths. There is not way possible that the blue crab fishery is in that bad of state to close it, there is more blue crab in the rivers now than I can ever remember. I cannot even drum fish because of blue crab eating the bait before the fish take it. I do not see this as a solution as closing the flounder fishing for everyone was not the way to go about it, there are other ways to regulate crabs as just not allowing keeping of any female blue crab. This amendment is not the way to go about this.

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Here in NJ billions of marine larvae were sucked up by the Oyster Creek Nuclear Power plant. Additionally out of state licenses were given to huge teams of commercial crabbers in small Barnegat Bay.

The plant ceased operation. It will be interesting to see the results the next few years. Combine that wit NO out of state commercial licensing, & Barney Bay fishery will be as healthy as before.

Look for such solutions in all the fisheries.

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Like other species yearly harvest is up and down for as long as I can remember. Weather conditions control good or bad seasons far more than any other factor.If N.C.M.F.s wants everyone out of the water, then why don't they just say so!

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every Crabber I have spoken to say that there is the best sign of crabs they have seen in years. I can hardly see how a fishery can be overfished from the commercial side when there is less gear in the water in there has ever been. please stop calling this sustainable harvest regulation and call it for what it is: regulations to end the commercial fishing industry in NC

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I think the N.C. Fisheries need to be shut down. Everytime you turnaround they are making new laws and regulations which make it harder on commercial fisherman to make a living. My honest opinion people vote all the yankees to a southern controlled board and mostly all of them live on the water or close to the water and get tired of seeing boats in their view. They need to go back up north and mind their own and leave our cultures alone

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### Comments Supporting Amendment 3

NC DMF recommendation on March closure is VERY geographically biased. From page 99 Table 4.1.8 the Southern region was be most affected. Table 4 March is time of high prices, actual prices we receive are higher than DMF estimates. October and November are times of high production and low prices, it would much easier to achieve harvest reductions during this timeframe.

Terrapin excluders could be attached to the partition portion of the pot. This would probably not affect crab catch as much and only require 2 excluders instead of 4. There was FRG work done by Hart and Crowder looking into this arrangement.

Remember there is a 31% chance the fishery will be sustainable with no action. Also there is no analysis of effect of most recent management measures.

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### Comments Opposing Amendment 3

In one part of your amendment it says stop harvesting immature females. Then in another part of your amendment says size limit on peelers and Soft Shell Crabs. So are you trying to say we can only harvest male peelers? What about the female? Because the female peeler are only in the peeler stage when they are immature. The question is If there is a decline in our crab harvest have you checked to see if the fishermen are harvesting other products and that could cause a decrease in pounds caught because there is less crabbers crabbing. Have you done a over all study by dividing the pounds of crabs into the number of active crabbers and not by active licenses.

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I do not think this is a good idea as there has been a very bountiful amount of blue crab the past couple years after the immature female regulation was set. There is other ways to regulate blue crab as this would destroy a lot of lives.

k

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I see nothing in amendment three that prohibits the taking of egg bearing crabs. I have personally observed thousands of egg bearing female crabs going into steamers at fish houses. There is no telling how many millions of baby crabs are killed because of this

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I desire a sustainable blue crab population, I just don't agree with all of the proposeles. I do agree that sponge crabs should be released year round, and that would be a good start. I believe the main issue is water quality, yet NCMF never addresses that. Fishermen are easy to lay the blame, while pesticides and herbicides are used upstream without checks and balances.

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As a commercial Fisherman I am not for more restrictions it is hard enough to make it already with the price of gear bait etc.going up in cost. The reason for the decline last couple of years is due to people getting out of crabbing to go shrimping.I know of quite a few who had done that therefore your landings are gone be lower. In my opinion you need to do away with sponge crabbing, give them a chance to do their thing.For all the other proposals yall have come up with let it be, its not necessary.Right now crabs are so abundant that we are having lay days and quotas on how many bushels we can bring in for that day because the market is flooded.Please thinks this thru and don't regulate the commercial guy out of a job this what we do. Thank you for allowing us to comment.

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## Comments Supporting Amendment 3

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## Comments Opposing Amendment 3

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I do not support a March closure. During March we are using a smaller portion of the resource for a greater economic benefit.

During March, we are gathering jimmy crabs to use in our peeler pots. A march closure would have a greater impact on fisherman than just what the amount of crabs landed indicates.

I do not support a 3 inch size limit on peeler crabs. There is no evidence this will benefit the resource in any way, and it would be a culling nightmare.

0.4 % overfishing by Division figures is quite a stretch to be placing restrictions on taking of crabs with landings in the millions of pounds.

In 2017 we were hit with additional adaptive measures to reduce landings, including a lower culling tolerance, changes to cull rings in pots, making immature females illegal to keep.

We are currently seeing some of the highest landings we have had in years. Maybe these measures have worked, and nothing more is needed, if not, take them away.

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Appendix 3. Public comment delivered to the division during the open comment period.

**Blue Crab Fishery Management Plan Public Comment**

Please consider regionally stocking larval-stage Blue Crabs. We don't always have to target fishermen and seafood consumers when trying to rebuild mismanaged stocks. We can use proven management tools that focus on enhancing our fisheries and food supply. Blue Crabs can thrive at historically high levels even as we harvest more if that is our goal. Stocking crabs would also help other species that eat them. This positive solution would benefit everyone and the environment.

I am always happy to answer any questions and/or go into greater detail.

Thank you,

Chris McCaffity

Received By: Carol Littrell - 10-1-2019 1:46pm

*Full list of recommendations  
by issue for  
Blue Crab Amendment 3*

Estimated harvest reductions  
for all management scenario  
combinations.

*A PRESENTATION  
WILL BE GIVEN AT  
THE MEETING*



ROY COOPER  
*Governor*

MICHAEL S. REGAN  
*Secretary*

STEPHEN W. MURPHEY  
*Director*

Oct. 25, 2019

## MEMORANDUM

**TO:** N.C. Marine Fisheries Commission

**FROM:** Catherine Blum, Fishery Management Plan and Rulemaking Coordinator  
Fisheries Management Section

**SUBJECT:** Rulemaking Update

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### Issue

Provide an update to the Marine Fisheries Commission (MFC) on the status of rulemaking and request the MFC vote on the readoption schedule for a portion of its rules.

### Findings

- G.S. 150B-21.3A(c) requires each agency to conduct a review of all its rules at least once every 10 years in accordance with a prescribed process of reporting and readoption.
- Once the final determination report becomes effective, G.S. 150B-21.3A(d)(2) requires the Rules Review Commission (RRC) to establish a date by which an agency must readopt its rules after consultation with the agency and consideration of the agency's rulemaking priorities in establishing the readoption date.
- MFC rulemaking priorities include:
  - The MFC has 164 rules subject to readoption in 15A NCAC 18A, a relatively large number.
  - The MFC strives to undertake a single package of rules each year to assist stakeholders with anticipating changes and making informed decisions about continued participation in various fisheries based on those rule changes. The MFC generally meets only once each calendar quarter, providing four opportunities per year to take action on rules.
  - The MFC is currently in the process of readopting another 172 rules in 15A NCAC 03 and there is interplay between the two groups of rules, adding complexity to the readoption process.
  - The MFC has a diverse group of stakeholders affected by the wide variety of issues regulated by these rules. By nature of managing a limited natural resource, the rules are generally controversial.

### Action Needed

The MFC is scheduled to vote on the readoption schedule for 164 rules in 15A NCAC 18A.

### Recommendation

Staff recommends the MFC approve a four-year schedule to readopt its rules that are found in 15A NCAC 18A by June 30, 2024.

For the list of affected rules, see the handout in the briefing materials entitled "[RRC DETERMINATION, PERIODIC RULE REVIEW, January 17, 2019, APO Review: March 24, 2019, Marine Fisheries Commission.](#)"

## Rulemaking Update

### Update on S.L. 2019-198, Legislative Review of Regulatory Crimes

[Session Law 2019-198](#) was approved Aug. 14, 2019; a copy of the law is including in the briefing materials. Section 3 of this law requires all State agencies to submit a list of all crimes defined and in effect (or pending implementation) in their current Administrative Code (MFC rules) to the Joint Legislative Administrative Procedure Oversight Committee no later than Nov. 1, 2019. The report was drafted and submitted to the Department of Environmental Quality Oct. 3, 2019. It contains 143 current MFC rules and six pending implementation for a total of 149 rules, of which 89 are still subject to readoption per G.S. 150B-21.3A.

In addition to the reporting requirements, Section 1 of the law added G.S. 14-4.1, Legislative review of regulatory crimes, to Article 1 of Chapter 14 of the General Statutes. This law requires rules adopted or amended on or after Jan. 1, 2020 pursuant to Article 2A of Chapter 150B of the General Statutes that creates a new criminal offense or otherwise subjects a person to criminal penalties to be subject to G.S. 150B-21.3(b1) regardless of whether the rule received written objections from 10 or more persons pursuant to G.S. 150B-21.3(b2). This means these rules will be subject to legislative review, which has a direct impact on the effective date of amended and readopted MFC rules. The MFC is currently in the process of readopting two of the remaining 89 MFC rules on the list of crimes defined in rules *and* subject to readoption per G.S. 150B-21.3A, with the remainder scheduled for readoption in the next couple of years.

### Periodic Review and Expiration of Existing Rules per G.S. 150B-21.3A

#### *Background*

Session Law 2013-413, the Regulatory Reform Act of 2013, implemented requirements known as the “Periodic Review and Expiration of Existing Rules.” These requirements are codified in a new section of Article 2A of Chapter 150B of the General Statutes in G.S. 150B-21.3A. Under the requirements, each agency is responsible for conducting a review of all its rules at least once every 10 years in accordance with a prescribed process.

The review has two parts. The first is a report phase, which has concluded, followed by the readoption of rules. An evaluation of the rules under the authority of the MFC was undertaken in two lots (see Figure 1.) The MFC had 211 rules in Chapter 03 (Marine Fisheries), of which 172 are subject to readoption, and 164 rules in Chapter 18A (Shellfish Sanitation). The MFC is the body with the authority for the approval steps prescribed in the process.

| Rules                            | 2017   | 2018               | 2019                  | 2020                  | 2021 | 2022             | 2023 | 2024             |
|----------------------------------|--------|--------------------|-----------------------|-----------------------|------|------------------|------|------------------|
| Chapter 03<br>(172 of 211 rules) | Report | 41 Rules Readopted | Rule Readoption (131) |                       |      | 6/30/22 deadline |      |                  |
| Chapter 18A<br>(all 164 rules)   |        | Report             |                       | Rule Readoption (164) |      |                  |      | 6/30/24 deadline |

Figure 1. Marine Fisheries Commission schedule to comply with G.S. 150B-21.3A, Periodic Review and Expiration of Existing Rules.

### *15A NCAC 03 Rule Readoption Update*

At its August 2019 meeting, the MFC approved Notice of Text for Rulemaking to begin the readoption process for the second package of rules in 15A NCAC 03. A handout showing the steps in the [MFC's 2019-2020 annual rulemaking cycle](#) is included in the briefing materials. This package includes two proposed rules for readoption: 15A NCAC 03M .0509, Tarpon, and 15A NCAC 03O .0108, License and Commercial Fishing Vessel Registration Transfers. The public comment period is Oct. 16 to Dec. 2 and a public hearing was held Oct. 23. Staff will present the input received from the public to the MFC at its February 2020 business meeting when the MFC is scheduled to vote on approval of the permanent rules. Then, following review and consideration of approval by the RRC, the proposed effective date of the rules is subject to legislative review per S.L. 2019-198 and G.S. 14-4.1.

### *MFC Vote on 15A NCAC 18A Rule Readoption Schedule*

The process of rule readoption for rules in 15A NCAC 18A is scheduled to begin at the MFC's May 2020 business meeting. Given the large number of rules subject to readoption, the wide variety of issues regulated by these rules, and the generally controversial nature of the rules, this will be the first of several years proposed to readopt rules. In preparation for the May meeting, staff prepared a proposed readoption schedule for these rules: staff recommends the MFC approve a four-year schedule to readopt its rules that are found in 15A NCAC 18A by June 30, 2024. If approved, the proposed schedule will be submitted to the RRC for approval at its December 2019 or January 2020 meeting. Once the readoption schedule is approved by the RRC, the MFC can take action to begin the rulemaking process at its May 2020 business meeting.

**RRC DETERMINATION  
PERIODIC RULE REVIEW  
January 17, 2019  
APO Review: March 24, 2019  
Marine Fisheries Commission  
Total: 164**

**RRC Determination: Necessary with substantive public interest**

| <b>Rule</b>                        | <b>Determination</b>                       |
|------------------------------------|--|
| <a href="#">15A NCAC 18A .0134</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0135</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0136</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0137</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0138</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0139</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0140</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0141</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0142</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0143</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0144</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0145</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0146</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0147</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0148</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0149</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0150</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0151</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0152</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0153</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0154</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0155</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0156</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0157</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0158</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0159</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0160</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0161</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0162</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0163</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0164</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0165</a> | Necessary with substantive public interest |
| <a href="#">15A NCAC 18A .0166</a> | Necessary with substantive public interest |









**GENERAL ASSEMBLY OF NORTH CAROLINA  
SESSION 2019**

**SESSION LAW 2019-198  
SENATE BILL 584**

AN ACT TO MAKE CHANGES TO FUTURE CRIMINAL LAWS RELATED TO REGULATORY OFFENSES, TO EXTEND THE TIME FOR LOCAL GOVERNMENTS TO REPORT ORDINANCES WITH CRIMINAL PENALTIES, AND TO REQUIRE THE GENERAL STATUTES COMMISSION TO STUDY CURRENT OFFENSES NOT ENACTED BY STATUTE.

The General Assembly of North Carolina enacts:

**SECTION 1.** Article 1 of Chapter 14 of the General Statutes is amended by adding a new section to read:

**"§ 14-4.1. Legislative review of regulatory crimes.**

(a) Any rule adopted or amended pursuant to Article 2A of Chapter 150B of the General Statutes that creates a new criminal offense or otherwise subjects a person to criminal penalties is subject to G.S. 150B-21.3(b1) regardless of whether the rule received written objections from 10 or more persons pursuant to G.S. 150B-21.3(b2).

(b) This section applies to rules adopted on or after January 1, 2020."

**SECTION 2.** Effective January 1, 2020, G.S. 150B-21.3(b1) reads as rewritten:

"(b1) Delayed Effective Dates. – If Except as provided in G.S. 14-4.1, if the Commission received written objections to the rule in accordance with subsection (b2) of this section, the rule becomes effective on the earlier of the thirty-first legislative day or the day of adjournment of the next regular session of the General Assembly that begins at least 25 days after the date the Commission approved the rule, unless a different effective date applies under this section. If a bill that specifically disapproves the rule is introduced in either house of the General Assembly before the thirty-first legislative day of that session, the rule becomes effective on the earlier of either the day an unfavorable final action is taken on the bill or the day that session of the General Assembly adjourns without ratifying a bill that specifically disapproves the rule. If the agency adopting the rule specifies a later effective date than the date that would otherwise apply under this subsection, the later date applies. A permanent rule that is not approved by the Commission or that is specifically disapproved by a bill enacted into law before it becomes effective does not become effective.

A bill specifically disapproves a rule if it contains a provision that refers to the rule by appropriate North Carolina Administrative Code citation and states that the rule is disapproved. Notwithstanding any rule of either house of the General Assembly, any member of the General Assembly may introduce a bill during the first 30 legislative days of any regular session to disapprove a rule that has been approved by the Commission and that either has not become effective or has become effective by executive order under subsection (c) of this section."

**SECTION 3.** Section 1 of S.L. 2018-69 reads as rewritten:

"**SECTION 1.** All State agencies, boards, and commissions that have the power to define conduct as a crime in the North Carolina Administrative Code shall create a list of all crimes defined by the agency, board, or commission that are in effect or pending implementation. Each agency, board, or commission shall submit the list to the Joint Legislative Administrative



Procedure Oversight Committee and the Joint Legislative Oversight Committee on Justice and Public Safety no later than ~~December 1, 2018~~ November 1, 2019."

**SECTION 4.** Section 3 of S.L. 2018-69 reads as rewritten:

**"SECTION 3.** Every ~~county, city, town, or metropolitan sewerage district~~ county with a population of 20,000 or more according to the last federal decennial census, city or town with a population of 1,000 or more according to the last federal decennial census, or metropolitan sewerage district that has enacted an ordinance punishable pursuant to G.S. 14-4(a) shall create a list of applicable ordinances with a description of the conduct subject to criminal punishment in each ordinance. Each county, city, town, or metropolitan sewerage district shall submit the list to the Joint Legislative Administrative Procedure Oversight Committee ~~and the Joint Legislative Oversight Committee on Justice and Public Safety~~ no later than ~~December 1, 2018~~ November 1, 2019."

**SECTION 5.** No ordinance adopted on or after January 1, 2020, and before January 1, 2022, by a county, city, or town that was required to report pursuant to Section 3 of S.L. 2018-69, as amended by Section 4 of this act, shall be subject to the criminal penalty provided by G.S. 14-4 unless that county, city, or town submitted the required report on or before November 1, 2019. Ordinances regulated by this section may still be subject to civil penalties as authorized by G.S. 153A-123 or G.S. 160A-175.

**SECTION 6.** The General Statutes Commission shall study the reports received pursuant to S.L. 2018-69, as amended by Section 3 and Section 4 of this act, and make recommendations regarding whether any conduct currently criminalized either (i) by an ordinance of a county, city, town, or metropolitan sewerage district or (ii) in the North Carolina Administrative Code by an agency, board, or commission, should have criminal penalties provided by a generally applicable State law. The Commission shall report to the 2020 Regular Session of the 2019 General Assembly and to the Joint Oversight Committee on General Government on or before May 1, 2020.

**SECTION 7.** G.S. 93A-8 reads as rewritten:

**"§ 93A-8. Penalty for violation of Chapter.**

Any person violating ~~the provisions of this Chapter~~ G.S. 93A-1 shall upon conviction thereof be deemed guilty of a Class 1 misdemeanor."

**SECTION 8.** Section 7 becomes effective December 1, 2019, and applies to offenses committed on or after that date. The remainder of this act is effective when it becomes law.

In the General Assembly read three times and ratified this the 7<sup>th</sup> day of August, 2019.

s/ Philip E. Berger  
President Pro Tempore of the Senate

s/ Tim Moore  
Speaker of the House of Representatives

s/ Roy Cooper  
Governor

Approved 5:12 p.m. this 14<sup>th</sup> day of August, 2019

# N.C. Marine Fisheries Commission 2019-2020 Annual Rulemaking Cycle

November 2019

| Time of Year             | Action   |
|--------------------------|--|
| April-July 2019          | Fiscal analysis of rules prepared by DMF staff and approved by Office of State Budget and Management     |
| August 2019              | MFC approved Notice of Text for Rulemaking   |
| Oct. 1, 2019             | Publication of proposed rules in the <i>North Carolina Register</i>                                      |
| Oct. 16-Dec. 2, 2019     | Public comment period held   |
| Wednesday, Oct. 23, 2019 | Public hearing held: 6 p.m., Division of Marine Fisheries, 5285 Highway 70 West, Morehead City, NC 28557 |
| February 2020            | MFC considers approval of permanent rules  |
| April 2020               | Rules reviewed by Office of Administrative Hearings Rules Review Commission.                             |
| TBD                      | Proposed effective date of rules is subject to legislative review per S.L. 2019-198 and G.S. 14-4.1.     |



ROY COOPER  
*Governor*

MICHAEL S. REGAN  
*Secretary*

STEPHEN W. MURPHEY  
*Director*

Oct. 25, 2019

## MEMORANDUM

**TO:** N.C. Marine Fisheries Commission  
**FROM:** Kathy Rawls, Fisheries Management Section Chief  
**SUBJECT:** Temporary Rule Suspension

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### Issue

In accordance with the North Carolina Division of Marine Fisheries Resource Management Policy Number 2014-2, Temporary Rule Suspension, the North Carolina Marine Fisheries Commission (NCMFC) will vote on any new rule suspensions that have occurred since the last meeting of the commission.

### Findings

No new rule suspensions have occurred since the August 2019 meeting.

### Action Needed

For informational purposes only, **no action is needed at this time.**

### Overview

In accordance with policy, the division will report current rule suspensions previously approved by the commission as non-action, items. The current rule suspensions previously approved by the commission are as follows:

#### **NCMFC Rule 15A NCAC 03L .0103 (a)(1) Prohibited Nets, Mesh Lengths and Areas**

Continued suspension of portions of this rule for an indefinite period. Suspension of this rule allows the division to adjust trawl net minimum mesh size requirements in accordance with the May 2018 Revision to Amendment 1 to the North Carolina Shrimp Fishery Management Plan. This suspension was implemented in proclamation SH-3-2019.

#### **NCMFC 15A NCAC 03M .0516 Cobia**

Continued suspension of this rule for an indefinite period. This continued suspension allows the division to manage the commercial and recreational cobia fisheries in accordance with management actions taken by the commission and in accordance with the Atlantic States Marine Fisheries Commission's Interstate Cobia Fishery Management Plan. This suspension was continued in Proclamation FF-10-2019.

### **NCMFC 15A NCAC 03J .0301 Pots**

Continued suspension of portions of this rule for an indefinite period. This continued suspension allows the division to implement the crab pot escape ring requirements adopted by the commission in the May 2016 Revision to Amendment 2 of the North Carolina Blue Crab Fishery Management Plan. This suspension was implemented in Proclamation M-11-2016.

### **NCMFC Rule 15A NCAC 03L .0201 Crab Harvest Restrictions & 03L .203 Crab Dredging**

Continued suspension of portions of these rules for an indefinite period. This continued suspension allows the division to implement the blue crab harvest restrictions adopted by the commission in the May 2016 Revision to Amendment 2 of the North Carolina Blue Crab Fishery Management Plan. These suspensions were implemented in Proclamation M-11-2016.

### **NCMFC Rule 15A NCAC 03J .0501 Definitions and Standards for Pound Nets and Pound Net Sets**

Continued suspension of portions of this rule for an indefinite period. Continued suspension of portions of this rule allows the division to increase the minimum mesh size of escape panels for flounder pound nets in accordance with Supplement A to Amendment 1 of the North Carolina Southern Flounder Fishery Management Plan. This suspension was implemented in Proclamation M-34-2015.

### **NCMFC Rule 15A NCAC 03M .0519 Shad & 03Q .0107 Special Regulations: Joint Waters**

Continued suspension of portions of these rules for an indefinite period. Continued suspension of portions of these rules allows the division to change the season and creel limit for American shad under the management framework of the North Carolina American Shad Sustainable Fishery Plan. These suspensions were continued in Proclamation FF-12-2019.

*SUPPLEMENTAL  
MATERIALS*



Table 4.1.14. Estimated harvest reductions for all management scenario combinations. Gray boxes indicate the harvest reduction needed for varying probabilities of achieving sustainable harvest. Options 1 through 5 do not meet statutory requirements for achieving sustainable harvest. Beginning with option 6, all remaining options meet or exceed the minimum statutory requirement for achieving sustainable harvest. \*Examples of different season closures for options 12 and 18 can be found in Table 4.1.15.

| Management Option  | Management Measure  | 2011-2016 Average Harvest Reduction (%) | 2016 Harvest Reduction (%) | Management Option                                     | Management Measure  | 2011-2016 Average Harvest Reduction (%) | 2016 Harvest Reduction (%) |     |
|--|---|---|----------------------------|---|---|---|----------------------------|-----|
| Options 1-5: Do not meet required 50% probability of ending overfished |   |   |                            | 13  | 6.5" Mature Female Maximum Size   | 5.4                                     | 4.3                        |     |
| 1  | Prohibit Immature Female Harvest  | 1.1                                     | 0.5                        | 14  | 6.75" Mature Female Maximum Size  | 4.3                                     | 4.4                        |     |
| 2  | 5" Mature Female Minimum Size   | 0.9                                     | 0.9                        |   | December Closure  |   |                            |     |
| 3  | 5" Mature Female Minimum Size<br>Prohibit Immature Female Harvest                     | 2.0                                     | 1.4                        | 15  | 5" Mature Female Minimum Size<br>Reducing Cull Tolerance to Zero  | 5.0                                     | 4.6                        |     |
| 4  | 6.75" Mature Female Maximum Size  | 2.3                                     | 1.5                        | 16  | 5.25" Mature Female Minimum Size<br>Prohibit Immature Female Harvest                                    | 4.1                                     | 4.6                        |     |
| 5  | 6.75" Mature Female Maximum Size<br>Prohibit Immature Female Harvest                  | 3.4                                     | 2.0                        | 17  | 6.5" Mature Female Maximum Size<br>Prohibit Immature Female Harvest                                     | 6.4                                     | 4.8                        |     |
| Reduction with a 50% probability of ending overfished                  |   |   | 2.2                        | 18*   | 6.75" Mature Female Maximum Size<br>Prohibit Immature Female Harvest<br>December Closure                | 5.3                                     | 4.8                        |     |
| 6  | December Closure  | 2.0                                     | 2.9                        | 19  | 5" Mature Female Minimum Size<br>Prohibit Immature Female Harvest<br>Reducing Cull Tolerance to Zero    | 5.9                                     | 4.9                        |     |
| 7  | Prohibit Immature Female Harvest<br>December Closure                                  | 3.1                                     | 3.4                        | 20  | 6.75" Mature Female Maximum Size<br>Reducing Cull Tolerance to Zero                                     | 6.3                                     | 5.1                        |     |
| 8  | Reducing Cull Tolerance to Zero   | 4.1                                     | 3.7                        | 21  | 6.75" Mature Female Maximum Size<br>Prohibit Immature Female Harvest<br>Reducing Cull Tolerance to Zero | 7.2                                     | 5.5                        |     |
| Reduction with a 67% probability of ending overfished                  |   |   | 3.8                        | Reduction with a 90% probability of ending overfished |   |   |                            | 5.9 |
| 9  | 5" Mature Female Minimum Size<br>December Closure                                     | 2.9                                     | 3.8                        | 22  | Reducing Cull Tolerance to Zero<br>December Closure   | 6.0                                     | 6.5                        |     |
| 10   | Prohibit Immature Female Harvest<br>Reducing Cull Tolerance to Zero                   | 5.1                                     | 4.1                        |   |   |   |                            |     |
| 11   | 5.25" Mature Female Minimum Size  | 3.0                                     | 4.1                        |   |   |   |                            |     |
| 12*  | 5" Mature Female Minimum Size<br>Prohibit Immature Female Harvest<br>December Closure | 4.0                                     | 4.3                        |   |   |   |                            |     |

Table 4.1.14. continued...

| Management Option | Management Measure   | 2011-2016 Average Harvest Reduction (%) | 2016 Harvest Reduction (%) | Management Option | Management Measure  | 2011-2016 Average Harvest Reduction (%) | 2016 Harvest Reduction (%) |
|-------------------|--|---|----------------------------|-------------------|---|---|----------------------------|
| 23                | Prohibit Immature Female Harvest<br>December Closure<br>Reducing Cull Tolerance to Zero                                  | 7.0                                     | 6.9                        | 33                | 5.25" Mature Female Minimum Size<br>Prohibit Immature Female Harvest<br>Reducing Cull Tolerance to Zero                     | 7.9                                     | 8.0                        |
| 24                | 5.25" Mature Female Minimum Size<br>December Closure   | 4.9                                     | 6.9                        | 34                | 6.5" Mature Female Maximum Size<br>Prohibit Immature Female Harvest<br>Reducing Cull Tolerance to Zero                      | 10.2                                    | 8.2                        |
| 25                | 6.5" Mature Female Maximum Size<br>December Closure  | 7.3                                     | 7.1                        | 35                | 6.75" Mature Female Maximum Size<br>Prohibit Immature Female Harvest<br>Reducing Cull Tolerance to Zero<br>December Closure | 9.1                                     | 8.3                        |
| 26                | 5" Mature Female Minimum Size<br>December Closure<br>Reducing Cull Tolerance to Zero                                     | 6.9                                     | 7.3                        |                   |   |   |                            |
|                   |  |   |                            |                   | Reduction with a 96% probability of ending overfished   |   | 9.3                        |
| 27                | 5.25" Mature Female Minimum Size<br>Prohibit Immature Female Harvest<br>December Closure                                 | 6.0                                     | 7.3                        | 36                | 5.25" Mature Female Minimum Size<br>December Closure<br>Reducing Cull Tolerance to Zero                                     | 8.8                                     | 10.3                       |
| 28                | 6.5" Mature Female Maximum Size<br>Prohibit Immature Female Harvest<br>December Closure                                  | 8.3                                     | 7.5                        | 37                | 6.5" Mature Female Maximum Size<br>December Closure<br>Reducing Cull Tolerance to Zero                                      | 11.1                                    | 10.5                       |
| 29                | 5.25" Mature Female Minimum Size<br>Reducing Cull Tolerance to Zero  | 7.0                                     | 7.6                        | 38                | 5.25" Mature Female Minimum Size<br>Prohibit Immature Female Harvest<br>Reducing Cull Tolerance to Zero<br>December Closure | 9.7                                     | 10.7                       |
| 30                | 5" Mature Female Minimum Size<br>Prohibit Immature Female Harvest<br>Reducing Cull Tolerance to Zero<br>December Closure | 7.8                                     | 7.7                        | 39                | 6.5" Mature Female Maximum Size<br>Prohibit Immature Female Harvest<br>Reducing Cull Tolerance to Zero<br>December Closure  | 12.0                                    | 10.9                       |
| 31                | 6.5" Mature Female Maximum Size<br>Reducing Cull Tolerance to Zero   | 9.3                                     | 7.8                        |                   |   |   |                            |
| 32                | 6.75" Mature Female Maximum Size<br>December Closure<br>Reducing Cull Tolerance to Zero                                  | 8.2                                     | 7.9                        |                   |   |   |                            |

Table 4.1.15. Estimated harvest reductions for management options 12 and 18 from Table 4.1.14 with various closure periods requested by the Blue Crab FMP AC.

| Management Option   | Management Measure  | 2011-2016 Average Harvest Reduction (%) | 2016 Harvest Reduction (%) | Management Option   | Management Measure   | 2011-2016 Average Harvest Reduction (%) | 2016 Harvest Reduction (%) |
|---|---|---|----------------------------|---|--|---|----------------------------|
| <b>Option 12.1: Does not meet required 50% probability of ending overfished</b> |   |   |                            | <b>Option 18.1: Does not meet required 50% probability of ending overfished</b> |  |   |                            |
| 12.1  | 5" Mature Female Minimum Size<br>Prohibit Immature Female Harvest<br>January 15 - February 7 Closure    | 2.2                                     | 1.5                        | 18.1  | 6.75" Mature Female Maximum Size<br>Prohibit Immature Female Harvest<br>January 15 - February 7 Closure  | 3.5                                     | 2.1                        |
| <b>Reduction with a 50% probability of ending overfished</b>                    |   |   |                            | <b>Reduction with a 50% probability of ending overfished</b>                    |  |   |                            |
| 12.2  | 5" Mature Female Minimum Size<br>Prohibit Immature Female Harvest<br>January 1 - January 31 Closure     | 2.4                                     | 2.3                        | 18.2  | 6.75" Mature Female Maximum Size<br>Prohibit Immature Female Harvest<br>January 1 - January 31 Closure   | 3.7                                     | 2.9                        |
| 12.3  | 5" Mature Female Minimum Size<br>Prohibit Immature Female Harvest<br>January 1 - February 28/29 Closure | 2.9                                     | 2.7                        | 18.3 (BCAC)   | Prohibit Immature Female Harvest<br>Jan. 1 - Jan. 31 Closure North of Hwy 58 Bridge<br>March 1 - March 15 Closure South of Hwy 58 Bridge<br>6.75" Mature Female Max. Size North of Hwy 58 Bridge | 3.7                                     | 3.2                        |
| 12.4  | 5" Mature Female Minimum Size<br>Prohibit Immature Female Harvest<br>March 16 - March 31 Closure        | 3.4                                     | 3.7                        | 18.4  | Prohibit Immature Female Harvest<br>Jan. 1 - Jan. 31 Closure North of Hwy 58 Bridge<br>Feb. 20 - March 15 Closure South of Hwy 58 Bridge<br>6.75" Mature Female Max. Size North of Hwy 58 Bridge | 3.8                                     | 3.2                        |
| <b>Reduction with a 67% probability of ending overfished</b>                    |   |   |                            | <b>Reduction with a 67% probability of ending overfished</b>                    |  |   |                            |
| 12.5  | 5" Mature Female Minimum Size<br>Prohibit Immature Female Harvest<br>March 1 - March 15 Closure         | 3.2                                     | 4.0                        | 18.5  | 6.75" Mature Female Maximum Size<br>Prohibit Immature Female Harvest<br>January 1 - February 28/29 Closure   | 4.2                                     | 3.3                        |
| 12.6  | 5" Mature Female Minimum Size<br>Prohibit Immature Female Harvest<br>March 1 - March 24 Closure         | 4.1                                     | 5.4                        | <b>Reduction with a 67% probability of ending overfished</b>                    |  |   |                            |
| 12.7  | 5" Mature Female Minimum Size<br>Prohibit Immature Female Harvest<br>March 8 - March 31 Closure         | 4.2                                     | 5.6                        | 18.6  | 6.75" Mature Female Maximum Size<br>Prohibit Immature Female Harvest<br>March 16 - March 31 Closure  | 4.7                                     | 4.3                        |
| <b>Reduction with a 90% probability of ending overfished</b>                    |   |   |                            | <b>Reduction with a 90% probability of ending overfished</b>                    |  |   |                            |
| 12.8  | 5" Mature Female Minimum Size<br>Prohibit Immature Female Harvest<br>March 1 - March 31 Closure         | 4.6                                     | 6.3                        | 18.7  | 6.75" Mature Female Maximum Size<br>Prohibit Immature Female Harvest<br>March 1 - March 15 Closure   | 4.6                                     | 4.5                        |
| <b>Reduction with a 90% probability of ending overfished</b>                    |   |   |                            | <b>Reduction with a 90% probability of ending overfished</b>                    |  |   |                            |
|   |   |   |                            | 18.8  | 6.75" Mature Female Maximum Size<br>Prohibit Immature Female Harvest<br>March 1 - March 24 Closure   | 5.4                                     | 6.0                        |
|   |   |   |                            | 18.9  | 6.75" Mature Female Maximum Size<br>Prohibit Immature Female Harvest<br>March 8 - March 31 Closure   | 5.5                                     | 6.2                        |
|   |   |   |                            | 18.10   | 6.75" Mature Female Maximum Size<br>Prohibit Immature Female Harvest<br>March 1 - March 31 Closure   | 5.9                                     | 6.9                        |