

MARINE FISHERIES COMMISSION BUSINESS MEETING
Hilton Garden Inn, Kitty Hawk, N.C.
Nov. 15-16, 2017

N.C.G.S. 138A-15(e) mandates at the beginning of any meeting of a board, the chair shall remind all members of their duty to avoid conflicts of interest under Chapter 138. The chair also shall inquire as to whether there is any known conflict of interest with respect to any matters coming before the board at that time.

N.C.G.S. 143B-289.54.(g)(2) states a member of the Marine Fisheries Commission shall not vote on any issue before the Commission that would have a "significant and predictable effect" on the member's financial interest. For purposes of this subdivision, "significant and predictable effect" means there is or may be a close causal link between the decision of the Commission and an expected disproportionate financial benefit to the member that is shared only by a minority of persons within the same industry sector or gear group. A member of the Commission shall also abstain from voting on any petition submitted by an advocacy group of which the member is an officer or sits as a member of the advocacy group's board of directors. A member of the Commission shall not use the member's official position as a member of the Commission to secure any special privilege or exemption of substantial value for any person. No member of the Commission shall, by the member's conduct, create an appearance that any person could improperly influence the member in the performance of the member's official duties.

Commissioners having questions about a conflict of interest or appearance of conflict should consult with counsel to the Marine Fisheries Commission or the secretary's ethics liaison. Upon discovering a conflict, the commissioner should inform the chair of the commission in accordance with N.C.G.S. 138A-15(e).

Nov. 15

2 p.m.

Call to Order*
Conflict of Interest Reminder
Roll Call
Approval of Agenda**
Approval of Meeting Minutes**

2:15 p.m.

Chairman's Report

- Letters
- Ethics Training Reminder
- 2018 Meeting Schedule

2:30 p.m.

Director's Report – Director Braxton Davis

Reports and updates on recent Division of Marine Fisheries activities

- Division of Marine Fisheries Quarterly Update
- Atlantic States Marine Fisheries Commission – Michelle Duval and Chris Batsavage
 - Sturgeon Benchmark Stock Assessment
 - Amendment 3 to the Interstate Fishery Management Plan for Atlantic Menhaden
 - Summer Flounder Commercial Quota Allocations – Chris Batsavage
 - Sustainable Fishery Management Plan for American Shad – Holly White
 - 2018 Cobia Season and Potential Management Measures – Steve Poland
 - **Vote on 2018 Season and Management Measures***
- Informational Materials
 - Landings Update for Red Drum and Southern Flounder
 - Protected Resources Update
 - Observer Program
 - Incidental Take Permit Updates
 - Mid-Atlantic Fishery Management Council Update
 - South Atlantic Fishery Management Council Update
 - Highly Migratory Species
 - Preliminary Landings, January - June 2017

- License and Statistics 2017 Annual Report
 - Rulemaking Update
- 4 p.m. Committee Reports
- Nominating Committee
 - **Vote on slate of nominees for at-large seats for the Mid-Atlantic and South Atlantic Fishery Management Councils ****
 - Region 4 Proposed Strategic Habitat Area Nominations – Anne Deaton and Casey Knight
 - **Vote to send Region 4 Strategic Habitat Areas nominations out for advisory committee/public comment****
 - Finfish Advisory Committee
 - Northern Advisory Committee
 - Southern Advisory Committee
 - Blue Crab Fishery Management Plan Advisory Committee
- 6 p.m. Public Comment Period

Nov. 16

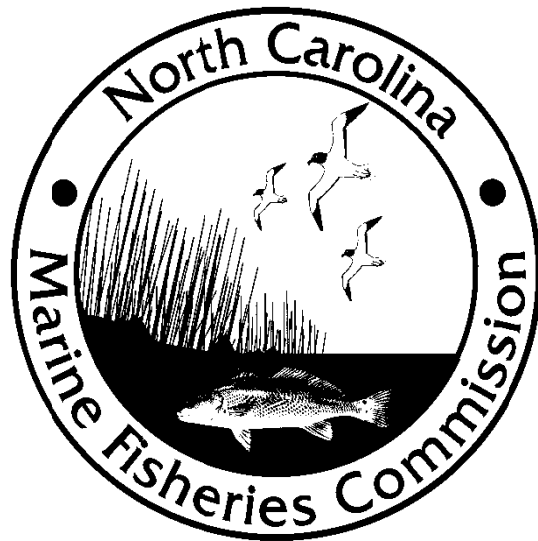
- 8:30 a.m. Shellfish Mariculture
- Remarks by Tom Looney, N.C. Economic Development Council and Todd Miller, N.C. Coastal Federation
 - Program Update – Steve Murphey and Anne Deaton
- 9:30 a.m. Fishery Management Plan Update – Catherine Blum
- Status of ongoing plans
- 9:45 a.m. Striped Mullet Update – Dan Zaph and Tracey Bauer
- 10:30 a.m. Rule Suspension Annual Update – Kathy Rawls
- 10:45 a.m. Coastal Habitat Protection Implementation Plan – Jimmy Johnson
- **Vote on Implementation Plan****
- 11:15 a.m. Issues from Commissioners
- 11:45 a.m. Meeting Assignments and Preview of February Agenda Items – Nancy Fish
- Noon Adjourn

2018 Meeting Dates

- Feb. 14-15** **Wilmington Area**
- May 16-17** **Morehead City/New Bern Area**
- Aug. 15-16** **Raleigh**
- Nov. 14-15** **Kitty Hawk**

** Times indicated are merely for guidance. The commission will proceed through the agenda until completed.*
***Potential Action Items*

Minutes



**Marine Fisheries Commission Business Meeting Minutes
Brownstone Hotel
Raleigh, North Carolina
August 16-17, 2017**

The commission held a business meeting Aug. 16-17 at the Doubletree by Hilton University Brownstone Hotel in Raleigh, North Carolina.

The briefing book, presentations and audio from this meeting can be found at <http://portal.ncdenr.org/web/mf/08-2017-briefing-book>.

Actions and motions from the meeting are listed in **bolded** type.

BUSINESS MEETING - MOTIONS AND ACTIONS

Chairman Sammy Corbett convened the Marine Fisheries Commission business meeting at 2 p.m. on Aug. 16 and reminded commissioners of their conflict of interest and ethics requirements.

The following commission members were in attendance: Sammy Corbett-Chairman, Mark Gorges, Brady Koury, Chuck Laughridge, Janet Rose, Rick Smith, Mike Wicker and Alison Willis.

Joe Shute was not present.

The agenda was approved by consensus.

The minutes from the May 2107 business meeting were approved by consensus.

Chairman's Report

Marine Fisheries Commission Liaison Nancy Fish reviewed letters that had been sent and received by the commission.

Commissioners were reminded of their ethics training requirements and their annual requirement to submit a Statement of Economic Interest form to the N.C. Ethics Commission.

It was determined the 2018 meeting schedule would be:

Feb. 14-15

May 16-17

Aug. 15-16

Nov. 14-15

Election of Vice-Chair

Alison Willis nominated Mark Gorges as vice chairman. Second by Janet Rose.

Brad Koury nominated Chuck Laughridge as vice chairman. Second by Rick Smith.

Chuck Laughridge was elected vice chairman by a majority vote of the commission.

Director's Report

Division Director Braxton Davis updated the commission on division activities occurring since the May 2017 business meeting, including:

- An update on fisheries-related legislation passed during the long session of the N.C. General Assembly;
- Promotion of Beth Govoni to chief of the Administrative Services Section, replacing Suzanne Guthrie, who retired in June;
- Selection of Officer Bill Register as Marine Patrol Enforcement Officer of the Year by the Governor's Conservation Achievement Awards Program that is sponsored by the North Carolina Wildlife Federation;
- Updates were provided on the status of development of the fiscal analysis for the rules contained in the NCWF petition for rulemaking, ongoing work on the expedited Estuarine Striped Bass Fishery Management Plan and anadromous stocked fish; and
- A review of the 2017 cobia season.

The division provided an overview of recent actions from the Atlantic States Marine Fisheries Commission, the South Atlantic Fishery Management Council and the Mid-Atlantic Fishery Management Council, along with updates on the division's Protected Resources Section, including the Observer Program.

Landings Overview

Stephanie McInerney, Alan Bianchi and Chris Wilson, with the division's License and Statistics Section, provided the commission with an overview of trends in North Carolina landings and harvest.

Commercial

A warm autumn kept commercial fishermen catching and selling shrimp up to New Year's Eve last year, boosting 2016 shrimp landings to the highest since the N.C. Division of Marine Fisheries' Trip Ticket Program began in 1994.

But overall, the 60 million pounds of finfish and shellfish commercial fishermen caught and sold at the docks was a 9 percent decrease from 2015. The total estimated dockside value of \$94 million was about \$700,000 short of the 2015 value.

The 2016 landings were higher than the five-year average of 59 million pounds, and the five-year average value of \$86 million.

The Trip Ticket Program collects commercial fishing landings statistics through legislatively-mandated reporting of all fisherman to dealer transactions.

As usual, hard blue crabs topped the list of species landed (24.7 million pounds), followed by shrimp (13.2 million pounds), spiny dogfish (2.3 million pounds), Atlantic croaker (2.1 million pounds) and summer flounder (2.1 million pounds).

Commercial shrimp landings in 2016 increased by 45 percent to 13.2 million pounds, which had an estimated dockside value of \$28 million. Shrimp landings were good all year; fishermen exceeded 2015 monthly landings in every month of 2016, except June and July. In December, dealers purchased 1.7 million pounds of shrimp from fishermen, which was 341 percent more than was purchased in December 2015.

The increase in annual shrimp landings was accompanied by an 18.7 percent increase in overall shrimp fishing trips in 2016. Also, landings from state ocean waters north of Cape Hatteras greatly increased in 2016 – nearly 11,000 percent over the previous year. Reports from dealers indicated an unusual abundance of shrimp in these northern, nearshore waters.

Landings of tilefish, spotted seatrout, squid and black drum also increased.

However, landings of blue crabs dropped by 21 percent from 2015 landings, bringing it back in line with the five-year average of around 25.7 million pounds. Landings of hard blue crabs decreased by 20.4 percent, landings of soft blue crabs decreased by 25.1 percent and landings of peeler blue crabs decreased by 36.9 percent.

While overall oyster landings increased 3.6 percent in 2016, the higher landings came from a 99 percent jump in landings from private leases. Public bottom landings dropped by 25 percent, possibly impacted by various environmental conditions leading to lower reproduction and growth over the past few years, as well as more shellfish water closures.

Landings can fluctuate from year-to year based on many factors, including environmental conditions, market changes and fishing effort.

Recreational

Coastal recreational fishermen hooked fewer fish in 2016 than they did in 2015. Anglers brought an estimated 8.5 million fish to the docks in 2016, a decrease of 18 percent from 2015.

The estimated weight of these landings inched up, increasing by 2 percent to 12.2 million pounds. Anglers also released 1.5 percent more fish in 2016 than in 2015.

Fishermen also took 16.2 percent more fishing trips in 2016 than they did in 2015. This trend continued even in the fall following Hurricane Matthew.

The 2016 top five recreationally harvested species, by pounds, were dolphin (2.8 million pounds), yellowfin tuna (2.3 million pounds), bluefish (862,558 pounds), spotted seatrout (688,682 pounds) and wahoo (640,807 pounds).

Yellowfin tuna harvest increased 145 percent from 2015. Anglers harvested 60,134 yellowfin tuna with a total weight of 2.3 million pounds. Bluefish harvests increased by 18 percent to 1.2 million fish (862,558 pounds), and wahoo harvests increased by 21 percent to 23,809 fish (640,807 pounds).

Landings for two of the top five species decreased significantly.

Anglers harvested 263,278 dolphin, with a total weight of 2.8 million pounds in 2016. That was a 39.4 percent decrease in the number of dolphin anglers brought to the docks. This dip in harvest may have resulted from the greater availability of yellowfin tuna and other offshore species, such as king mackerel, wahoo and blackfin tuna.

Also, the number of cobia landed fell by 42.5 percent, in 2016 to 9,288 fish (293,544 pounds).

In another notable change, estimated spotted seatrout harvests for 2016 increased by 342 percent over 2015, which were the lowest recreational spotted seatrout landings on record. Anglers brought 386,021 (688,682 pounds) spotted seatrout to the docks in 2016.

Landings can fluctuate from year-to year based on many factors, including environmental conditions and fishing effort.

The Division of Marine Fisheries estimates recreational fishing harvests through broad-based intercept surveys, where port agents talk to fishermen on the beach, at the piers and at boat ramps, and through mail surveys to license holders.

For a full landings report, click on the 2016 Annual Fisheries Bulletin link [here](#).

The presentation can be found at:

http://portal.ncdenr.org/c/document_library/get_file?p_l_id=1169848&folderId=30862623&name=DLFE-133891.pdf

Blue Crab Traffic Light Assessment

Jason Rock, with the division's Fisheries Management Section, presented the annual update to the Blue Crab Traffic Light Assessment, which includes data through 2016.

The presentation can be found at:

http://portal.ncdenr.org/c/document_library/get_file?p_l_id=1169848&folderId=30862623&name=DLFE-133892.pdf

Stock Status Report

Tina Moore, with the division's Fisheries Management Section, provided the commission with an overview of the 2017 Stock Status Report.

The North Carolina Division of Marine Fisheries has changed its annual Stock Status Overview Report to make it more user friendly and better correspond to stock status determinations at the federal and interstate management levels.

A new webpage design separates state-managed species from those cooperatively managed through a federal or interstate entity. The Division of Marine Fisheries assigned a stock status only to the 14 state-managed marine fisheries stocks. For the remaining 23 stocks, the state defers to the stock status assigned by the principal management agency, including the Atlantic States Marine Fisheries Commission, the South Atlantic Fishery Management Council and the Mid-Atlantic Fishery Management Council.

Additionally, the Division of Marine Fisheries has redesigned the individual species pages, making them more visual with photographs and color graphics showing fishery landings and abundance trends. The new pages also give life history and updated management summaries.

The Division of Marine Fisheries classifies the status of important marine finfish, shellfish, shrimp and crabs as viable, recovering, concern, depleted or unknown. Definitions of these categories can be found [here](#).

The annual classifications are based on biological and statistical data from the prior year and describe the overall condition of North Carolina's state-managed fishery resources.

This year's Stock Status Overview Report reclassifies one state-managed species. Striped mullet moved from "viable" to "concern" because monitoring triggers established in Amendment 1 to the North Carolina Striped Mullet Fishery Management Plan were met. 2016 commercial landings fell below the minimum landings threshold established in the plan. Also, Division of Marine Fisheries sampling surveys showed low striped mullet abundance.

Under the striped mullet plan's guidelines, the division will review striped mullet data in more detail to determine what factors are responsible for this decline and to decide if management action is needed.

No other state-managed species were reclassified, but the status of red drum, currently listed as "recovering," is now based on a new regional stock assessment which indicates that the stock continues to meet or exceed the management targets set forth in Amendment 1 to the North Carolina Red Drum Fishery Management Plan.

The complete 2016 Stock Status Overview Report can be found [here](#). The stock condition of overfished and overfishing, if known for a state-managed species, is highlighted in the comments column of the state-managed species table. A stock is overfished when the population size is too small. Overfishing occurs when the removal rate of fish is too high.

The presentation can be found at:

http://portal.ncdenr.org/c/document_library/get_file?p_1_id=1169848&folderId=30862623&name=DLE-133894.pdf

Red Drum Update

Lee Paramore with the division's Fisheries Management Section, provided the commission with an update on red drum. Red drum is managed under Amendment 2 of the Atlantic States Marine Fisheries Commission Red Drum Fishery Management Plan and Amendment 1 to the North Carolina Red Drum Fishery Management Plan. The stock is considered "recovering" and the most recent assessment shows there is no overfishing.

The presentation can be found at:

http://portal.ncdenr.org/c/document_library/get_file?p_1_id=1169848&folderId=30862623&name=DLE-133893.pdf

Public Comment Period

The following individuals spoke:

David Bush, with the N.C. Fisheries Association, asked the commission to consider sending a letter or a standing position paper to the Mid-Atlantic Fishery Management Council and the Atlantic States Marine Fisheries Commission opposing reallocation of the summer flounder quota that could have negative impact on both North Carolina and Virginia. He also said that for striped mullet, landings dropped because effort shifted to the shrimp fishery and impacts from Hurricane Matthew. Bush also said that it was good to hear that spot and croaker abundance is increasing and the current levels of removal are considered sustainable.

David Sneed, Executive Director of the Coastal Conservation Association – N.C., discussed the need for the recreational sector to have some say in the Coastal Recreational Fishing License Fund and said a direct comparison should not be made on how the Wildlife Resources Commission manages its license revenues because that staff reports directly to their commission. He also asked the commission to support Menhaden Amendment 3 at the Atlantic States Marine Fisheries Commission. Sneed closed by saying his organization wants to get the fishery management plan schedule back on track, especially for striped bass in the Central Southern Management Area.

Blakely Hildebrand, with the Southern Environmental Law Center of behalf of the N.C. Wildlife Federation, expressed concern with the pace of progress being made in the development of the Notice of Text and the fiscal note related to a rulemaking petition the commission approved in February. She also voiced concern about the lack of meaningful communication related to the state of the petition. Hildebrand pointed out that the Atlantic States Marine Fisheries Commission could not reach a consensus on stock assessments for spot and croaker and feels it is a result of bycatch in the shrimp trawl fishery. Additionally, she said the fiscal note must also consider two alternatives, which should be status quo and a complete net ban, and she indicated if there are stakeholder meetings regarding the development of the fiscal note, the federation would like to participate in those meetings.

The commission's counsel, Assistant Attorney General Phillip Reynolds, reminded the commission that he had advised them when they granted the petition that it would be a long process because the scope of the petition was so broad. He assured the commission that the division was working on the fiscal note and there was no attempt at delay.

Troy Brannan, with the Triangle Fly Fishers, thanked the commission for its vote on the shrimp trawl petition and said he remembered big spot runs and that North Carolina needs to get large trawlers out of inside waters. He also said the state needed to manage stocks for abundance and he expressed concern about striped bass in the Central Southern Management Area. He closed by saying the state can do better at managing its fisheries.

Tim Gestwicki, Executive Director of the N.C. Wildlife Federation, talked about how the federation had sponsored the Governor's Conservation and Achievement Awards Program for the past 54 years. The awards recognize conservation heroes across the state, including conservation enforcement officers. Gestwicki invited the commission to the awards ceremony on Sept. 9, where Officer Bill Register is to receive the 2017 Marine Fisheries Enforcement Officer of the Year award.

Standard Commercial Fishing License Eligibility Report/Set Eligibility Pool Cap

Major Jason Walker with the Marine Patrol gave a presentation on the annual Standard Commercial Fishing License Eligibility Pool process and reviewed the number of licenses available for the pool for the 2017-2018 license/fiscal year.

The commission set the number of Standard Commercial Fishing Licenses available through an Eligibility Pool for the 2017-2018 fiscal year at 1,500.

Motion by Chuck Laughridge to make 1,500 licenses available in the SCFL eligibility pool for the 2017-2018 fiscal year. Second by Alison Willis.

Motion carries 7-1.

Fishery Management Plan Update/Five-Year Schedule and Commission Supplement Request

Catherine Blum, the division's Fishery Management Plan Coordinator, updated the commission on the status of the ongoing fishery management plans and reviewed the proposed five-year schedule.

The commission voted to ask the N.C. Department of Environmental Quality secretary to authorize it to develop a supplement to the Estuarine Striped Bass Fishery Management Plan to make temporary management changes in the Central-Southern Management Area, excluding the Cape Fear River system.

Specifically, the commission asked to:

- Reduce the annual commercial quota from 25,000 pounds to 2,500 pounds;
- Lower the recreational daily bag limit from 2 fish per day to 1 fish per day; and
- Increase the recreational size limit to a 24-inch to 26-inch slot. The current minimum size limit is 18 inches with no possession of fish between 22 inches and 27 inches.

State law allows the secretary of the Department of Environmental Quality to authorize the commission to develop temporary management measures to supplement a fishery management plan if he finds it is in the interest of the long-term viability of a fishery. Any temporary management measures adopted in a supplement must be incorporated in the full fishery management plan the next time it is amended and adopted or they will expire.

The commission also decided to delay review of the full Estuarine Striped Bass Fishery Management Plan, which began this year, to no earlier than 2019. This was made contingent upon approval of a supplement.

Other decisions regarding the fishery management plan schedule were to:

- Continue review of the Blue Crab plan, currently in process;
- Begin review of the Southern Flounder plan as soon as the peer reviewed stock assessment is completed, which is expected to be later this year or in early 2018;
- Begin review of the Shrimp plan as soon as a state study on bycatch reduction devices in the shrimp trawl fishery is completed, but no later than February 2018;
- Begin review of the Spotted Seatrout plan in 2019;
- Begin review of the Bay Scallop, River Herring, Interjurisdictional, Kingfishes and Striped Mullet plans in 2020;
- Accept the Division of Marine Fisheries' annual update on red drum, which cites an Atlantic States Marine Fisheries Commission red drum stock assessment and management plan, as the formal statutory review of the North Carolina Red Drum plan, and slate a new review of the Red Drum plan for 2022; and
- Begin review of the Hard Clam and Oyster plans in 2022.

The updated schedule can be found at

http://portal.ncdenr.org/c/document_library/get_file?p_1_id=1169848&folderId=30207658&name=DLE-134209.pdf .

Motion by Janet Rose to approve the 5-year FMP schedule as presented by staff. Second by Alison Willis.

Motion by Chuck Laughridge to amend the Rose motion to place in the following order these FMPs: Southern Flounder, to begin as soon as the peer reviewed stock assessment is completed; Estuarine Striped Bass, to pursue this FMP no earlier than 2019, assuming a supplement is in place addressing issues in the Central-Southern Management Area with the approval of the NCWRC; Blue Crab, to begin as scheduled, Spotted Seatrout, to begin in 2020; Shrimp, to begin as soon as the three-year study is complete, and no later than February 2018. All other FMPs as presented by the NCDMF.

**Motion by Chuck Laughridge to table the motion. Second by Mike Wicker.
Motion carries 5-1 with one abstention.**

**Motion by Rick Smith to ask the director of the NCDMF to request that the NCDEQ secretary allow the NCMFC to move forward with a supplement to the Striped Bass FMP to adjust the recreational and commercial takes of the Central Southern Striped Bass, with the exception of the Cape Fear River system, by reducing the commercial takes from 25,000 pounds to 2,500 pounds and the recreational limit to 1 fish between 24 inches and 26 inches. Seconded by Chuck Laughridge.
Motion carries 5-2.**

**Motion by Chuck Laughridge to take from the table the previous tabled action. Second by Rick Smith.
Motion carries unanimously.**

Motion by Chuck Laughridge to amend the Rose motion to place in the following order these FMPs: Southern Flounder, to begin as soon as the peer reviewed stock assessment is completed; Estuarine Striped Bass, to pursue this FMP no earlier than 2019, assuming a supplement requested by the MFC is in place addressing issues in the Central-Southern Management Area; Blue Crab, to begin as scheduled, Spotted Seatrout, to begin in 2019-2020; Shrimp, to begin as soon as the three-year study is complete, and no later than February 2018. All other FMPs as presented by the NCDMF. Second by Rick Smith.

Motion to amend carries 5-3

Motion to approve by Chuck Laughridge. Second by Rick Smith.

Motion carries 5-3.

Rulemaking and Periodic Review and Expiration of Existing Rules

Catherine Blum, the division's rulemaking coordinator, reminded the commission is was in the report phase of the Periodic Review and Expiration of Existing Rules process. Blum reported that the division recommended the commission approve the final reports for the following rules:

- 15A NCAC 03Q .0100 rules, per G.S. 150B-21.3A;
- 15A NCAC 03 rules, per G.S. 150B-21.3A; and
- 15A NCAC 10C .0100 rules, per G.S. 150B-21.3A and contingent on approval by the Wildlife Resources Commission.

Motion by Mike Wicker to approve the final report on 15A NCAC 03Q .0100 rules, per G.S. 150B-21.3A.

Second by Mark Gorges.

Motion carries unanimously.

Motion by Chuck Laughridge to approve the final report on all other 15A NCAC 03 rules, per G.S. 150B-21.3A. Second by Alison Willis.

Motion carries with no opposition.

Motion by Mike Wicker to approve final report on 15A NCAC 10C .0100 rules, per G.S. 150B-21.3A and contingent on approval by the Wildlife Resources Commission. Second by Chuck Laughridge.

Motion carries with no opposition.

Rule Suspension

Kathy Rawls, the division's Fisheries Management Section Chief, reviewed a rule on Spanish mackerel that had been suspended after the commission's May 2017 meeting.

Motion by Chuck Laughridge to continue the rule suspension on Spanish Mackerel. Second by Alison Willis.

Motion carries with no opposition.

The meeting adjourned.

Chairman's Report



INFORMATION
WILL BE
PROVIDED AT
THE MEETING.

REMINDER

MANDATORY EDUCATION REQUIREMENTS

MANDATORY EDUCATION.

Public Servants and Ethics Liaisons. The State Government Ethics Act *requires* that every public servant and ethics liaison complete an ethics and lobbying education presentation/program approved by the State Ethics Commission *within 6 months* of the person's election, reelection, appointment, or employment **and** complete a refresher ethics presentation *at least every two years thereafter*.

The willful failure of a public servant serving on a board to comply with the education requirements may subject the person to removal from the board. The willful failure of a public servant who is a State employee to comply with the education requirement may be considered a violation of a written work order permitting disciplinary action. Therefore, if there are public servants in your agency or on your covered state board or commission who are past due for completing their ethics education requirements, **those individuals should attend a live presentation, distance video-streamed presentation or complete the online education as soon as possible.**

Legislators. The State Government Ethics Act *requires* that every legislator complete an ethics and lobbying education presentation/program approved by the State Ethics Commission and the Legislative Ethics Committee *within 2 months* of either the convening of the General Assembly to which the legislator is elected or the legislator's appointment, whichever is later, **and** complete a refresher ethics education presentation *at least every two years thereafter*.

The willful failure of a legislator to comply with these education requirements may subject the legislator to sanctions under the Legislative Ethics Act.

Legislative Employees. The State Government Ethics Act *requires* that every legislative employee complete an ethics and lobbying education presentation/program approved by the State Ethics Commission and the Legislative Ethics Committee *within 3 months* of the person's employment **and** complete a refresher ethics education presentation *at least every two years thereafter*.

The willful failure of a legislative employee to comply with these education requirements may subject the person to disciplinary action by their hiring authority.

Legislators and Legislative Employees may check the status of their ethics education by going to the General Assembly intra-net page. Legislators and legislative employees who are past due for completing their ethics education requirements should contact Denise Adams with the Research Division of the General Assembly at denise.adams@ncleg.net or 919-301-1991 to coordinate/schedule their ethics education training.

ETHICS AND LOBBYING EDUCATION TRAINING.

Public Servants and Ethics Liaisons may complete the required basic or refresher ethics and lobbying education training by either attending a live presentation, a distance video streamed presentation or completing the online education modules.

- **Live and Distance Video-Streamed Presentation Dates.** The State Ethics Commission has scheduled live ethics and lobbying education presentations and distance video-streamlined presentations for the remainder of 2014. Dates, locations, and registration information are on the Commission's website at:
www.ethicscommission.nc.gov/education/eduSchedule.aspx.
- **Online Education.** The State Ethics Commission also offers online ethics and lobbying education. The education modules and instructions are on the Commission's website at:
www.ethicscommission.nc.gov/education/eduOnline.aspx.

Legislators may complete the required basic or refresher ethics and lobbying education training by attending a live presentation at the beginning of the legislative session jointly provided by the Ethic Commission and the Research Division of the General Assembly.

Legislative Employees may complete the required basic or refresher ethics and lobbying education training by going online to the General Assembly intra-net page.

REGISTRATION AND QUESTIONS.

- **Public Servants and Ethics Liaisons** please contact Sue Lundberg at (919) 715-2071 or by e-mail at Education.Ethics@doa.nc.gov to register for ethics and lobbying education training or if you have ethics education questions.
- **Legislators and Legislative Employees** please contact the General Assembly ethics hotline at 919-301-1991 or email Denise Adams at denise.adams@ncleg.net if you have questions about the ethics and lobbying education training or have ethics education questions.

Thank you for giving this matter your immediate attention and for sharing this information with all members of your covered board, commission or committee, all staff and employees covered under the State Government Ethics Act, and all legislators and legislative employees.



NORTH CAROLINA

State Board of Elections & Ethics Enforcement

Mailing Address:
P.O. Box 27255
Raleigh, NC 27611-7255

Phone: (919) 814-0700
Fax: (919) 715-0135

KIM WESTBROOK STRACH
Executive Director

OCTOBER 26, 2017

TIPS FOR THE ONLINE ETHICS EDUCATION PROGRAM COMPATIBILITY ISSUES.

Please share this information with your Agency's covered employees and the members of your Boards and Commissions:

Computers with Windows 10

- Use Microsoft Edge & Microsoft Internet Explorer
- May also work with Foxfire
- Program does **not** work with Google Chrome

Mac Computers

- Use Firefox to open Online Education; if audio does not work, right click "No Audio" button and allow microphone so that audio works.

Computers with Windows 7 & 8

- Use Internet Explorer as your browser

If the above suggestions do not resolve the problem for the person, we recommend they use a computer at a public library, Community College or University as the program seems to run fine on these computers. **NOTE: individuals are required to complete the ethics education PRIOR to their education due date even if they encounter problems with the online program.**

INDIVIDUALS MUST FULLY COMPLETE THE ONLINE PROGRAM.

Many people are not fully completing the online ethics education program. If within a few minutes after you "completed" the online program you do not receive an emailed certificate of completion from us, you probably have **not** fully completed the program. **If one fails to fully complete the online program, we cannot credit them with completing the required ethics education training.**

To complete the program, when one comes to the slide that says "Congratulations," they **MUST** click on the box that says "complete program." Clicking on this box brings them to a form where they enter identifying information and "certify" that they have taken the complete program. After providing this information, they need to click on the "submit" button; we are then notified of their completion, their record is updated and they will be emailed a certificate of completion from us.

If you or any of your people have any questions, please contact us at (919) 814-3600.



NORTH CAROLINA

State Board of Elections & Ethics Enforcement

Mailing Address:
P.O. Box 27255
Raleigh, NC 27611-7255

Phone: (919) 733-7173
Fax: (919) 715-0135

KIM WESTBROOK STRACH
Executive Director

State Board of Elections and State Ethics Commission Merged into One New State Board

On June 1, 2017, a panel of superior court judges dismissed a lawsuit challenging the constitutionality of Session Law 2017-6, the [state law](#) creating the Bipartisan State Board of Elections and Ethics Enforcement (State Board). The new State Board merges the N.C. State Board of Elections and the N.C. State Ethics Commission and assumes duties formerly overseen by these two agencies, along with lobbying compliance carried out by the Secretary of State. Though parties to the lawsuit may seek additional review on appeal, for now, the consolidated State Board is the agency to enforce North Carolina's elections, ethics and lobbying laws.

Currently, the ethics staff and the election staff of the State Board are housed in different buildings. However, the goal is for all staff to be housed in one building by September 1, 2017. **So, the ethics staff will be moving soon, but until then we will remain at our present location at 424 North Blount Street in Raleigh and our direct telephone number remains 919-814-3600.**

Although the State Board is a new entity, the State Government Ethics Act (Ethics Act) remains in effect and applies to the same individuals as it did prior to this merger. **The duties and obligations of the Ethics Act remain, including the *SEI filing requirements and the Ethics Education training requirements*.** In addition, the duties of Agency Heads, including Board Chairs, and those of Ethics Liaisons remain the same.

If you have questions or need additional help, please feel free to contact us at 919.814.3600

Sue Lundberg, Education Attorney - Gretchen Aycock, SEI Attorney

2018 Meeting Planning Calendar*

January						
Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

February						
Su	Mo	Tu	We	Th	Fr	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28			

March						
Su	Mo	Tu	We	Th	Fr	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

April						
Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

May						
Su	Mo	Tu	We	Th	Fr	Sa
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

June						
Su	Mo	Tu	We	Th	Fr	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

July						
Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

August						
Su	Mo	Tu	We	Th	Fr	Sa
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

September						
Su	Mo	Tu	We	Th	Fr	Sa
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

October						
Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

November						
Su	Mo	Tu	We	Th	Fr	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

December						
Su	Mo	Tu	We	Th	Fr	Sa
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

	MFC
	ASMFC
	SAFMC
	MAFMC
	State Holiday

	Southern Regional AC
	Northern Regional AC
	Finfish AC
	Habitat and Water Quality AC
	Shellfish/Crustacean AC

*Advisory Committee dates not yet available

Director's Report





ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

BRAXTON C. DAVIS
Director

October 26, 2017

MEMORANDUM

ASMFC 11-17

TO: Marine Fisheries Commission
FROM: Chris Batsavage and Michelle Duval
SUBJECT: Atlantic States Marine Fisheries Commission Meeting (Oct. 16-19, 2017)

The Atlantic States Marine Fisheries Commission met Oct. 16-19, 2017 in Norfolk, Virginia. Attached is the meeting summary compiled by commission staff which includes a summary of each of the species management board meetings and motions, as well as associated press releases.

Items that may be of particular interest include:

- **Shad and River Herring:** The Shad and River Herring Management Board reviewed and approved updated American Shad Sustainable Fishery Plans for North Carolina, South Carolina, Georgia and Virginia. All sustainable fishery plans were required to undergo a five-year review, as per Amendment 3 to the interstate fishery management plan. North Carolina's updated Sustainable Fishery Plan maintains all existing management measures, sustainability parameters and thresholds as previous years. It includes two minor technical changes to how sustainability parameters are calculated (please see staff cover memo from American Shad Working group). The board also received an update on the next American shad stock assessment, which will be conducted as a benchmark assessment to better address some of the data challenges and incorporate new information.
- **Cobia:** The South Atlantic State Federal Management Board selected final management measures and approved the Interstate Fishery Management Plan for Atlantic Cobia. The plan is currently designed to complement Framework Amendment 4 to the federal fishery management plan developed by the South Atlantic Fishery Management Council. Commercial measures selected by the board mirror those implemented by the council: a coastwide minimum size limit of 33 inches fork length and a possession limit of two-fish per person, not to exceed six fish per vessel. Recreational measures include a coastwide minimum size limit of 36 inches fork length, a one fish per person bag limit, and vessel limits to be determined by the states, but not to exceed six fish per vessel. The board approved state-specific recreational soft harvest targets for Virginia, North Carolina, South Carolina and Georgia based on the coastwide 5-year/10-year average proportion of harvest by each state. Recreational landings will be evaluated against harvest targets over a three-year timeframe; if a state's average harvest over that timeframe exceeds the target, its management measures will need to be adjusted accordingly. North Carolina's soft harvest target is 236,316 pounds. States must submit proposed implementation plans for Technical Committee review by Jan. 1, 2018.
- **Atlantic Sturgeon:** The Atlantic Sturgeon Management Board reviewed the results of the 2017 Atlantic Sturgeon Benchmark Stock Assessment, which indicate the population remains depleted coastwide and at the distinct population segment level relative to historic abundance. However, on a coastwide basis, the population appears to be recovering slowly since the implementation of a complete coastwide moratorium in 1998. Factors such as mortality from ship strikes and fisheries interactions, habitat loss, and climate change continue to contribute to

the low abundance of the species. The board approved the 2017 Atlantic Sturgeon Benchmark Stock Assessment and Peer Review Reports for management use and discussed the need to support management actions that have contributed to recovery seen to date and improve on these actions (reducing ship strike occurrences and fisheries interactions), as well as continue to collect biological information that meets the research needs.

- Black Sea Bass: The Summer Flounder, Scup, and Black Sea Bass Management Board approved a Feb. 1-28 opening for the recreational black sea bass fishery in 2018 with a minimum size limit of 12.5 inches total length and a 15-fish bag limit. As part of the recommendation, the 2018 recreational harvest limit will be reduced by 100,000 pounds to account for expected harvest during the February season. The Mid-Atlantic Fishery Management Council approved these measures at their meeting on Oct. 10-12 in Riverhead, NY. The recreational black sea bass fishery north of Cape Hatteras had been closed in January and February for several years due to the lack of Marine Recreational Information Program sampling north of North Carolina during these months and from harvest overages during other times of the year.



Atlantic States Marine Fisheries Commission

76th Annual Meeting Summary

Vision: Sustainably Managing Atlantic Coastal Fisheries

76th Annual Meeting
Norfolk, VA
October 16-19, 2017

Toni Kerns, ISFMP, or
Tina Berger, Communications
For more information, please contact
the identified individual at
703.842.0740

Meeting Summaries, Press Releases and Motions

TABLE OF CONTENTS:

AMERICAN LOBSTER MANAGEMENT BOARD (OCTOBER 16, 2017)	3
<i>Press Release</i>	3
<i>Meeting Summary</i>	4
<i>Motions</i>	4
ATLANTIC COASTAL FISH HABITAT PARTNERSHIP STEERING COMMITTEE (OCTOBER 16 & 17, 2017)	5
<i>Meeting Summary</i>	5
TAUOG MANAGEMENT BOARD (OCTOBER 16, 2017).....	6
<i>Meeting Summary</i>	6
<i>Motions</i>	6
SPINY DOGFISH MANAGEMENT BOARD (OCTOBER 16, 2017)	8
<i>Press Release</i>	8
<i>Motions</i>	8
ATLANTIC HERRING SECTION (OCTOBER 16, 2017).....	9
<i>Meeting Summary</i>	9
<i>Motions</i>	10
SHAD AND RIVER HERRING MANAGEMENT BOARD (OCTOBER 17, 2017)	10
<i>Meeting Summary</i>	10
<i>Motions</i>	11
HORSESHOE CRAB MANAGEMENT BOARD (OCTOBER 17, 2017).....	11
<i>Press Release</i>	11
<i>Meeting Summary</i>	12
<i>Motions</i>	13
LAW ENFORCEMENT COMMITTEE (OCTOBER 17 & 18, 2017)	13
<i>Meeting Summary</i>	13
COASTAL SHARKS MANAGEMENT BOARD (OCTOBER 17, 2017).....	15
<i>Meeting Summary</i>	15
<i>Motions</i>	16

AMERICAN EEL MANAGEMENT BOARD (OCTOBER 17, 2017)	16
<i>Press Release</i>	16
<i>Motions</i>	18
ATLANTIC COASTAL COOPERATIVE STATISTICS PROGRAM COORDINATING COUNCIL (OCTOBER 17, 2017)	18
<i>Meeting Summary</i>	18
<i>Motions</i>	18
EXECUTIVE COMMITTEE (OCTOBER 18, 2017)	19
<i>Meeting Summary</i>	19
HABITAT COMMITTEE (OCTOBER 18, 2017)	19
<i>Meeting Summary</i>	19
ATLANTIC STURGEON MANAGEMENT BOARD (OCTOBER 18, 2017)	20
<i>Press Release</i>	20
<i>Motions</i>	22
CAPTAIN DAVID H. HART AWARD LUNCHEON (OCTOBER 18, 2017)	22
<i>Press Release</i>	22
BUSINESS SESSION (OCTOBER 18 & 19, 2017)	23
<i>Press Releases</i>	23
<i>Meeting Summary</i>	26
<i>Motions</i>	27
SUMMER FLOUNDER, SCUP AND BLACK SEA BASS MANAGEMENT BOARD (OCTOBER 18, 2017)	27
<i>Meeting Summary</i>	27
<i>Motions</i>	28
ATLANTIC STRIPED BASS MANAGEMENT BOARD (OCTOBER 19, 2017)	29
<i>Meeting Summary</i>	29
<i>Motions</i>	30
INTERSTATE FISHERIES MANAGEMENT BOARD (OCTOBER 19, 2017)	30
<i>Meeting Summary</i>	30
<i>Motions</i>	31
SOUTH ATLANTIC STATE/FEDERAL MANAGEMENT BOARD (OCTOBER 19, 2017)	32
<i>Press Release</i>	32
<i>Meeting Summary</i>	33
<i>Motions</i>	33

AMERICAN LOBSTER MANAGEMENT BOARD (OCTOBER 16, 2017)

Press Release

ASMFC American Lobster Board Approves Draft Addenda XXVI & III to the American Lobster and Jonah Crab FMPs for Public Comment

Norfolk, VA – The Commission’s American Lobster Management Board approved American Lobster Draft Addendum XXVI/Jonah Crab Draft Addendum III for public comment. Given the same data collection needs apply to both American lobster and Jonah crab fisheries, Draft Addendum XXVI and Draft Addendum III are combined into one document that would modify management programs for both species upon its adoption. The Draft Addenda seek to improve harvest reporting and biological data collection in the American lobster and Jonah crab fisheries. The Draft Addenda propose using the latest reporting technology, expanding the collection of effort data, increasing the spatial resolution of harvester reporting, and advancing the collection of biological data, particularly offshore.

Recent management action in the Northwest Atlantic, including the protection of deep sea corals, the declaration of a national monument, and the expansion of offshore wind projects, have highlighted deficiencies in current American lobster and Jonah crab reporting requirements. These include a lack of spatial resolution in harvester data and a significant number of fishermen who are not required to report. As a result, efforts to estimate the economic impacts of these various management actions on American lobster and Jonah crab fisheries have been hindered. States have been forced to piece together information from harvester reports, industry surveys, and fishermen interviews to gather the information needed. In addition, as American lobster and Jonah crab fisheries continue to expand offshore, there is a greater disconnect between where the fishery is being prosecuted and where biological sampling is occurring. More specifically, while most of the sampling occurs in state waters, an increasing volume of American lobster and Jonah crab are being harvested in federal waters. The lack of biological information on the offshore portions of these fisheries can impede effective management.

The Draft Addenda present three questions for public comment: (1) what percentage of harvesters should be required to report in the American lobster and Jonah crab fisheries; (2) should current data elements be expanded to collect a greater amount of information in both fisheries; and (3) at what scale should spatial information be collected. In addition, the Draft Addenda provide several recommendations to NOAA Fisheries for data collection of offshore American lobster and Jonah crab fisheries. These include implementation of a harvester reporting requirement for federal lobster permit holders, creation of a fixed-gear VTR form, and expansion of a biological sampling program offshore.

It is anticipated the majority of states from Maine through New Jersey will be conducting public hearings on the Draft Addenda. The details of those hearings will be released in a subsequent press release. The Draft Addenda will be available on the Commission website, www.asmfc.org (under Public Input) by October 27th. Fishermen and other interested groups are encouraged to provide input on the Draft Addenda either by attending state public hearings or providing written comment. Public comment will be accepted until **5:00 PM (EST) on January 22, 2017** and should be forwarded

to Megan Ware, FMP Coordinator, 1050 N. Highland St, Suite A-N, Arlington, VA 22201; 703.842.0741 (FAX) or at comments@asmfc.org (Subject line: Draft Addenda XXVI & III).

###

PR17-45

Meeting Summary

In addition to approving Lobster Draft Addendum XXVI/Jonah Crab Draft Addendum III for public comment (see press release), the American Lobster Management Board reviewed recommendations from a working group regarding future management of the Southern New England (SNE) stock. Based on these recommendations, the Board agreed to review the goals and objectives by which the SNE stock is managed, engage with the Commission's Climate Change Working Group, and develop terms of reference for the 2020 Stock Assessment which investigate reference points and environmental drivers of the stock. In addition, the Board tasked each Lobster Conservation Management Team with developing proposals to reduce latent effort in the respective management areas.

The Board also addressed inconsistencies between the state and federal regulations for the Lobster Conservation Area (LCMA) 4 season closure. The Board agreed that dual-permit holders in LCMA 4 do not need to remove their gear from other management areas during the LCMA 4 season closure, which occurs from April 30 – May 31. The Board also approved state compliance reports and FMP Reviews for lobster and Jonah crab, granting *de minimis* status for Delaware, Maryland, and Virginia in the lobster and Jonah crab fisheries, and *de minimis* status for Connecticut in the Jonah crab fishery. Finally, the Board began discussions on whale interactions in the lobster fishery given a decline in the North Atlantic right whale population.

For more information, please contact Megan Ware, Fishery Management Plan Coordinator, at mware@asmfc.org or 703.842.0740.

Motions

Move to add sub option under issue 1, option c, to allow commercial harvesters with less than a 1,000 pounds of lobster landings in the previous year to report monthly summarized data instead of trip level data.

Motion by Mr. Grout, seconded by Mr. Keliher. Motion approved by unanimous consent.

Move to approve Lobster Draft Addendum XXVI/Jonah Crab Draft Addendum III for public comment as amended today.

Motion made by Mr. Keliher and seconded by Rep. Abbott. Motion approved unanimously.

Tabled Motion August 2017:

Move to (1), allow LCMA 4 fishermen the ability to continue fishing fixed lobster gear for other legal species, such as Jonah crab, during the closed period and (2), exempt closed seasons from the most restrictive rule; as currently defined by the feds.

Motion to Substitute

Move to substitute to: (1) LCMA 4 states (New Jersey and New York) will work with representatives from NOAA Fisheries to develop conservation equivalent alternatives for the current LCMA 4 season

closure. We request that the Technical Committee review the alternative management measures to assure that the conservation goals of Addendum XVII are met; and (2) The LCMA 4 seasonal closure relates only to LCMA 4. Permit holders with an LCMA 4 designation and another Lobster Management Area designation on their lobster permit would not have to similarly remove their lobster gear from the other designated management areas during the LCMA 4 closed season. This also applies to seasonal closures in other LCMAs.

Motion made by Mr. Gilmore and seconded by Mr. Baum. Motion carries unanimously.

Main Motion as Substituted:

1 – LCMA 4 States (New Jersey and New York) will work with representatives from NOAA Fisheries to develop conservation equivalent alternatives for the current LCMA 4 season closure. We request that the Technical Committee review the alternative management measures to assure that the conservation goals of Addendum XVII are met.

2 - The LCMA 4 seasonal closure relates only to LCMA 4. Permit holders with an LCMA 4 designation and another Lobster Management Area designation on their lobster permit would not have to similarly remove their lobster gear from the other designated management areas during the LCMA 4 closed season. This also applies to seasonal closures in other LCMAs.

Motion by Mr. Gilmore, seconded by Mr. Baum. Motion approved unanimously.

Move to approve the 2017 Lobster FMP Review, state compliance reports, and *de minimis* status for DE, MD, and VA.

Motion made by Mr. Grout and seconded by Mr. Miller. Motion approved unanimously

Move to approve the 2017 Jonah Crab FMP Review, state compliance reports, and *de minimis* status for CT, DE, MD, and VA.

Motion made by Mr. Alexander and seconded by Mr. Gilmore. Motion passes unanimously.

ATLANTIC COASTAL FISH HABITAT PARTNERSHIP STEERING COMMITTEE (OCTOBER 16 & 17, 2017)

Meeting Summary

The Atlantic Coastal Fish Habitat Partnership (ACFHP) Steering Committee met at the ASMFC Annual Meeting October 16 – 17 in Norfolk, Virginia. Jeff Beal of the Florida Fish and Wildlife Conservation Commission (FL FWC) provided two presentations. The first was on Lake Okeechobee water releases and the stress responses of St. Lucie reef corals. FL FWC is using assessments of these northernmost Florida reefs to inform estuarine restoration performance measures in the Everglades and along the coast. Mr. Beal also presented on FWC's comparison studies of oyster health between restored and natural reefs in the Indian River Lagoon. Mr. Beal was ACFHP's 2017 Melissa Laser Habitat Conservation Award recipient, which was presented at the welcome reception on Monday evening.

Chris Powell (RI DEM, retired) provided the final report on ACFHP's NOAA-funded project to retrofit traditional boat moorings with conservation moorings in select Jamestown, Rhode Island boatyards. Conservation moorings use a buoyant bungee-like cord to minimize contact with the seafloor and promote SAV conservation. Dr. Lisa Havel (ACFHP Coordinator) gave an update on the Mid-Atlantic Fishery Management Council-funded project to assess the use of natural and artificial habitats by black sea bass, a study being conducted by Dr. Brad Stevens at the University of Maryland Eastern Shore. Dr.

Stevens has led 1.5 field seasons for the project so far, and will continue to collect and analyze data through 2018. Kent Smith (FL FWC) summarized the success of a workshop hosted by The Nature Conservancy and NOAA to develop a web-based tool that calculates the productivity of seagrass and salt marshes.

The ACFHP Steering Committee also received updates on the progress of the NOAA-funded mapping project to spatially analyze fish habitat conservation areas in the Southeastern United States. The ACFHP Science and Data Committee met via webinar on June 12th and in-person September 27-28th to finalize the recommended variables for diadromous, estuarine, and coastal analyses. The Steering Committee provided feedback for the Science and Data Committee, and the project is expected to be completed in the spring of 2018. The Steering Committee also brainstormed ideas for ACFHP's website update, and checked in on the progress of their two-year Conservation Action Plan.

Finally, the Steering Committee finalized their ranking of recommended conservation projects for FY2018 National Fish Habitat Action Plan (NFHAP) funding. From 2010 to 2017 ACFHP has facilitated NFHAP in awarding >\$530,000 to partners to complete 17 on-the-ground projects from Florida to Maine. Funding supported 3 tidal vegetation projects, 2 SAV projects, 3 oyster reef restoration projects, 8 fish passage projects, and 1 sturgeon spawning habitat restoration project.

For more information, please contact Dr. Lisa Havel, ACFHP Coordinator, at lhavel@asmfc.org or 703.842.0740.

TAUTOG MANAGEMENT BOARD (OCTOBER 16, 2017)

Meeting Summary

The Tautog Management Board selected final management measures to be included in Amendment 1 to the Interstate Fishery Management Plan and recommended final approval of the Amendment by the Commission's Business Session. For more information on the Amendment, please see the press release found under the Business Session later in this document. The Board reviewed and approved 2017 Fishery Management Plan Review for the 2015 and 2016 Fishing Years. For more information about tautog management, please contact Caitlin Starks, Fishery Management Plan Coordinator, at cstarks@asmfc.org or 703.842.0740.

Motions

Move to approve option B: 50% probability of achieving the F target.

Motion made by Mr. Gilmore and seconded by Mr. Borden. Motion carries without objection.

Move to approve option A: status quo-no reduction schedule to achieve the F target.

Motion made by Mr. Alexander and seconded by Mr. Gilmore. Motion carries (7 in favor, 1 opposed, 1 abstention).

Move to approve Sub-Option B2: LIS Boundaries, Orient, NY to Watch Hill, RI.

Motion made by Mr. Gilmore and seconded by Mr. Clark. Motion carries without objection.

Move to approve the following tautog recreational measures for the MARI region in Amendment 1 section 4.2.2: 16" minimum size, and bag limits that change seasonally as follows: During January through March: 0 fish; During April and May: 3 fish; During June and July: 1 fish in Massachusetts and 0 fish in Rhode Island; During August through October 14: 3 fish; and from October 15-December 31: 5 fish. MA will adopt the private/rental boat vessel limit as is implemented in RI (10 fish per vessel max) and will adopt mandatory electronic reporting for the Party and Charter sector as soon as is practicable.

Motion made by Mr. McKiernan and seconded by Mr. Ballou. Motion carries without objection.

Move to approve the following measures for the LIS recreational tautog fishery and reduce the commercial fishery harvest by 20.3%.

Option 1 20.3% Reduction	Minimum Length	Creel Limit	CT Days Open	NY Days Open
Spring Season	16"	3 (-1)	30	30 (+30)
Summer Season		2	62	0
Fall Season		3 (-1)	50 (-8)	60 (-11)

Motion made by Mr. Gilmore and seconded by Mr. Alexander. Motion carries without objection.

Move to approve Option A1: Status quo (state specific 2% reduction) for the recreational and commercial measures for the NJ-NY Bight.

Motion made by Mr. Allen and seconded by Mr. Hasbrouck. Motion carries without objection.

Move to approve Option D for recreational measures for the DelMarVa region: 16" minimum size limit, up to a four fish bag limit, and a closure of May 16-June 30.

Motion made by Mr. Luisi and seconded by Mr. Cimino. Motion carries without objection.

Move to approve for MD and DE to have commercial measures consistent with recreational measures and for VA, status quo for commercial measures with the option for VA to open May 1-15.

Motion made by Mr. Cimino and seconded by Mr. Luisi. Motion carries without objection.

Move to approve the following implementation plan:

- States submit proposals by December 1, 2017
- Implement all measures other than the Commercial tagging program by April 1, 2018
- Implement the Commercial tagging program by January 1, 2019

Motion made by Mr. McKiernan and seconded by Mr. Ballou. Motion carries without objection.

Move to recommend to the Commission the adoption of Amendment 1 to the Tautog Interstate Fishery Management Plan as modified today and at the August 2017 meeting.

Motion made by Mr. McKiernan and seconded by Mr. Alexander. Motion approved without objection (1 abstention).

Move to accept the FMP Review and compliance reports for tautog for the 2015 and 2016 fishing years, and approve *de minimis* status for Delaware and Maryland.

Motion made by Mr. Clark and seconded by Mr. Luisi. Motion carries without objection.

SPINY DOGFISH MANAGEMENT BOARD (OCTOBER 16, 2017)

Press Release

ASMFC Spiny Dogfish Board Approves 2018 Fishery Specifications

Norfolk, VA – The Commission’s Spiny Dogfish Management Board approved a spiny dogfish commercial quota of 38,195,822 pounds for the 2018 fishing season (May 1, 2018 – April 30, 2019). The Board maintained a 6,000 pound commercial trip limit in state waters (0-3 miles from shore) in the northern region (Maine through Connecticut). The quota and northern region trip limit are consistent with the measures recommended to NOAA Fisheries by the Mid-Atlantic Fishery Management Council. States in the southern region (New York to North Carolina) have the ability to set state-specific trip limits based on the needs of their fisheries.

2018 marks the third year of the current federal 3-year specifications cycle. It is anticipated the stock assessment will be updated in 2018 to inform development of fishery specification recommendations, including the commercial quota, for 2019 and beyond. Additionally, the Board intends to discuss issues raised by the Advisory Panel (and other fishery participants) in more detail prior to setting 2019 specifications. The timing of the next benchmark stock assessment for spiny dogfish is less certain, however, the Board supported the Council’s recommendations to conduct a benchmark stock assessment in 2019, or soon after.

The 2018 spiny dogfish commercial quota allocations (in pounds) for the northern region and the states of New York through North Carolina are described below. Any overages from the 2017 season will be deducted from that region’s or state’s 2018 quota allocation. Similarly, any eligible roll overs from the 2017 season will be applied to that region’s or state’s 2018 quota allocation.

	Northern Region (ME-CT)	NY	NJ	DE	MD	VA	NC
Possession Limit	6,000	To be specified by the individual southern region states					
Allocation	58%	2.707%	7.644%	0.896%	5.92%	10.795%	14.036%
2018 Quota	22,153,577	1,033,961	2,919,689	342,235	2,261,193	4,123,239	5,361,166

For more information, please contact Kirby Rootes-Murdy, Senior Fishery Management Plan Coordinator, at krootes-murdy@asmfc.org or 703.842.0740.

###

PR17-46

Motions

Move to adopt the 2018 commercial quota of 38,195,822 pounds, which is consistent with the commercial quota recommended by the Mid-Atlantic Fishery Management Council to NOAA Fisheries, and a 6,000 pound trip limit for the northern region.

Motion made by Mr. Reid and seconded Mr. Hasbrouck. Motion passes without objection.

The Board recommends Commission support a spiny dogfish update and benchmark stock assessment at the NRCC.

Motion made by Dr. Pierce and seconded Mr. O'Reilly. Motion passes.

Move to approve the 2017 FMP Review, state compliance and *de minimis* status requests from New York and Delaware.

Motion made by Mr. Grout and seconded by Mr. Clark. Motion approved without objection.

ATLANTIC HERRING SECTION (OCTOBER 16, 2017)

Meeting Summary

The Atlantic Herring Section met to set specifications for the Area 1A fishery, discuss possible involvement in the research set-aside (RSA) program, and discuss the New England Fishery Management Council (NEFMC) participation in Commission Atlantic herring management. The Section approved a seasonal allocation of the Area 1A total allowable catch (TAC) at 30,300 metric tons, with 72.8 percent available from June through September and 27.2 percent allocated from October through December. The TAC was set previously as a part of a three year specification, this is the last year of that specification.

The Section reviewed the Research Set Aside (RSA) process and the roles and responsibilities of the NEFMC and NOAA Fisheries. At the request of the Section, the Commission had previously requested the NEFMC provide the Section input into the RSA process. Concerns had been raised over gear conflicts with boats fishing outside of the typical season using RSA quota and fixed gear fishermen, mainly lobster and Jonah crab. After discussion, the Section encouraged continued communication between NOAA Fisheries, boats with RSA quota, industry and states on when and where RSA fishing will be occurring to avoid gear conflicts.

The NEFMC requested the Commission provide the Council a voting seat on the Atlantic Herring Section. The Policy Board asked the Section to provide a recommendation to the Policy Board on how to include the Council in Commission management of Atlantic herring. The Section had a long discussion on the importance of communication between the two bodies. Some Section members expressed concern about whether the Council should have a voting or non-voting seat, in particular the ability of a state to have more influence on the outcome of a vote depending on the location of the Council member's home state. The Section recommended to the Policy Board a letter be sent to the Council to establish a working group that would focus on improving communication between the two bodies.

Lastly, the Section briefly discussed the current spawning closure forecasting and protocols. The Section tasked the Technical Committee to: 1) revisit the 2017 fishing season relative to the goals and objectives of Amendment 3 and comment on the effectiveness of the current spawning management measures; 2) make suggestions on technical or management changes to better meet those goals and objectives; and 3) if time allows, make research recommendations to maximize effectiveness and better inform management.

For more information, please contact Toni Kerns, ISFMP Director, at tkerns@asmfc.org or 703.842.0740.

Motions

Move to allocate the 2018 Area 1A TAC seasonally with 72.8 percent available from June through September and 27.2 percent allocated from October through December. The fishery will close when 92 percent of the seasonal period's quota has been harvested and underages from June through September may be rolled into the October through December period.

Motion made by Mr. Grout and seconded by Mr. Keliher. Motion approved by unanimous consent.

Move that the Section recommend to the Policy Board to send a letter to the New England Fishery Management Council to establish a Working Group with the goal of improving communication between the two bodies.

Motion made by Mr. Keliher and seconded by Mr. Fote. Motion passes unanimously by consent.

Move to task the Technical Committee to:

- **Revisit the 2017 fishing season relative to the goals and objectives of Amendment 3 and comment on the effectiveness of the current spawning management measures;**
- **Make suggestions on technical or management changes to better meet those goals and objectives;**
- **If time would allow make research recommendations to maximize effectiveness and better inform management; and**
- **TC would report back to the Board at the Winter Meeting.**

Motion made by Mr. Keliher and second by Rep. Abbott. Motion passes unanimously by consent.

SHAD AND RIVER HERRING MANAGEMENT BOARD (OCTOBER 17, 2017)

Meeting Summary

The Shad and River Herring Management Board met to consider recommendations for completing the upcoming American shad stock assessment, review updated sustainable fishery management plans (SFMPs), receive a report from the Technical Committee (TC) regarding inconsistencies between the SFMPs and Amendment 3, and approve the 2017 Fishery Management Plan (FMP) Review.

The Board was presented recommendations from the Assessment Science Committee (ASC) for the American shad stock assessment process. Considering the potential challenges of updating the 2007 Benchmark Assessment based on recent experiences with the recent River Herring Stock Assessment Update and Stock Assessment Subcommittee, the ASC recommended switching from an assessment update to a benchmark stock assessment. A benchmark stock assessment will allow incorporation of new data sets and assessment techniques not used in the 2007 assessment. The recommendation will go to the ISFMP Policy Board for acceptance. If accepted, the assessment process will be initiated immediately following the Annual Meeting. The Benchmark Stock Assessment is expected to be completed in 2019.

The Board was presented updated SFMPs for American shad from Connecticut, the Potomac River Fisheries Commission, North Carolina, South Carolina, and Georgia, and a Bycatch Plan from Virginia.

The TC reviewed these plans and found inconsistencies between several SFMPs and the language in Amendment 2 and 3, which mandates that all river systems with open fisheries must be sustainable. After considering the TC's report and updated SFMPs, the Board approved all of the updated SFMPs as presented, and tasked the TC with developing recommendations to address the issue of inconsistencies prior to SFMPs being updated in the future. The approved SFMPs will be available on the Commission website, www.asmfc.org, on the Shad and River Herring webpage.

Lastly, the Board approved the 2017 FMP Review for Shad and River Herring and *de minimis* status for the following states: Maine, New Hampshire, and Massachusetts and Florida for American shad; and New Hampshire and Florida for river herring.

For more information, please contact Caitlin Starks, Fishery Management Plan Coordinator, at cstarks@asmfc.org or 703.842.0740.

Motions

Move to accept the Sustainable Fishery Management Plan (SFMP) updates for shad for Connecticut, Potomac River Fisheries Commission, North Carolina, South Carolina, and Georgia, Virginia's bycatch plan, and task the Technical Committee with developing proposed improvements to Amendments 2 and 3 to address SFMP inconsistencies with the management documents.

Motion made by Ms. Patterson and seconded by Mr. Geer. Motion carries unanimously.

Move to accept the 2017 FMP Review of the 2016 fishing year and State Compliance Reports, and approve *de minimis* requests for Maine (both commercial and recreational), New Hampshire, Massachusetts, and Florida for shad; and *de minimis* requests for New Hampshire and Florida for river herring.

Motion made by Mr. Miller and seconded by Mr. Davis. Motion is approved unanimously.

HORSESHOE CRAB MANAGEMENT BOARD (OCTOBER 17, 2017)

Press Release

ASMFC Horseshoe Crab Board Sets 2018 Specifications for Horseshoe Crabs of Delaware Bay Origin

Norfolk, VA – The Commission's Horseshoe Crab Management Board approved the harvest specifications for horseshoe crabs of Delaware Bay origin. Under the Adaptive Resource Management (ARM) Framework, the Board set a harvest limit of 500,000 Delaware Bay male horseshoe crabs and zero female horseshoe crabs for the 2018 season. Based on the allocation mechanism established in Addendum VII, the following quotas were set for the states of New Jersey, Delaware, Maryland and Virginia, which harvest horseshoe crabs of Delaware Bay origin:

	Delaware Bay Origin Horseshoe Crab Quota (no. of crabs)	Total Quota**
State	Male Only	Male Only
Delaware	162,136	162,136
New Jersey	162,136	162,136
Maryland	141,112	255,980
Virginia*	34,615	81,331

*Virginia harvest refers to harvest east of the COLREGS line only

** Total male harvest includes crabs which are not of Delaware Bay origin.

The Board chose a harvest package based on the Technical Committee and ARM Subcommittee recommendation. The ARM Framework, established through Addendum VII, incorporates both shorebird and horseshoe crab abundance levels to set optimized harvest levels for horseshoe crabs of Delaware Bay origin. The horseshoe crab abundance estimate was based on data from the Benthic Trawl Survey conducted by Virginia Polytechnic Institute (Virginia Tech). This survey has not been funded consistently in recent years, but was funded and conducted in 2016. A composite index of the Delaware Trawl Survey, New Jersey Delaware Bay Trawl Survey, and New Jersey Ocean Trawl Survey has been developed and used in years the Virginia Tech Survey was not conducted. While continued, long-term funding of the Virginia Tech Survey is preferred, the recent revival of this survey also allows the composite index to be improved through “tuning” relative to additional Virginia Tech Survey data points. The Virginia Tech Survey has been funded for 2017 and is currently underway. Funding for future years continues to be explored.

Terms of reference for the 2018 stock assessment were presented to and approved by the Board. Within these terms of reference were tasks specific to the horseshoe crab stock assessment, including assessments of regional populations of horseshoe crabs, incorporation and evaluation of estimated mortality attributed to the biomedical use of horseshoe crabs for *Limulus Amebocyte Lysate* production, and comparisons of assessment results with results from the ARM Framework used to annually set bait harvest levels for horseshoe crabs from the Delaware Bay region. The completed assessment is expected to be presented to the Board in October at the 2018 Annual Meeting.

For more information, please contact Michael Schmidtke, Fishery Management Plan Coordinator, at 703.842.0740 or mschmidtke@asmfc.org.

###

PR17-49

Meeting Summary

In addition to setting 2018 specifications for horseshoe crabs of Delaware Bay origin, the Board reviewed results of alternative runs of the Adaptive Resource Management (ARM) Framework ARM model conducted by the ARM Subcommittee, which incorporated estimates of mortality attributed to the biomedical use of horseshoe crabs for *Limulus Amebocyte Lysate* production. These runs resulted in small changes to the number of population scenarios corresponding to harvest package recommendations, but would have had no impact on recommended harvest levels since use of the

ARM Framework began in 2013. The Board decided that action to incorporate these changes could be considered after completion of the 2018 benchmark stock assessment.

The Board also reviewed results of the Horseshoe Crab Technical Committee's report on baiting practices of the American eel and channeled whelk fisheries. This report includes information on current practices in these fisheries that may be relevant to the development and consideration of alternative baits with reduced amounts of horseshoe crab. The report will be available on the Commission's website, www.asmfc.org, on the Horseshoe Crab webpage.

Finally, the Board reviewed state compliance with the Fishery Management Plan. All states were found to be in compliance. For more information, please contact Michael Schmidtke, Fishery Management Plan Coordinator, at 703.842.0740 or mschmidtke@asmfc.org.

Motions

Move to accept the Terms of Reference for the 2018 Horseshoe Crab Benchmark Stock Assessment and add a Term of Reference evaluating the sub-lethal effects of biomedical bleeding.

Motion made by Mr. Michels and seconded by Ms. Giannini. Motion approved by consent.

Move to select Harvest Package 3 for 2018 Horseshoe crab harvest in Delaware Bay.

Motion made by Mr. Michels and seconded by Mr. Millard. Motion is approved by consent.

Move to accept the Horseshoe Crab 2017 FMP Review and State Compliance Reports and approve *de minimis* requests for the Potomac River Fisheries Commission, South Carolina, Georgia and Florida.

Motion made by Mr. Boyles and seconded by O'Reilly. Motion passes by consent.

Move to initiate an addendum that the ARM model incorporate the biomedical harvest using the Preferred Option.

Motion made by Mr. Millard and seconded by Mr. Wright. Motion fails (2 in favor, 13 opposed).

Move to nominate Mr. John Maniscalco as Vice-Chair.

Motion made by Mr. McKiernan and seconded by Dr. Duval. Motion passes by consent.

LAW ENFORCEMENT COMMITTEE (OCTOBER 17 & 18, 2017)

Meeting Summary

The Law Enforcement Committee (LEC) met during the 76th Annual Meeting of the Atlantic States Marine Fisheries Commission in Norfolk, VA. The LEC welcomed alternate representatives Wynn Carney from NOAA Office of Law Enforcement, and Jay Pilgrim from US Fish and Wildlife Service.

New Chair and Vice Chair

The LEC has selected a new chair and vice chair for the upcoming two-year term. The new Chair is **Steve Anthony (NC)** and our Vice-chair is **Doug Messeck (DE)**. The LEC thanked Mike Eastman for his service as Chairman.

Species Issues

American lobster — Megan Ware and David Borden briefed the LEC on recent discussions of the American lobster Management Board and efforts to address electronic tracking and standardization of management measures. David Borden introduced Nick Salvi from Faria Beede Instrument Co., who provided the LEC information on their latest tracking equipment for fishing applications. Tests of products are underway in Maine in the sea urchin fishery. Of interest in the lobster fishery is the possible use of this technology to identify when trap haulers are activated. The need for rapid ping rates and trap-haul signaling are both important for future use in monitoring offshore lobster trap fisheries. Current technology being tested in Maine has an active range of 12-15 miles, but can store up to 20,000 positions when out of active range. LEC members discussed the use of these units for enforcement investigations and also for routine LE fleet monitoring and maintenance. Additional types of technology will be explored by the LEC for possible applications in the offshore lobster fishery.

Atlantic menhaden — Megan Ware briefed the LEC on the development of draft amendment 3 of the fishery management plan and sought any LEC feedback on possible management options under development. Of particular interest to the LEC members was the possible handling of incidental catch and the small-scale fishery. Members noted that there were not any unusual enforcement challenges in enforcing a 6000-lb bycatch limit in this case. While a simple closure of the directed fishery when quotas are met was seen as less of a strain on enforcement resources, it was also noted that a closure is more effective if possession of the species in question is prohibited, and that this would not likely be possible for menhaden given its widespread use for bait. The LEC did not comment on various allocation options.

Cobia — Mike Schmidtke briefed the LEC on development of a new fishery management plan for cobia. After reviewing the need for a state plan that would be complementary to federal regulations in the EEZ, the LEC focused on possible options for setting regulations for *de minimis* states (states north of Virginia). The LEC strongly encourages development of a plan that would provide the greatest amount of regulatory consistency, particularly for the region encompassing NJ, DE, MD and VA. To the extent those state-waters regulations could mirror federal waters while also being consistent among the states, it would enhance enforcement efforts in that region.

Black Sea Bass — Toni Kerns briefed the LEC on the request of the Policy Board to look at existing state or federal regulations providing for the **charging of charter captains or operators**. LEC members had previously shared language from their respective states, if such provisions were in place. ME, MA, DE and SC all reported some success in making cases against for-hire captains or operators with regulations or statutes they have implemented. The LEC discussed this issue relative to the black sea bass fishery and several members observed that repeated abuse of size and bag limits on certain for-hire vessels has been an ongoing problem. If all states could implement the needed measures to charge and prosecute captains or operators (along with customers), it would help in putting a stop to these illegal practices.

Tautog — Jason Snellbaker, LEC representative to the Tautog Management Board, asked the LEC for input on any problems associated with the lack of a federal fishery management plan and regulations for tautog in the EEZ. After lengthy discussion it was apparent that states differ in their ability to cite and prosecute violations in federal waters off of their respective coasts. While language in the Magnuson-Stevens Fishery Conservation and Management Act may allow states to enforce regulations

in federal waters in the absence of a federal plan, some states or their respective court systems are unwilling or unable to do so for jurisdictional reasons. LEC members discussed possible mechanisms for states to implement regulations or statutory language specifically extending state rules into federal waters, thus aiding enforcement efforts. As the ASMFC and states move forward on commercial tagging of tautog, especially if point-of-harvest tagging is implemented, the LEC recommends addressing this issue among the affected states.

Other Issues

The LEC reviewed proposed **2018 Action Plan** items and confirmed that its work will address the tasks outlined in Goal 3 of the plan once it is approved by the ASMFC.

Mark Robson reviewed a draft procedure for **orientation of new members** on the LEC. The procedure will include first contacts, follow-up materials, detailed procedural reviews and short-term mentoring or overlap. LEC members agreed an established procedure would be a great help to new members. Mark will coordinate this process with ASMFC staff for implementation.

The LEC reviewed draft changes to its **Enforceability Matrix** table that better reflected the role of aerial enforcement in assessing the enforceability of various management measures. Mark Robson will work with ASMFC staff to revise and update the Enforceability Guidelines.

Three members of the LEC, Bob Lynn of Georgia, Jason Snellbaker of New Jersey, and Mike Eastman of New Hampshire are recent graduates of the highly-regarded **National Leadership Training Program** sponsored by the National Association of Conservation Law Enforcement Chiefs and the United States Fish and Wildlife Service. Training takes place at the National Conservation Training Center in Shepherdstown, WV. Five LEC representatives have completed the program and three additional members of the LEC are on the program's Steering Committee. This high level of participation exemplifies the professionalism of the ASMFC's Law Enforcement Committee.

For more information, please contact Mark Robson, LEC Coordinator, at markrobson2015@outlook.com.

COASTAL SHARKS MANAGEMENT BOARD (OCTOBER 17, 2017)

Meeting Summary

The Coastal Sharks Management Board met to consider adopting complementary measures to Amendment 5b to the Consolidated Atlantic Highly Migratory Species (HMS) Fishery Management Plan (FMP); set 2018 specifications for Atlantic coastal sharks, and elect a new Vice-Chair.

Amendment 5b implements a range of federal management measures to prevent overfishing and rebuild overfished dusky sharks. These measures are based on the 2016 dusky shark stock assessment update that determined the stock is overfished and experiencing overfishing. HMS requested the Board (and state agencies) consider complementary management for state waters. The LEC and TC reports on the measures were presented to the Board. In addition, states provided feedback on whether they have measures in place similar to Amendment 5b and how receptive the state was to complementary measures. Feedback from the states and the TC indicated challenges to implementing

some of the Amendment’s provisions, specifically regarding the educational outreach, gear specifications for recreational shark fishing, cooperative research, and best practices for handling sharks for all state permit holder. Some states have measures in place consistent with parts of Amendment 5b measures and the Board indicated moving forward states could voluntarily adopt other Amendment 5b measures. After considering these reports and Board discussion, the Board did not adopt complementary management measures.

The federal proposed 2018 Atlantic shark specifications were presented. Similar to the 2017, NOAA Fisheries is proposing a January 1 open date for all shark management groups, with an initial 25 shark possession limit for large coastal and hammerhead management groups with the possibility of in season adjustments. The Board will set the 2018 coastal shark specifications via an email vote after the final rule is published.

For more information, please contact Kirby Rootes-Murdy, Senior Fishery Management Plan Coordinator, at krootes-murdy@asmfc.org.

Motions

Move to approve the 2018 coastal sharks specifications via an email vote after NOAA Fisheries publishes the final rule for the 2018 Atlantic Shark Commercial Fishing season.

Motion made by Mr. O’Reilly and seconded by Mr. Baum. Motion carries without objection.

Move to elect Mr. Pat Geer as Vice-chair to the Coastal Sharks Board.

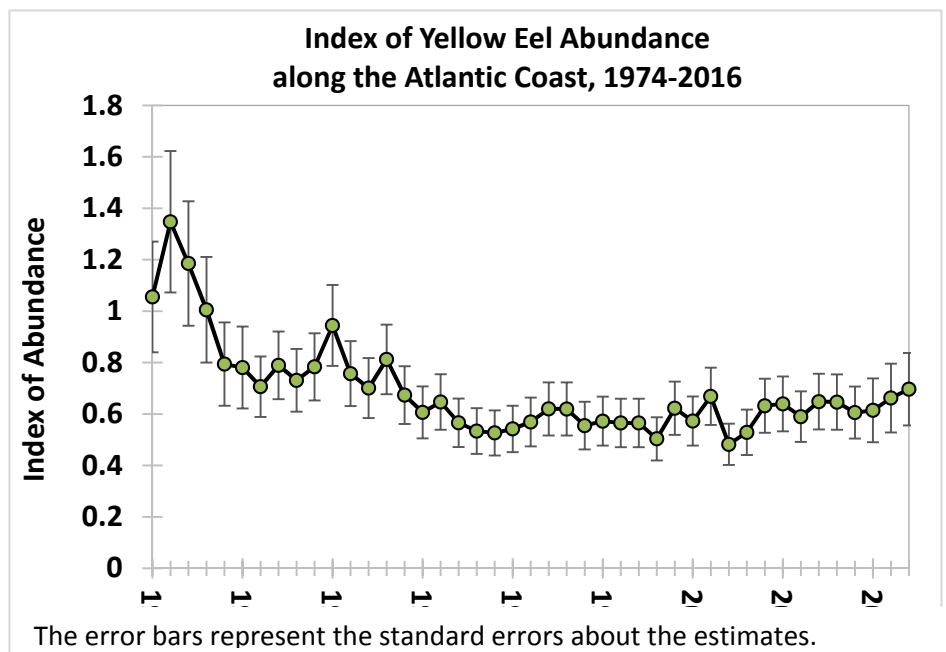
Motion made by Mr. Woodward and second by Mr. Boyles. Motion passes unanimously.

AMERICAN EEL MANAGEMENT BOARD (OCTOBER 17, 2017)

Press Release

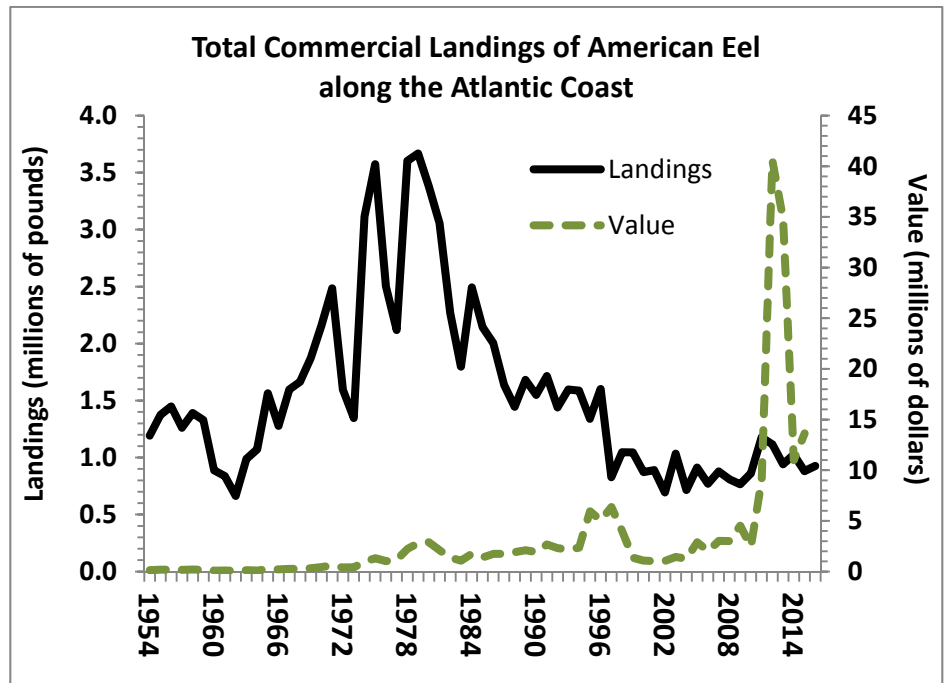
American Eel Stock Assessment Update Finds Resource Remains Depleted

Norfolk, VA – The Commission’s American Eel Management Board reviewed the results of the 2017 American Eel Stock Assessment Update, which indicates the resource remains depleted. The assessment updates the 2012 American Eel Benchmark Stock Assessment with data from 2010-2016. Trend analyses of abundance indices indicated large declines in abundance of yellow eels during the 1980s through the early 1990s, with primarily neutral or stable abundance from



the mid-1990s through 2016. Total landings remain low but stable. Based on these findings, the stock is still considered depleted. No overfishing determination can be made based on the analyses performed.

The American eel fishery primarily targets yellow eel. Glass eel fisheries along the Atlantic coast are prohibited in all states except Maine and South Carolina. In recent years, Maine is the only state reporting significant glass eel harvest. The highest total



landings of all life stages occurred from the mid-1970s to the early 1980s after which they declined. Since the 1990s, landings have been lower than historical landings and have been stable in recent decades. The value of U.S. commercial American eel landings has varied from a few hundred thousand dollars (prior to the 1980s) to a peak of \$40.6 million in 2012 (largely driven by the price of glass eels).

The 2012 benchmark stock assessment found the resource depleted and Addenda III (2013) and IV (2014) were approved with the goal of reducing mortality across all life stages. These addenda established a 9-inch minimum size limit for commercial and recreational fisheries, a yellow eel commercial coastwide cap of 907,671 pounds, and glass eel quota of 9,688 pounds for Maine beginning for the 2015 fishing year. The yellow eel cap has two management triggers: (1) the coastwide cap is exceeded by more than 10% in a given year and (2) the coastwide cap is exceeded for two consecutive years, regardless of the percent over. If either trigger is met, there is an automatic implementation of state-by-state quotas. The 2015 yellow eel landings were below the cap. However, 2016 landings were 925,798 pounds, which exceeded the cap by less than 10%.

A more detailed overview of the American eel stock assessment is available on the Commission website at http://www.asmfc.org/uploads/file/59e8c077AmericanEelStockAssessmentOverview_Oct2017.pdf. It was developed to aid media and interested stakeholders in better understanding the results. The assessment update will be available on the Commission website on the American Eel webpage the week of October 23rd.

In other business, the Board maintained Maine's glass eel quota of 9,688 pounds for the 2018 fishing season. The Board also initiated an addendum to consider alternative allocations, management triggers, and coastwide caps relative to the current management program for both the yellow and glass eel commercial fisheries starting for the 2019 fishing season.

For more information on the stock assessment update, please contact Dr. Kristen Anstead at kanstead@asmfc.org and for information on American eel management, please contact Kirby Rootes-Murdy, Senior Fishery Management Coordinator, at krootes-murdy@asmfc.org.

###

PR17-48

Motions

Move to maintain Maine's glass eel quota for 2018 at status quo level from 2015-2017 (9,688 pounds).

Motion made by Ms. Patterson and seconded by Mr. Keliher. Motion passes unanimously.

Move to initiate an addendum to consider alternative allocations, management triggers, and coastwide caps relative to the current management program for both the yellow and glass eel commercial fisheries starting in the 2019 fishing season.

Motion made by Ms. Fegley and seconded by Mr. Gary. Motion passes unanimously.

ATLANTIC COASTAL COOPERATIVE STATISTICS PROGRAM COORDINATING COUNCIL (OCTOBER 17, 2017)

Meeting Summary

The ACCSP Coordinating Council met to receive Program and Committee Updates and take final action on the FY18 funding allocation. The Council took final action and approved the preferred Option 1 as recommended by the Advisory and Operations Committees. Option 1 fully funds all Maintenance proposals, necessitating a deviation from the 75%/25% funding split between Maintenance and New proposals recommended in the Funding Decision Document. The Council also approved the Advisory and Operations Committees' recommendation not to fund the new proposal from the MAFMC, and to expend the remaining funds on the remaining new proposals. If a funding shortage is encountered in FY18, then the ACCSP Management and Policy Committee will be the deciding body for any remaining allocation decisions. To conclude the meeting, the Council elected Lynn Fegley of MD DNR as the new ACCSP Coordinating Council Chair and John Carmichael of the SAFMC as the new Vice-chair.

For more information, please contact Mike Cahall, ACCSP Director, at mike.cahall@accsp.org.

Motions

Motion to fund all Maintenance proposals, deviating from the 75%/25% split, do not fund the new proposal from the MAFMC and use the remaining funds on new proposals as recommended by the Operations and Advisory Committees. If there is a funding shortage the deciding body would be the ACCSP Management and Policy Committee.

Motion made by Ms. Patterson and seconded by Ms. Fegley. Motion carries unanimously

Motion to elect Ms. Fegley as Coordinating Council Chair.

Motion carries.

Motion to elect Mr. Carmichael as Vice-chair.

Motion carries.

EXECUTIVE COMMITTEE (OCTOBER 18, 2017)

Meeting Summary

The Executive Committee reviewed the FY 2017 Commission Audit. The Committee noted that all of the findings from the FY 2016 Audit have been addressed and the FY 2017 Audit contained no findings that need to be addressed. The FY 2017 was approved by the Committee.

The Committee reviewed feedback from participants in the ASMFC technical process to seek ways to improve the Commission's technical meeting weeks. It was agreed the technical weeks will be continued with improved planning to provide as much advance notice as possible.

The Committee discussed the overall pace and workload of Commissioners. The Committee agreed to 1) consider extending the length of the Winter and Summer Meetings if finances allow, 2) increase the use of working groups and subcommittees to make management board meetings more efficient, 3) use the available meeting management tools to increase meeting efficiency, and 4) provide meeting facilitation training every 2-3 years.

In order to develop the Commission's next strategic plan, a Commissioner workshop will be held in February to determine if the current plan needs a major re-write or if there are only minor modifications needed. Based on the outcome of this workshop, a plan will be developed to complete the Action Plan by the 2018 Annual Meeting.

The Committee discussed the process used to develop nominations for Commission leadership. It was agreed this process would be reviewed to consider the process for seeking Commissioner input and the eligibility of Commissioner proxies to serve in leadership roles.

The Committee also agreed to review the Commission's Appeals and Conservation Equivalency Processes to determine whether modifications are needed to reduce future noncompliance findings. For more information, please contact Bob Beal, Executive Director, at rbeal@asmfc.org or 703.842.0740.

HABITAT COMMITTEE (OCTOBER 18, 2017)

Meeting Summary

The Habitat Committee (HC) met to review and discuss a number of issues, including an ASMFC term for Habitat Areas of Particular Concern; progress on the current Habitat Management Series document as well as the next installment; content for the next issue of *Habitat Hotline Atlantic*; and ways to extend its outreach.

Michelle Bachman (NEFMC) discussed the New England Fishery Management Council's work modelling fishing impacts on habitat in the North and Mid-Atlantic, and Tina Berger (ASMFC) led a discussion on the Habitat Committee's communications strategy and website presence.

The HC was charged with creating a new term for ‘Habitat Areas of Particular Concern’ by the Policy Board at the 2017 Summer Meeting, and the Board recommended ‘Fish Habitats of Concern’ as a replacement. In 2018, the HC will develop a document that compiles all of ASMFC’s Habitat Areas of Particular Concern/Fish Habitats of Concern and identifies inconsistencies with federal designations, as well as recommends new targeted areas for designation in state waters.

The HC made progress on the Aquaculture Habitat Management Series publication, which summarizes the impacts of aquaculture on fish habitat in U.S. Atlantic waters. The HC is also working on a document that identifies gaps in state initiatives to address climate change, particularly in regards to fish habitat, and provides recommendations for the future. The ASMFC SAV Policy Update is also moving forward, which adds new information to the 20-year old document, as well as updates the recommendations and roles that ASMFC and state and federal agencies can take in conservation SAV. All three documents are projected to be presented to the Policy Board at the winter 2018 meeting.

The HC also finalized the tasks for 2018. In 2018, the *Habitat Hotline Atlantic* will focus on environmental monitoring, highlighting examples of long-term monitoring projects and different ways in which monitoring data is being incorporated into strategic planning and modelling efforts. The next Habitat Management Series publication will focus on the effects of underwater acoustics on fish physiology, behavior, and habitat. Finally, the HC will develop a document that compiles the habitat recommendations found in Fishery Management Plans, Habitat Management Series publications, and other HC publications. The goal of this document is to provide Commissioners and habitat managers with all habitat-related ASMFC recommendations in one location for easier reference.

For more information, please contact Dr. Lisa Havel, Habitat Coordinator, at lhavel@asmfc.org or 703.842.0740.

ATLANTIC STURGEON MANAGEMENT BOARD (OCTOBER 18, 2017)

Press Release

Atlantic Sturgeon Benchmark Stock Assessment Indicates Slow Recovery Since Moratorium; Resource Remains Depleted

Norfolk, VA – The Commission’s Atlantic Sturgeon Management Board reviewed the results of the 2017 Atlantic Sturgeon Benchmark Stock Assessment, which indicate the population remains depleted coastwide and at the distinct population segment (DPS) level relative to historic abundance. However, on a coastwide basis, the population appears to be recovering slowly since implementation of a complete moratorium in 1998. Despite the fishing moratorium, the population still experiences mortality from several sources but the assessment indicates that total mortality is sustainable. The “depleted” determination was used instead of “overfished” because of the many factors that contribute to the low abundance of Atlantic sturgeon, including directed and incidental fishing, habitat loss, ship strikes, and climate changes.

Atlantic sturgeon are a long lived, slow to mature, anadromous species that spend the majority of their life at sea and return to natal streams to spawn. While at sea, extensive mixing is known to occur in both ocean and inland regions. The Commission manages Atlantic sturgeon as a single stock, however,

NOAA Fisheries identified five DPSs of Atlantic sturgeon based on genetic analysis as part of a 2012 Endangered Species Act listing: Gulf of Maine, New York Bight, Chesapeake Bay, Carolina, and South Atlantic. Accordingly, this benchmark assessment evaluated Atlantic sturgeon on a coastwide level as well as a DPS-level when possible.

Atlantic sturgeon are not well monitored by existing fishery-independent data collection and bycatch observer programs, and landings information does not exist after 1998 due to implementation of a coastwide moratorium. Because of this, Atlantic sturgeon are considered a “data-poor” species which hindered the Stock Assessment Subcommittee’s ability to use complex statistical stock assessment models, particularly at the DPS-level. Based on the models used, the stock assessment indicated the Atlantic sturgeon population remains depleted relative to historic levels at the coastwide and DPS levels. Since the moratorium, the probability that Atlantic sturgeon abundance has increased coastwide is high and total mortality experienced by the population is low. The results are more mixed at the DPS-level due to sample size and limited data, but the Gulf of Maine and Carolina DPS appear to be experiencing the highest mortality and abundance in the Gulf of Maine and Chesapeake Bay DPS is not as likely to be at a higher level since the moratorium.

The Board approved the 2017 Atlantic Sturgeon Benchmark Stock Assessment and Peer Review Reports for management use and discussed the need to support management actions that have contributed to recovery seen to date (e.g., the moratorium, habitat restoration/protection, better bycatch monitoring) and continue to work on improving them (e.g., identifying bycatch and ship strike hotspots and ways to reduce those interactions). It is important to note there has been a tremendous amount of new information about Atlantic sturgeon collected in recent years. Although this does not resolve the issue of the lack of historical data, it certainly puts stock assessment scientists and fisheries managers on a better path going forward to continue to monitor stocks of Atlantic sturgeon and work towards its restoration.

Atlantic sturgeon are managed through Amendment 1 and Addenda I-IV to the Interstate Fishery Management Plan (FMP) for Atlantic Sturgeon. The primary goal of the amendment is to achieve stock recovery via implementation of a coastwide moratorium on Atlantic sturgeon harvest and by prohibiting the possession of Atlantic sturgeon and any parts thereof. The moratorium is to remain in effect until 20-year classes of spawning females is realized and the FMP is modified to reopen Atlantic sturgeon fisheries.

The Atlantic Sturgeon Benchmark Stock Assessment, as well as the Stock Assessment Overview (which is intended to aid media and interested stakeholders in better understanding the Commission’s stock assessment results and process), will be available the week of October 23rd on the Commission website, www.asmfc.org, on the Atlantic Sturgeon webpage under stock assessment reports. For more information on the stock assessment, please contact Dr. Katie Drew, Senior Stock Assessment Scientist, at kdrew@asmfc.org and for more information on management, please contact Max Appelman, Fishery Management Coordinator, at mappelman@asmfc.org or 703.842.0740.

###

PR17-51

Motions

Move to approve the 2017 benchmark assessment for Atlantic sturgeon and peer review for management use.

Motion made by Mr. Batsavage and seconded by Mr. Grout. Motion approved unanimously.

CAPTAIN DAVID H. HART AWARD LUNCHEON (OCTOBER 18, 2017)

Press Release

ASMFC Presents Paul J. Diodati Prestigious Captain David H. Hart Award

Norfolk, VA – The Atlantic States Marine Fisheries Commission presented Paul J. Diodati, former Director of the Massachusetts Division of Marine Fisheries (MA DMF), the Captain David H. Hart Award, its highest annual award, at the Commission's 76th Annual Meeting in Norfolk, Virginia. For over four decades, Mr. Diodati has been a prominent figure in the marine fisheries management community throughout New England and along the Atlantic coast. While now retired, the impact of his accomplishments to Atlantic coast fisheries conservation and management will be felt for much longer.



Mr. Diodati's career in marine fisheries began at MA DMF in 1975 as a contracted sea sampler for northern shrimp. Over the years, he worked his way up through the ranks to Division Director, a position he served in for his final 15 years at DMF. In between, Mr. Diodati served as technical and policy advisor for striped bass and northern shrimp, Sportfish Program Director, and co-creator and co-Chair of the Massachusetts Marine Fisheries Institute. Understanding the need to address user conflicts before they begin, he was heavily involved in the development of the Massachusetts Ocean Management Plan and the Federal Ocean Management Plan. Mr. Diodati closed major data gaps by requiring comprehensive reporting from dealers in 2005 and all commercial harvesters in 2010. In 2009, he was instrumental in establishing the state's saltwater fishing license.

As Massachusetts' Administrative Commissioner since 2000, Mr. Diodati chaired numerous management boards, overseeing the development and implementation of interstate management plans for species such as striped bass, shad and river herring. From 2010 – 2013, he provided leadership to the Commission serving as Vice-chair and Chair and worked tirelessly to raise the Commission's profile both on Capitol Hill and within the Administration – ensuring the 15 Atlantic states were well equipped to tackle both current and emerging issues.

Mr. Diodati's outsized role at the Commission is not limited to his term as Chair. He also helped to improve coordination and the sharing of information between the states and their federal partners. He had impeccable foresight, as evidenced by his role as a principal supporter of the Atlantic Coastal Cooperative Statistics Program; a Program he would later Chair.

Mr. Diodati's lifetime has been marked by a commitment to science and sound management and his efforts have been instrumental in improving fisheries programs both in Massachusetts and along the

coast. But his legacy is more than scientific papers, surveys conducted, and recovered species; Mr. Diodati will be remembered for his extraordinary way with people. From recreational and commercial fishermen to his peers at the Commission and New England Fishery Management Council, he was well known and trusted as a coalition builder and deal maker.

In honor of Mr. Diodati's lifelong dedication to the conservation of Atlantic striped bass, his innate ability to sense and adapt to changing winds, and the unerring guidance and direction he provided throughout his long career, Mr. Diodati will receive a striped bass weathervane. Due to unforeseen circumstances, Mr. Diodati was not able to attend the award ceremony. Dr. David Pierce, current MA DMF Director and lifelong friend and colleague of Mr. Diodati accepted the award on his behalf.

The Commission instituted the Award in 1991 to recognize individuals who have made outstanding efforts to improve Atlantic coast marine fisheries. The Hart Award is named for one of the Commission's longest serving members, who dedicated himself to the advancement and protection of marine fishery resources.

###

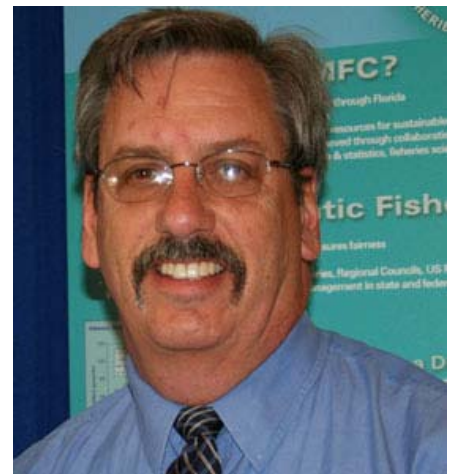
PR17-50

BUSINESS SESSION (OCTOBER 18 & 19, 2017)

Press Releases

James J. Gilmore, Jr. Elected ASMFC Chair

Norfolk, VA – Today, member states of the Atlantic States Marine Fisheries Commission (Commission) thanked Douglas Grout of New Hampshire for an effective two-year term as Chair and elected James J. Gilmore, Jr. of New York to succeed him.



"I am honored by the support of my colleagues from the 15 Atlantic coast states, and grateful to Doug for shepherding the Commission through two challenging years," said Mr. Gilmore. "I embrace the challenges that lie ahead and pledge to rise up to the lofty expectations set by my predecessors – especially Doug. Environmental and political threats to fisheries and management for the 15 sovereign coast states have never been greater. As the Commission has always done, we must use these obstacles as stepping stones. I will ensure the voices of our many stakeholders – recreational, commercial, and conservation alike – are heard. The Commission must seek ways to ensure the integrity of our management process is protected, strengthen our collaboration with NOAA Fisheries, and continue forging alliances on Capitol Hill. With all the challenges facing the Commission, it's all too easy to lose sight of our Vision: *Sustainably Managing Atlantic Coastal Fisheries*. Our Vision must guide the Commission through all its decisions."

Under Mr. Grout's chairmanship, the Commission made important strides in furthering its strategic goals. The Commission approved new plan amendments for northern shrimp and tautog and, by the end of the year, will likely adopt an important amendment for Atlantic menhaden and a new Cobia

FMP. Commission science staff along with state and federal scientists completed benchmark stock assessments for Atlantic sturgeon, Atlantic croaker, spot, red drum; stock assessment updates for American eel, menhaden and river herring; and regional stock assessments and an assessment update for tautog. All of these have provided much needed insight into the health of these species, as well as identified the continued challenges of assessing fish stocks given limited data and increasingly complex stock assessment models.

The Atlantic Coastal Cooperative Statistics Program (ACCSP) is now fully integrated under the Commission's umbrella. State conduct of the Marine Recreational Information Program's Access Point Angler Intercept Survey is well into its second year and is estimated to have increased the number of angler intercepts by nearly 10%. ACCSP has been collaborating with NOAA Fisheries Greater Atlantic Regional Office on an integrated reporting system, which will allow all related fisheries-dependent data collected from various sources, including vessel, observer, and dealer reports, to be linked. ACCSP has also been working closely with the Mid-Atlantic Council on launching its mandatory for-hire electronic reporting system and have begun discussions with the South Atlantic Council on its efforts to move to for-hire electronic reporting.

The Commission's Habitat Committee and the Atlantic Coastal Fish Habitat Partnership continue to advance our understanding of the importance of the fisheries-habitat connection and provide us and habitat managers with tools to further habitat conservation. The Habitat Committee released the Sciaenid Fish Habitat Source Document, the most comprehensive compilation of habitat information to date on Commission-managed and other common sciaenid species found throughout the Western Atlantic. ACFHP completed its 5-year Conservation Strategic Plan and 2-year Conservation Action Plan which include goals, objectives, strategies, and actions to restore and enhance Atlantic coastal, estuarine, and diadromous fish habitat through conservation, science and data, outreach and communication, and financial initiatives. The Commission's Law Enforcement Committee continued to coordinate enforcement activities directed at illegal glass eel harvest and to respond to lobster industry concerns about illegal activity in federal waters by working with our federal partners to place lobster as a high priority for federal enforcement and joint enforcement agreement activities.

Mr. Gilmore has served as Director of the Division of Marine Resources for New York State Department of Environmental Conservation for the past ten years. As a respected marine scientist and fisheries manager with more than 40 years of experience in both the public and private sector, Mr. Gilmore has built a reputation as a coalition builder and skilled negotiator. Mr. Gilmore is also an Executive Committee member of the New York Sea Grant Board of Directors and holds an adjunct faculty position at SUNY Stony Brook, where he teaches a graduate level fisheries management course. Most importantly, he is an avid marine angler, dividing his efforts between Long Island Sound's south shore and southern New Jersey. Mr. Gilmore received a Bachelor of Arts in Biology from SUNY Plattsburgh and a Master's in Marine Science from SUNY Stony Brook.

The Commission also elected Patrick Keliher, Commissioner of the Maine Department of Marine Resources, as its Vice-Chair.

###

PR17-47

ASMFC Approves Amendment 3 to the Interstate Fishery Management Plan for Northern Shrimp

Norfolk, VA – The Atlantic States Marine Fisheries Commission approved Amendment 3 to the Interstate Fishery Management Plan (FMP) for Northern Shrimp. The Amendment is designed to improve management of the northern shrimp resource in the event the fishery reopens (the fishery has been under moratorium since 2014). Specifically, the Amendment refines the FMP objectives and provides the flexibility to use the best available information to define the status of the stock and set the total allowable catch (TAC). Furthermore, the Amendment implements a state-specific allocation program to better manage effort in the fishery; 80% of the annual TAC will be allocated to Maine, 10% to New Hampshire, and 10% to Massachusetts. Fishermen with a trap landings history will continue to operate under gear-specific allocations (i.e., 87% of the state-specific quota will be allocated to the trawl fishery, and 13% to the trap fishery), however, the Section anticipates exploring alternative measures through the adaptive management process that would allow states to modify allocation between gear types on an annual basis. The Section also has the discretion to roll over unused quota from the states of New Hampshire and Massachusetts to Maine by a date determined during annual specifications.

Additionally, the Amendment strengthens catch and landings reporting requirements to ensure all harvested shrimp are being reported, and requires shrimp-directed trawl vessels to use either a double-Nordmore or compound grate system (both designed to minimize the catch of small, presumably male, shrimp). Other changes include the implementation of accountability measures (i.e., penalties if states exceed their quota), specification of a maximum fishing season length, and formalizing fishery-dependent monitoring requirements.

The Section will meet November 29 at the Westin Portland Harborview, Hotel 157 High Street, Portland, ME, to review the 2017 stock status report and set specifications for the 2018 fishing season. For more information, please contact, Max Appelman, FMP Coordinator, at mappelman@asmfc.org or 703.842.0740.

###

PR17-53

ASMFC Approves Amendment 1 to the Interstate Fishery Management Plan for Tautog

Norfolk, VA – The Atlantic States Marine Fisheries Commission has approved Amendment 1 to the Interstate Fishery Management Plan (FMP) for Tautog, which includes new management goals and objectives, biological reference points, fishing mortality targets, and stock rebuilding schedules. The Amendment institutes a fundamental change in tautog management, moving away from coastwide management towards regional management. Specifically, the Amendment delineates the stock into four regions due to differences in biology and fishery characteristics: Massachusetts – Rhode Island (MARI); Long Island Sound (LIS); New Jersey – New York Bight (NJ-NYB); and Delaware – Maryland – Virginia (DelMarVa).

The 2016 stock assessment update indicated that all regions except MARI were overfished, and overfishing was occurring in the LIS and NJ-NYB regions in 2015. As such, LIS and NJ-NYB would be required to take harvest reductions, while MARI and DelMarVa would not have to take harvest reductions, but are proposing regional measures.

Amendment 1 replaces the goal of the FMP to sustainably manage tautog over the long-term using regional differences in biology and fishery characteristics as the basis for management. Additionally, the Amendment seeks to promote the conservation and enhancement of structured habitat to meet the needs of all stages of tautog's life cycle. The plan objectives were modified to achieve this new goal.

Under Amendment 1 the four regions will implement measures to achieve the regional fishing mortality target with at least a 50% probability. No consistent schedule is required to achieve targets, but if the current fishing mortality exceeds the regional threshold, the Board must initiate corrective action within one year. A stock rebuilding schedule can be established via an addendum.

In addition, Amendment 1 establishes a commercial harvest tagging program to address an illegal, unreported and undocumented fishery. The tagging program will be implemented in 2019. Reports of illegally harvested fish have been documented in cases against fishermen, fish houses, and at retail markets and restaurants. The tagging program, which will accommodate both the live and dead commercial markets, was recommended by the Commission's Law Enforcement Committee to increase accountability in the fishery and curb illegal harvest. Tags will be applied by the commercially-permitted harvester at harvest or prior to offloading. Tautog must be landed in the state that is identified on the tag.

The states will submit implementation proposals by December 1, 2017 and all measures in the Amendment except for the commercial tagging program will be implemented by April 1, 2018. The commercial tagging program must be implemented by January 1, 2019.

The final Amendment will be posted to the Commission's website on the Tautog webpage the week of October 31st. For more information, please contact Caitlin Starks, Fishery Management Plan Coordinator, at cstarks@asmfc.org or 703.842.0740.

###

PR17-52

Meeting Summary

The Business Session met to address a number of issues, including the election of a new Commission Chair and Vice-Chair; review and consider approval of the Draft 2018 Action Plan; consider approval of new Amendments to Interstate Fishery Management Plans (FMPs) for Northern Shrimp and Tautog.

By unanimous consent, the Business Session elected James J. Gilmore of New York and Patrick Keliher of Maine as its new Chair and Vice-chair, respectively. It approved the 2018 Action Plan, which guides the activities of Commission programs for fisheries management, fisheries science, law enforcement, habitat conservation, outreach and education, finance and administration and data collection and data management. It approved Amendments to the Interstate FMPs for Northern Shrimp and Tautog (more

detailed information on those amendments can be found in the above press releases). It also directed Commission staff to send a letter to NOAA Fisheries and the New England Fishery Management Council regarding the requirements for size-sorting grates in Amendment 3 to the Northern Shrimp Fishery Management Plan.

For more information, please contact Bob Beal, Executive Director, at rbeal@asmfc.org or 703.842.0740.

Motions

Move to approve the 2018 Action Plan on behalf of the Administrative Oversight Committee.

Motion made by Mr. Gilmore. Motion approved by consent.

Move the Commission approve Amendment 3 to the Northern Shrimp Interstate Fishery Management Plan.

Motion made by Mr. Grout and seconded by Mr. Reid. Motion is approved by unanimous consent.

Move the Commission send a letter to NOAA Fisheries and the New England Fishery Management Council regarding the requirements for size-sorting grates in Amendment 3 to the Northern Shrimp Fishery Management Plan.

Motion made by Mr. Grout and seconded by Mr. Clark. Motion carries by unanimous consent.

On behalf of the Tautog Management Board, move the Commission approve Amendment 1 to the Tautog Interstate Fishery Management Plan.

Motion made by Mr. Nowalsky. Motion carries by unanimous consent.

SUMMER FLOUNDER, SCUP AND BLACK SEA BASS MANAGEMENT BOARD (OCTOBER 18, 2017)

Meeting Summary

The Summer Flounder, Scup, and Black Sea Bass Management Board met to consider Draft Addendum XXX; receive an update on preliminary recreational harvest estimates through wave 4 (July-August 2017); consider a wave 1 recreational black sea bass fishery for 2018; and consider state compliance and FMP Reviews.

The Board was presented the updated Draft Addendum XXX, which proposes options for management of the recreational black sea bass fishery based on the recommendations of the Black Sea Bass Recreational Working Group. The Draft Addendum offers alternatives for recreational black sea bass regional management and allocations. The main recommendation was to delay considering approval of the Draft Addendum for public comment to allow more time for developing an additional management option focused on improving data collection, compliance with the management measures, and an evaluation of the recreational fishery performance. The Board agreed and will consider the Draft Addendum at the joint meeting with the Mid-Atlantic Fishery Management Council (Council) in December.

The Board received preliminary recreational harvest estimates through wave 4. Coastwide harvest estimates for summer flounder, scup, and black sea bass were below the 2017 recreational harvest

limits for all three species based on the preliminary information, as well as lower than harvest through this wave a year ago. Projections of recreational harvest for all three species will be presented to the Board and Council at their meeting in December as part of the 2018 recreational specification process.

The Board received a presentation on a possible wave 1 recreational black sea bass fishery for 2018. At their meeting last week, the Council approved a recommendation to NOAA Fisheries to open the black sea bass recreational fishery in federal waters for February 2018. As part of the recommendation, the 2018 RHL will be reduced by 100,000 pounds to account for expected harvest during the February season. After discussing the Council's motion and considering the process by which this fishery would be monitored and accounted for, the Board approved the same motion. Adjustments to the 2018 recreational measures to account for this estimated February harvest will be required only of states that participate in the February fishery. State participation will be discussed at the Board and Council joint meeting. As part of the Board and Council's approved motion, management measures for the recreational black sea bass February season (February 1-28) will be a 12.5 inch minimum size limit and 15 fish possession limit per person.

The Board was informed of inconsistencies between the FMP requirements for the scup incidental possession limit and mesh size requirements and Massachusetts' state regulations for participants in the small mesh squid fishery. The Board moved to postpone consideration of the Scup FMP Review and state compliance until the 2018 ASMFC Winter Meeting in order for the state to address the issue. The Summer Flounder and Black Sea Bass FMP Reviews and state compliance will be considered for approval by email vote following the ASMFC Annual meeting.

Last, the Board discussed recent reports of noncompliance in the recreational for-hire fisheries for summer flounder, scup, and black sea bass. The Board moved to task the existing Black Sea Bass Recreational Working Group with developing options aimed at reducing non-compliance in the summer flounder, scup, black sea bass for-hire fisheries.

For more information on summer and scup, please contact Kirby Rootes-Murdy, Senior Fishery Management Plan Coordinator, at krootes-murdy@asmfc.org and for information on black sea bass, please contact Caitlin Starks, Fishery Management Plan Coordinator, at cstarks@asmfc.org or 703.842.0740.

Motions

Main Motion

Move to include a second management issue in Draft Addendum XXX with options aimed to reduce non-compliance in the for-hire fisheries for summer flounder, scup, and black sea bass, including a possible requirement for for-hire permit holders/operators to be held liable for violations of recreational fishing rules occurring during a for-hire trip.

Motion made by Ms. Meserve and seconded by Mr. Borden.

Motion to Substitute

Move to substitute to task our existing working group with developing options aimed at reducing non-compliance in the summer flounder, scup, black sea bass for-hire fisheries.

Motion made by Mr. Nowalsky and seconded by Mr. Hasbrouck. Motion carries (8 in favor, 2 opposed, 1 abstention, 1 null).

Main Motion as Substituted

Move to task our existing working group with developing options aimed at reducing non-compliance in the summer flounder, scup, black sea bass for-hire fisheries.

Motion carries unanimously.

Move to recommend NMFS open the black sea bass recreational fishery in federal waters from 2/1/18 – 2/28/18 with a minimum size limit of 12.5” and a per person daily possession limit of 15 fish. Based on staff analysis, the 2018 recreational harvest limit that applies to the remainder of the fishing year will be reduced by the preliminary estimate of 100,000 lb to account for expected catch during the February season. Adjustments to the 2018 recreational measures to account for this estimated February catch will be required only of states that participate in the February fishery.

Motion made by Mr. Nowalsky and seconded by Mr. O’Reilly. Motion carries (5 in favor, 4 opposed, 3 abstentions).

Move to postpone Board approval of the Scup FMP review and state compliance reports until the Winter Meeting.

Motion made by Dr. Pierce and seconded by Sen. Boyle. Motion carries (10 in favor, 1 abstention).

ATLANTIC STRIPED BASS MANAGEMENT BOARD (OCTOBER 19, 2017)

Meeting Summary

As the Atlantic Striped Bass Technical Committee (TC) and Stock Assessment Subcommittee (SAS) continue their work on the 2018 benchmark assessment, they request guidance from the Atlantic Striped Bass Management Board (Board) regarding the management plan objectives to facilitate development of biological reference points (BRPs) that best meet those objectives.

While some Board members are comfortable with the current BRPs, other Board members expressed concern that the BRPs are too conservative for various biological, ecological and socio-economic reasons, and are restricting fishing unnecessarily. These differing opinions raises questions about whether the objectives of the Atlantic Striped Bass Fishery Management Plan (FMP) have changed since the implementation of Amendment 6 in 2003. Determining the best balance between preserving stock biomass and allowing fishing is ultimately a management-level decision. Accordingly, the Board chose to convene a workshop to discuss the direction of management in more detail and to establish a working group of the Board to continue those discussions and provide the necessary guidance to the TC and SAS. The exact timing of the workshop is yet to be determined, but the final guidance to the TC and SAS is expected to occur at the May 2018 Board Meeting, or the August Meeting at the latest. The Board also approved the 2017 FMP Review and State Compliance.

For more information, please contact Max Appelman, Fishery Management Plan Coordinator, at mappelman@asmfc.org or 703-842-0740.

Motions

Move to approve the 2017 Fishery Management Plan Review and state compliance for Atlantic Striped Bass.

Motion made by Mr. Luisi and seconded by Mr. Keliher. Motion carries unanimously.

Move to elect Mike Armstrong as Chair of the Atlantic Striped Bass Management Board, and Michelle Duval as Vice-chair.

Motion made by Mr. White, second by Mr. Allen. Motion carries unanimously.

INTERSTATE FISHERIES MANAGEMENT BOARD (OCTOBER 19, 2017)

Meeting Summary

Doug Grout, ASMFC outgoing Chair, presented the Executive Committee Report (see Executive Committee Meeting Summary). Commission leadership will be meeting with the Secretary of Commerce to discuss the noncompliance process, in particular ways to improve the process and make it more transparent. Jason McNamee presented a progress report from the Risk and Uncertainty Workgroup, which was tasked to develop a risk policy for the Commission. The Work Group will present the policy, through an interactive workshop, at the Commission Winter 2018 Meeting in February. The Board received committee reports from the Habitat Committee, Atlantic Coastal Fish Habitat Partnership, and the Law Enforcement Committee (LEC) (see respective meeting summaries in this document).

The Atlantic Herring Section recommended the Commission establish a working group with the New England Fishery Management Council with the goal of improving communication (see Atlantic Herring Committee Meeting Summary). The Board agreed to send a letter to the Council to establish the working group. In addition, the Board will extend a non-voting seat to the Council. Having input from the Council will improve the strength of decisions made by the Section and improve coordination between state and federal water management of Atlantic herring.

The Board discussed recent violations in the for-hire sector where patrons have far exceeded bag limits in addition to possessing undersized fish. Some Commissioners have raised concerns that captains are not being held accountable for activities on their vessel, in particular when flagrant violations occur. Members of the Board recognized captains are not law enforcement and it can be difficult for captains of party boats with a large number of patrons to know everything being caught on Board but vessels should be creating an environment that educates and incentivizes patrons to follow the regulations (e.g. providing the regulations to each patron, marking each patrons cooler, and providing measuring sticks). The LEC discussed the issue earlier in the week. Enforcement officers concluded the ability to charge and prosecute captains or operators along with patrons would help to curtail noncompliance in the for-hire sector. The Summer Flounder, Scup and Black Sea Bass Board established a working group to look at noncompliance and the Policy Board will wait to make any recommendations until after the group has addressed its task.

The Board reviewed a white paper from the Climate Change Working Group which was included in meeting materials. The Climate Change Working Group was tasked with developing science, policy, and management strategies to assist the Commission with adapting its management to changes in species abundance and distribution resulting from climate change impacts. The white paper presents

adaptation strategies as guidelines to assist Boards and Sections in the management of species impacted by climate change, with a focus on stocks with low biomass and allocation. The Board will consider approval of the white paper for species management board use at the February 2018 Board meeting.

The Board received an update from the Assessment Science Committee regarding the new Technical Committee Task Lists included briefing materials. These lists updated and added to the briefing materials for each quarterly Commission meeting. Lists will include all current committee tasks with timelines, assign an activity level, a committee overlap score based on overlap with other TC/SAS, and TC and SAS member lists and their affiliations. The lists are intended to help Boards prioritize and address timeframes when assigning committees additional work.

The Committee on Economics and Social Sciences requested a change in its membership requirements in the ISFMP Charter. The Board agreed to relax requirements to encourage more active participation in drafting management change documents. Staff will work to integrate Board recommendations into ISFMP Charter language. The Board approved two changes in the stock assessment schedule. The shad stock assessment will be moved to 2019 to account for the change from an update to a benchmark stock assessment to incorporate changes in aging. The weakfish assessment update will be moved 2019 to incorporate new MRIP data that will be released in 2018.

For more information, please contact Toni Kerns, ISFMP Director, at tkerns@asmfc.org or 703.842.0740.

Motions

Main Motion

On behalf of the Atlantic Herring Section, I move the Commission to send a letter to the New England Fishery Management Council to establish a Working Group with the goal of improving communication between the two bodies.

Motion by Mr. White. Motion amended.

Motion to Amend

Move to amend to include to provide a permanent non-voting seat to the New England Fishery Management Council on the Atlantic Herring Section.

Motion by Mr. Reid, seconded by Mr. White. Motion approved by unanimous consensus.

Main Motion as Amended

On behalf of the Atlantic Herring Section, move the Commission to send a letter to the New England Fishery Management Council to establish a Working Group with the goal of improving communication between the two bodies and to provide a permanent non-voting seat to the New England Fishery Management Council on the Atlantic Herring Section.

Motion is approved by unanimous consent.

Move to approve the recommended changes to the CESS Membership requirements in the ISFMP Charter as modified to reflect the Policy Board discussion today.

Motion made by Mr. Clark and seconded by Mr. Estes. Motion approved by unanimous consent.

Press Release

**ASMFC South Atlantic Board Selects Final Measures
for the Interstate FMP for the Atlantic Migratory Group Cobia and
Recommends Final Approval by the Commission**

Norfolk, VA –The Commission’s South Atlantic State/Federal Fisheries Management Board selected final measures for the Interstate Fishery Management Plan (FMP) for Atlantic Migratory Group (AMG) Cobia and recommended Commission approval of the FMP at its next Business Session meeting, scheduled for November in Baltimore, MD.

The FMP was initiated in response to recent overages of the federal annual catch limit (ACL) for AMG Cobia. Managing the recreational ACL on a coastwide basis has resulted in federal closures and significant overages in 2015 and 2016, disrupting fishing opportunities and jeopardizing the health of the stock.

The Board-approved FMP complements many of the aspects of the South Atlantic Fishery Management Council’s (SAFMC) cobia regulations from Georgia through New York. The recreational fishery will be managed with a one fish bag limit and minimum size limit of 36” fork length (FL) or total length equivalent. Vessel limits will be determined once individual states set their seasonal restrictions, but may not exceed six fish per vessel. State-specific allocations of a coastwide recreational harvest limit that is equivalent to the federal AMG cobia ACL of 620,000 pounds result in the following state-specific soft targets:

- Georgia: 58,311 pounds
- South Carolina: 74,885 pounds
- North Carolina: 236,316 pounds
- Virginia: 244,292 pounds

Recreational harvest overages of specific-state allocations will be evaluated over a three-year time period. If overages occur, states will be required to adjust management measures to reduce harvest in the subsequent three-year period.

The commercial fishery will maintain the current management measures as implemented through the SAFMC plan and continue to be managed with a 33” FL minimum size limit and 2 fish limit per person, with a 6 fish maximum vessel limit. The federal ACL of 50,000 pounds is allocated to the entire commercial fishery from Georgia through New York. The commercial AMG cobia fishery will close once the ACL is projected to be reached.

The FMP provides the opportunity for states to declare *de minimis* status for their recreational fishery if landings constitute less than 1% of the recreational AMG cobia harvest. States must submit implementation plans to the Commission by January 1, 2018 for Technical Committee review and Board approval at the February 2018 meeting in Alexandria, Virginia. Approved plans must be implemented by April 1, 2018. For more information, please contact Dr. Louis Daniel, Fishery Management Plan Coordinator, at ldaniel@asmfc.org or 252.342.1478. PR17-54

Meeting Summary

The South Atlantic State/Federal Fisheries Management Board met to review and discuss a number of issues including selection of final measures for the Interstate Fishery Management Plan (FMP) for the Atlantic Migratory Group Cobia; a proposal to re-open Maryland's commercial fishery for black drum in Chesapeake Bay; and annual state compliance with FMPs for black drum, red drum, and spotted seatrout.

The Board reviewed a proposal submitted by Maryland to re-open their commercial black drum fishery in Chesapeake Bay. This historic fishery was closed in the late 1990s to conduct a tagging study to collect biological and movement information and was never re-opened after completion of the study. In 2014, the Interstate Black Drum FMP was approved and required states to maintain current management measures, resulting in a continuation of the commercial closure. The Board approved the initiation of an addendum to the Black Drum FMP that would re-open the Maryland commercial fishery under a 28 inch minimum size and a 10 fish daily vessel limit. The Draft Addendum will be presented to the Board in February 2018. If approved, it will be released for public comment late Winter/early Spring, with final action scheduled for May 2018.

The Board also reviewed annual state compliance with FMPs for black drum, red drum, and spotted seatrout. The Board found all states to be in compliance with the measures included within each species' respective FMP. The Board also revisited a conversation about whether interstate management of spotted seatrout should be continued. Options for future management of spotted seatrout will be explored and reviewed at a later meeting.

For more information, please contact Mike Schmidtke, Fishery Management Plan Coordinator, at mschmidtke@asmfc.org or 703.842.0740.

Motions

Move to initiate an addendum that would allow Maryland to re-open its pre-existing commercial black drum fishery under a 28 inch minimum size and a 10 fish daily vessel limit.

Motion made by Ms. Fegley and seconded by Dr. Rhodes. Motion passes unanimously.

Move to accept the 2017 FMP Reviews and State Compliance Reports for black drum, red drum, and spotted seatrout and approve *de minimis* requests for New Jersey and Delaware for both red drum and spotted seatrout.

Motion made by Dr. Rhodes and seconded by Mr. Batsavage. Motion passes unanimously.

Move to adopt Option 2: 36" fork length for recreational minimum size limit options, Option 2: 1 fish per person for recreational bag limit options, and Option 2: up to 6 fish per vessel for recreational vessel limit options.

Motion made by Mr. Boyles and seconded by Dr. Duval. Motion carries unanimously.

Move to adopt option 2: soft harvest target for recreational season/allocation options.

Motion made by Mr. Boyles and seconded by Mr. Woodward. Motion carries unanimously.

Move to select Sub-option D under Option 2: 5 year/10 year average reference period.

Motion made by Dr. Duval and seconded by Mr. Cimino. Motion passes (5 in favor, 2 opposed, 3 abstentions).

Move to adopt Sub-option F under Option 2: 3 years landings monitoring timeframe.

Motion made by Dr. Duval and seconded by Mr. Boyles. Motion passes unanimously.

Move to adopt Option 2: 33" commercial minimum size limit under section 4.2.1 and adopt a possession limit of no more than 2 fish per person, not to exceed 6 fish per vessel.

Motion made by Dr. Duval and seconded by Mr. Boyles. Motion passes unanimously.

Move to adopt Option 3: a *de minimis* program for recreational fisheries only.

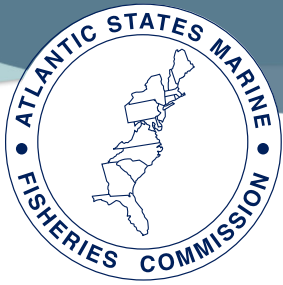
Motion made by Ms. Fegley and seconded by Mr. Woodward. Motion passes unanimously.

Move to adopt Sub-option B: the ability to match an adjacent non-*de minimis* state and Sub-option D: recreational minimum size of 29".

Motion made by Ms. Fegley and seconded by Mr. Miller. Motion passes (5 in favor, 1 opposed, 3 abstentions).

Move to recommend to the Commission the approval of the Cobia Interstate Fishery Management Plan as amended today.

Motion made by Mr. Boyles and seconded by Dr. Duval. Motion passes with one abstention.



ASMFC

FISHERIES *focus*

Vision: Sustainably Managing Atlantic Coastal Fisheries

INSIDE THIS ISSUE

Upcoming Meetings
page 2

From the Executive Director's Desk
ASMFC Discusses Next Steps in State/Federal Management
page 3

Species Profile
Spot
page 4

Fishery Management Actions
American Lobster
Scup
page 7

Proposed Management Actions
Atlantic Menhaden
Cobia
page 9

Science Highlight
ASMFC Releases Stock Assessment Updates for Atlantic Menhaden and River Herring
page 11

ACCSP
ACCSP Submits Regional Recreational Implementation Plan to NOAA Fisheries MRIP
page 12

Comings & Goings
page 14

Employees of the Quarter Named
page 16

ASMFC Atlantic Herring Section Launches New Website on Atlantic Herring Area 1A Spawning Monitoring System

In May, the Commission's Atlantic Herring Section approved the continued use of the GS_{130} -based forecast system to predict when the population will be spawning and when spawning closures should be set based on the development of herring gonads (reproductive organs) in Area 1A (inshore Gulf of Maine). GSI stands for gonadosomatic index and in its simplest terms assesses the onset of spawning based on the ratio of the weight of a female herring's ovaries to its body weight. This new system, which was successfully piloted in 2016, uses the observed rate of increase in GSI to predict when spawning will occur and when the fishery will be closed. This replaces an earlier system that simply closed the fishery when the observed GSI was above a threshold value.

Stakeholders can see the spawning forecast model in real time here: <https://www.massmarinesfisheries.net/herring/>.

Atlantic herring spawn in the late summer or early fall of each year. The timing of this event can vary by several weeks, which necessitates sampling the population each year to determine when the spawning closure should occur. Once three samples have been collected that show a positive progression in gonadal development, a forecasted closure date can be determined by projecting forward when the population is likely to cross the spawning threshold (see Figure 2 on page 6). This forecasted closure date is continuously updated as new samples are acquired, and the closure is finally set within 5 days of the forecast date.

If not enough samples can be collected to forecast a closure date, a default closure date will go into effect. This date varies slightly by region:

- Eastern Maine: August 28th
- Western Maine: October 4th
- Massachusetts-New Hampshire: October 4th

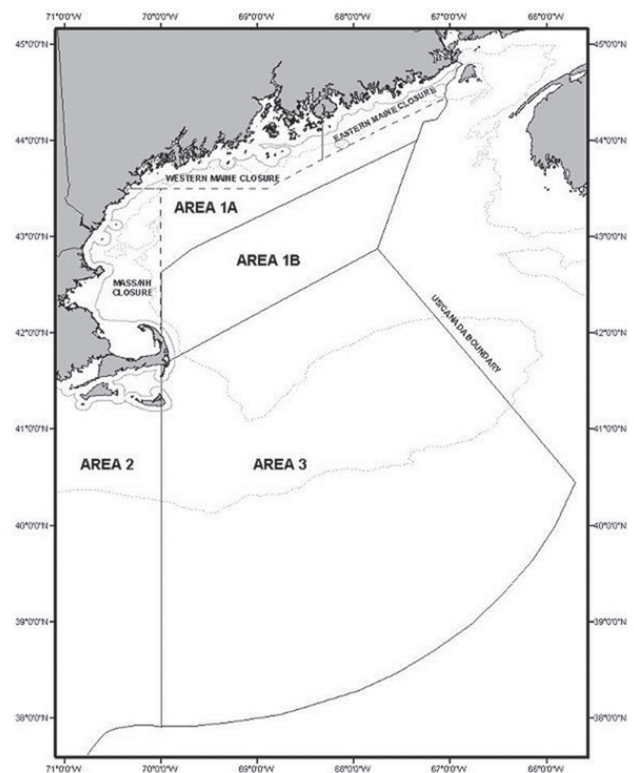


Figure 1. Map of Eastern Maine, Western Maine, and Massachusetts-New Hampshire Atlantic Herring Spawning Areas

continued, see HERRING WEBSITE on page 6

Upcoming Meetings

The Atlantic States Marine Fisheries Commission was formed by the 15 Atlantic coastal states in 1942 for the promotion and protection of coastal fishery resources. The Commission serves as the deliberative body of the Atlantic coastal states, coordinating the conservation and management of nearshore fishery resources, including marine, shell and diadromous species. The fifteen member states of the Commission are: Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, and Florida.

Atlantic States Marine Fisheries Commission

Douglas E. Grout (NH)
Chair

James J. Gilmore, Jr. (NY)
Vice-Chair

Robert E. Beal
Executive Director

Patrick A. Campfield
Science Director

Toni Kerns
ISFMP Director

Laura C. Leach
Director of Finance & Administration

Tina L. Berger, Editor
Director of Communications
tberger@asmfc.org

703.842.0740 Phone
703.842.0741 Fax
www.asmfc.org
info@asmfc.org

October 10-12

Mid-Atlantic Fishery Management Council, Hyatt Long Island East End, 451 East Main Street, Riverhead, NY

October 10 (1 - 4 PM)

ASMFC Tautog Technical Committee Conference Call; go here for more details - <http://www.asmfc.org/calendar/>.

October 16-19

ASMFC 76th Annual Meeting, Waterside Marriott Hotel, 235 East Main Street, Norfolk, VA

October 26 (10 AM - 4 PM)

ASMFC Atlantic Menhaden Advisory Panel, Philadelphia Airport Marriott, One Arrivals Road, Terminal B, Philadelphia, PA

November 13 (begins at 1 PM) & 14 (ends at 6 PM)

ASMFC Atlantic Menhaden Management Board, BWI Marriot, 1743 West Nursery Road, Linthicum MD

November 29 (10 - 11:30 AM)

ASMFC Northern Shrimp Advisory Panel, Westin Portland Harborview, Hotel 157 High Street, Portland, ME

November 29 (1 - 3:30 PM)

ASMFC Northern Shrimp Section, Westin Portland Harborview, Hotel 157 High Street, Portland, ME

December 4-7

South Atlantic Fishery Management Council, DoubleTree by Hilton Atlantic Beach Oceanfront, 2717 W. Fort Macon Road, Atlantic Beach, NC

December 5-7

New England Fishery Management Council, Hotel Viking, Newport, Rhode Island

December 11-14

Mid-Atlantic Fishery Management Council, Westin Annapolis, 100 Westgate Circle, Annapolis, Maryland

January 30-31

New England Fishery Management Council, Sheraton Harborside, Portsmouth, NH

February 6-8

ASMFC Winter Meeting, Westin Hotel, 1800 Jefferson Davis Highway, Arlington, VA

February 13-15

Mid-Atlantic Fishery Management Council, Hilton Garden Inn Raleigh/Crabtree Valley, 3912 Arrow Drive, Raleigh, NC

March 5-9

South Atlantic Fishery Management Council, Westin Jekyll Island, 110 Ocean Way, Jekyll Island GA

April 10-12

Mid-Atlantic Fishery Management Council, Montauk Yacht Club, 32 Star Island Road, Montauk, NY

April 30 - May 3

ASMFC Spring Meeting, Westin Hotel, 1800 Jefferson Davis Highway, Arlington, VA



ASMFC Discusses Next Steps in State/Federal Management

On July 11th, Secretary of Commerce Wilbur Ross notified the Atlantic States Marine Fisheries Commission that he found the State of New Jersey to be in compliance with Addendum XXVII to the Summer Flounder Fishery Management Plan. This decision is unprecedented and is of serious concern to the Commission's member states. Never before has any Secretary rejected the Commission's determination of noncompliance. Indeed, in all 18 of the noncompliance submittals decided since enactment of the Atlantic Coastal Fisheries Cooperative Management Act (ACFMCA) in 1993, the Secretary has accepted the Commission's judgment.

Given the importance of the action, this issue was discussed at length during the Commission's Summer Meeting, beginning with a dialogue between the state directors and NOAA Fisheries' leadership, then by the Commission's Executive Committee, and lastly with the Interstate Fisheries Management Program Policy Board. A significant portion of the discussion focused on the technical merits of New Jersey's management program and the lack of transparency in the Secretarial review process. Commissioners also focused on broader issues such as the overall approach to recreational management and the imperative that states come together to address their problems

and cooperatively manage their shared resources. Provided below are some excerpts from those discussions:

One of the biggest criticisms I've heard of the Secretary's decision is that somehow there is a sense that an individual state won here. We all lost; everyone around this table!

*-- Adam Nowalsky, New Jersey
Legislative Proxy*

James Gilmore (NYS DEC) spoke to the issue of the Commission's submitted justification for its noncompliance finding, "...of all the justifications I've seen in my career that was one of the strongest ones I've ever seen. I think the staff for the Commission and the states, even the federal government that were involved, did an exemplary job."

Following up on the issue of adequate justification being provided to the Secretary, Jason McNamee (RI DEM) stated, "What became very apparent to me during the past couple of days is there was nothing to review. We had a really rigorous process. New Jersey put forward a fair effort. I appreciate Representative Abbott's comments earlier about my involve-

ment on the technical review, but there were a lot of other people involved as well – state scientists, NOAA Fisheries scientists, Mid-Atlantic staff; it was not a single person, it was a full technical review. We reviewed their work. We offered our advice on that work, and what happened subsequent to that was a process where the Secretary second guessed what the technical body did, without any evidence or information. There was nothing to review. I was told that bluntly.

I appreciate the idea to meet with the Secretary because I think we really need to emphasize this point that we put forward a technical review, and were offered nothing in return as to why that technical review was deemed insufficient."

With respect to protecting the integrity of the Commission's process and ensuring our management programs are upheld by the states, Ritchie White and Dennis Abbott, NH Governor Appointee and Legislative Proxy, respectively, and Robert Boyles (SC DNR) shared the following:

Mr. White: "I think we have to take the Secretary of Commerce out of our process, and what I mean by that is we have to not have noncompliance findings. The states have to think long and hard before entering into this, and thinking about what I believe will be a short-term gain for a state that may not be a long-term gain for interstate management. I think it's up to us to make sure that this system is solid and goes forward, and that we don't use this change in political decisions to advance what we might perceive as a short-term gain for our individual state."

Rep. Abbott: "In the end, I think that the states really have to consider placing the Compact above their individual state issues. It may be difficult, as it was in this case difficult for Massachusetts and New York to go along with essentially what the federal government agency told us when we had to cut back on summer flounder catch...But the states really have to look at the big picture and look at the damage that was done. We can say that this is a one-issue or one-time thing. But it doesn't work that way. There are always precedents. I'm concerned and I think that at the end of the day it's very important that we place the Compact above all else."

Mr. Boyles: "Representative Abbott, thank you for what I would like to consider a great segue way to my remarks. Mr. Chairman, I think it's important that we recognize that the very Constitution of this great nation holds matters of interstate commerce to be the purview of the federal government. In the early 1940s when the country was engaged in some distractions around the globe, the Congress in its wisdom

continued on page 10

Species Profile: Spot

Introduction

Spot directly support recreational and commercial fisheries in the U.S. Mid- and South Atlantic and function as an important forage species in the region. The range of this short-lived species includes brackish and saltwater habitats predominately between Chesapeake Bay and South Carolina. Annual variation in landings, typically composed of fish belonging to a single year class, is due in part to the prevailing environmental conditions at spawning and nursery sites. Small-sized spot remain a major component of the bycatch (or inadvertent catch of undersized or unwanted fish) associated with seine, trawl, and pound net fisheries in the Chesapeake Bay and North Carolina, as well as that of the South Atlantic shrimp trawl fishery. While substantial reductions in the magnitude of bycatch have occurred in the shrimp trawl fishery since the introduction of bycatch-reducing devices in the 1990s, this fishery continues to be the largest single contributor to removals (harvest and bycatch from all sources) of spot, annually.

Life History

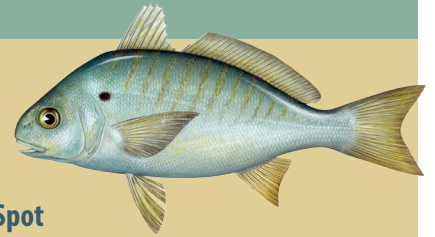
Spot occur along the U.S. Atlantic coast in estuarine and coastal waters from the Gulf of Maine to Florida, although they are most abundant from Chesapeake Bay south to South Carolina. Spot migrate seasonally, entering bays and estuaries in the spring where they remain until late summer or fall when they move offshore to spawn. Spot typically mature between the ages of one and two, at lengths of 5.5 to 8.5 inches. Their maximum life span is about six years, although fish older than three years are uncommon.

Spawning takes place in the ocean from fall to early spring and the post-larvae move into estuaries, utilizing low salinity tidal creeks where they develop into juveniles. As spot grow, they move toward higher salinity areas during the summer and early fall and offshore in the fall as water temperatures decrease. Those that summered in the northern portion of their range also move south in the autumn. Spot are opportunistic bottom feeders, eating mainly worms, small crustaceans and mollusks, and decaying organic material. Post-larvae prey on plankton but become bottom feeders as juveniles or adults. Predators such as striped bass, weakfish, summer flounder, bluefish, and sharks eat them in turn.

Commercial & Recreational Fisheries

Spot support commercial fisheries along the Atlantic coast, particularly from Chesapeake Bay southward. They are harvested by a variety of commercial gears including haul seines, pound nets, gillnets, and trawls. Commercial catches fluctuated widely between 1950 and the early 1980s, ranging from 3.9 to 14.5 million pounds. Such variability is expected because spot are a short-lived species and catch in most years consists of a single year class, the strength of which appears to be determined by environmental conditions that prevail on the spawning and nursery grounds in any particular year. Commercial landings have, overall, decreased from historic levels, with the five lowest years for the entire commercial landings record back to 1950 occurring from 2006-2015.

Species Snapshot



Spot
Leiostomus xanthurus

Common Names: Norfolk spot, flat croaker, golden croaker, spot croaker, silver gudgeon, goody, chub, roach, jimmy

Management Unit: Delaware to Florida

Interesting Facts:

- Spot travel in huge (>100 fish), slow moving schools over sand-mud bottom.
- Spot are the only member of the drum family, which includes weakfish, red and black drum, and croaker, with a forked tail.
- Spot tend to live longer and attain greater size in the northern extent of their range.

Largest Recorded:

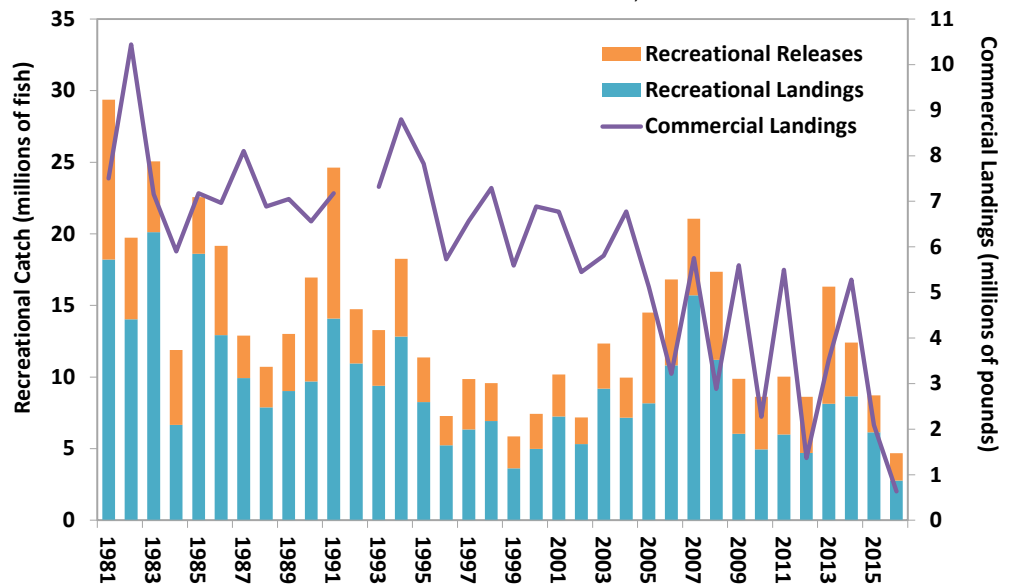
2 pounds, 6 ounces (Poquoson, VA, 1980)

Life Span: 6 years

Stock Status: Unknown

Spot Recreational Catch & Commercial Landings

Source: ACCSP Data Warehouse, 2017



*Commercial landings from 1992 are confidential under current policies.

Timeline of Management Actions: FMP ('87); Omnibus Amendment ('11); Addendum I ('14)

Spot is a popular recreational species sought by anglers from Delaware Bay to northern Florida. Most of the Atlantic recreational harvest is taken within three miles of the coast, from shore or by private or rental boats rather than by party or charter boats. Recreational harvest has fluctuated from a high of 6.9 million pounds in 1981 to a low of 1.6 million pounds in 1999. From 2006-2015, recreational harvest has averaged 3.4 million pounds, and has exceeded commercial landings in five years during this timeframe.

Stock Status

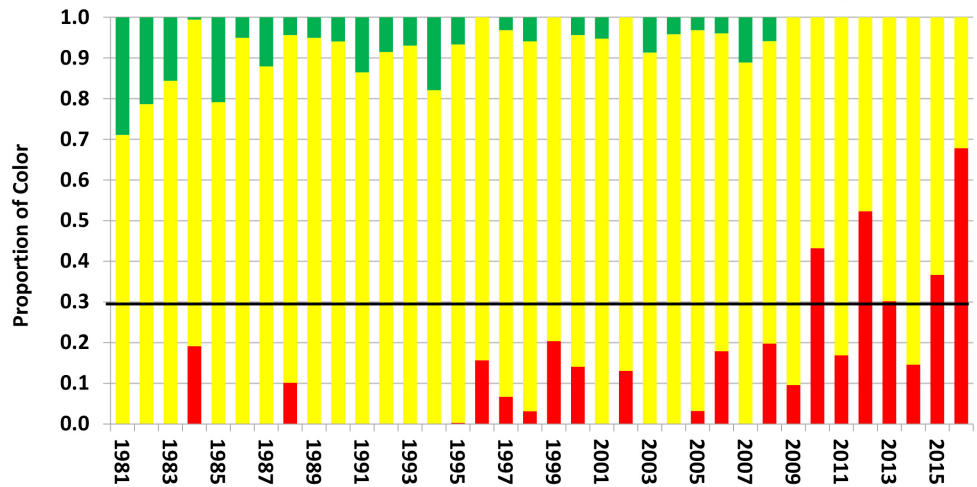
In August 2017, the Commission's South Atlantic State/Federal Fisheries Management Board received the findings of the 2017 Spot Benchmark Stock Assessment and Peer Review Report. While the assessment was not endorsed by an independent panel of fisheries scientists (Peer Review Panel) for management use, the Panel agreed with the general results of the assessment that immediate management actions are not necessary. The Panel recommended continued use of the annual traffic light analysis (TLA) that was established in 2014 to monitor fishery and resource trends, and implement management measures, as needed, for spot.

The Panel acknowledged several improvements with regard to the estimation and inclusion of dead discards from the Southeastern US shrimp trawl fishery. Estimates of these discards indicate they account for a large majority of fish removed from the population annually (via directed and non-directed fishing activities) for both Atlantic croaker and spot. The Panel recommended continued monitoring of these discards and potential inclusion or consideration of these discards in the annual TLA conducted for spot.

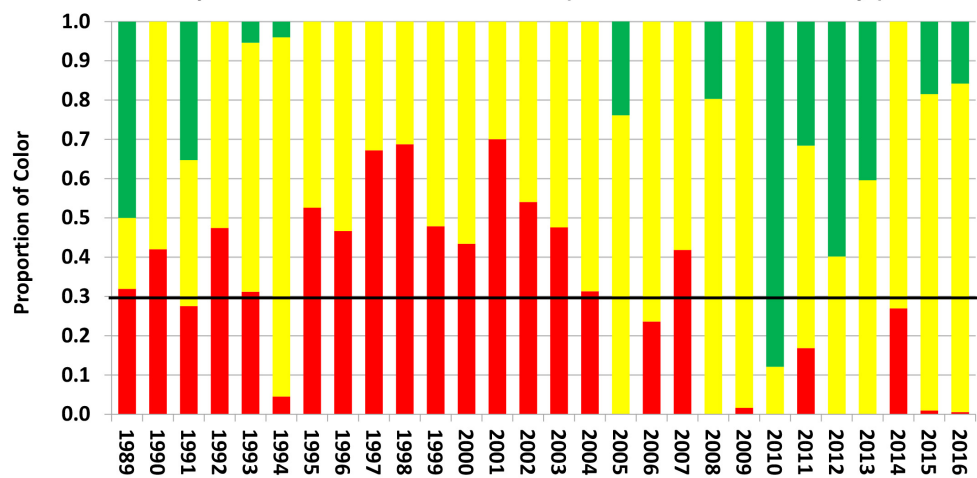
A key issue causing uncertainty in the results of the assessment was the disagreement between recent trends in harvest and abundance. Trends in stock abundance for spot are estimated through several federal and state fishery-independent surveys. Typically, if these surveys catch a relatively large number of spot, that would indicate a greater number of spot available to be harvested by their directed fisheries. Thus, scientists and managers would expect a greater abundance of spot would also be reflected through an increase in harvest for that year. Similarly, a decrease in abundance would be expected to be coupled with a decrease in harvest. However for spot, recent harvest numbers are declining while estimated abundance is increasing.

A similar trend is evident in the 2016 TLA for spot. The TLA assigns a color (red, yellow, or green) to categorize relative levels of indicators of the condition of the fish population (abundance metric) or fishery (harvest metric). For example, as harvest increases relative to its long-term mean, the proportion of green in a given year will increase, and as harvest decreases, the amount of red in that year will increase. Under Addendum II to Amendment 1 for Atlantic Croaker and Addendum I to the Omnibus Amendment for Spot, state-specific management action would be initiated when the proportion of red exceeds the specified thresholds (for both harvest and abundance) over two consecutive years for spot.

Spot TLA Harvest Metric (Commercial and Recreational Landings)



Spot TLA Adult Abundance Metric (NMFS and SEAMAP Surveys)



Management response is triggered when proportion of red exceeds the 30% threshold level for two consecutive years in both fishery characteristics (harvest and abundance metrics).

continued, see SPOT on page 15

Whether initiated by the forecast model or a default date, the spawning closure lasts four weeks. If more than 25% of sampled fish are still in spawning condition when the fishery is reopened, the fishery will reclose for another two weeks.

For more information, please contact Toni Kerns, ISFMP Director, at tkerns@asmfc.org or 703.842.0740.



KEY TERMS

GSI (Gonadosomatic Index): The ratio of a female fish's ovary weight to its body weight. This value increases in a predictable way as female fish approach spawning.

Forecasted Closure Date: The date when GSI is projected to exceed the GSI trigger value. It is used as the starting date for the spawning area closure (assuming there is enough data to allow for a prediction).

GSI Trigger Value: When the forecasted GSI crosses this value, the spawning area closure begins. A value near the high end of observed GSI for mature female fish was selected by the ASMFC Herring Section because it represents a compromise between protecting pre-spawning fish and providing adequate coverage for the majority of the population.

Default Closure Date: A preselected date at which the spawning closure begins, if not enough samples have been collected to forecast a closure date. This represents the average date when population has crossed GSI Trigger Value in past years.

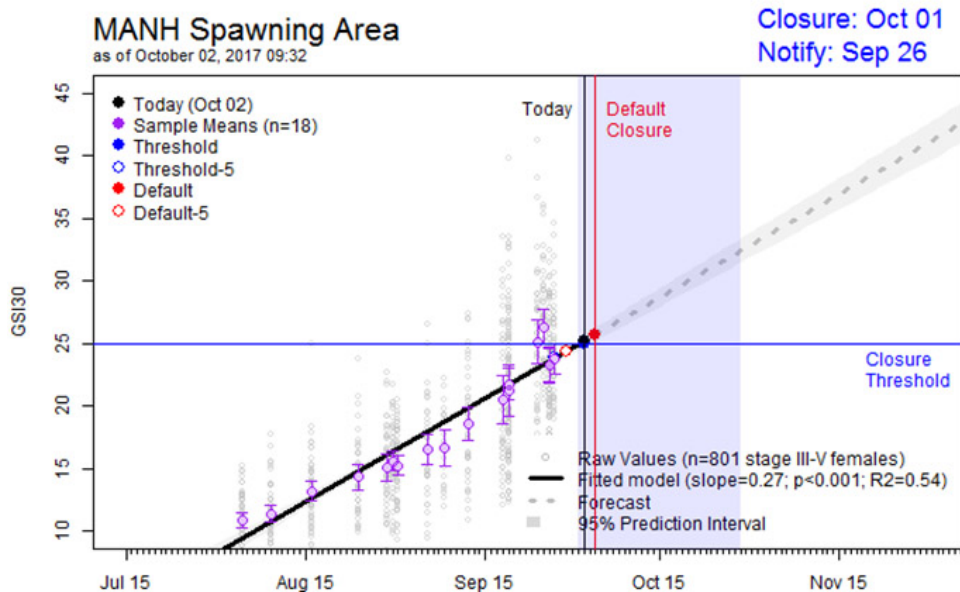


Figure 2. Modeling Projection of the Spawning Area Closure Date for Massachusetts-New Hampshire. Similar projections can be found for Eastern and Western Maine at <http://www.massmarinefisheries.net/herring/>. All projections on this webpage may be updated due to new data.

Key: The purple points show the average GSI of female fish on each day they are sampled and are used to plot a line predicting average GSI for the population over the next couple months. The GSI trigger value (closure threshold) is a preselected GSI value, and when the population's average GSI crosses that threshold, the spawning area closure begins. If not enough samples can be collected by the time the default closure date comes, that is the date used for the start of the spawning area closure.

ASMFC 76th Annual Meeting

Norfolk Waterside Marriott

October 16-19, 2017

The Annual Meeting Final Agenda and public comment guidelines are available on the website at <http://www.asmfc.org/home/2017-annual-meeting>

American Lobster Board Initiates Addendum to Increase Resiliency of the Gulf of Maine/Georges Bank Stock

The Commission's American Lobster Management Board has initiated Draft Addendum XXVII to Amendment 3 to the Interstate Fishery Management Plan for American Lobster. The Draft Addendum seeks to increase the resiliency of the Gulf of Maine/Georges Bank (GOM/GBK) stock by considering the standardization of management measures across Lobster Conservation Management Areas (LCMAs). This is a proactive management action and is in response to signs of reduced settlement. Initiating an addendum charges the Plan Development Team (PDT) with developing management alternatives for consideration in the Draft Addendum.

The American lobster fishery is one of the largest and most valuable fisheries along the Atlantic coast. In 2016, over 158 million pounds were landed coastwide totaling \$666 million in ex-vessel value. The vast majority of harvest occurs within the GOM/GBK stock area, with over 130 million pounds landed in Maine alone. Since 2012, settlement surveys for the GOM/GBK stock

have indicated a consistent decreasing trend in young-of-year lobster. This decrease could foreshadow a decline in recruitment and landings. Given the high value of the fishery and the economic importance of the fishery to coastal communities throughout New England, the Board initiated Draft Addendum XXVII as a proactive response to build resiliency in the stock.

The Draft Addendum will consider, to the extent possible, the development of consistent management measures for the GOM/GBK stock, including gauge size and v-notch definitions. Currently, disparate regulations allow lobsters protected in one LCMA to be harvested in another LCMA. A uniform set of regulations would add an additional biological buffer to the stock through the protection of spawning stock biomass across LCMAs. In addition, this action may address enforcement concerns, particularly regarding the sale and transfer of lobsters across state lines which are subject to different minimum gauge sizes. The PDT will provide an update on the

development of Draft Addendum XXVII at the Commission's Annual Meeting in October.

Regarding the Southern New England stock, the Board decided to not move forward with Addendum XXV for management use at the current time. After considering the proposals put forth by the Lobster Conservation Management Teams (LCMTs) and Technical Committee input, the Board was divided in its support of the Draft Addendum. Some members felt the proposed measures did not go far enough to protect the stock, while others were concerned the majority of LCMT proposals would not achieve the required 5% increase in egg production. Others believed significant reductions have already occurred in the fishery and no further action was needed. Ultimately, the Board decided to establish a Workgroup to discuss ways to manage SNE lobster.

For more information, please contact Megan Ware, Fishery Management Plan Coordinator, at mware@asmfc.org.



ASMFC & MAFMC Modify Scup Specifications for 2018 and 2019

The Commission and the Mid-Atlantic Fishery Management Council (Council) reviewed previously approved specifications for summer flounder, black sea bass and bluefish fisheries and modified 2018 and 2019 specifications for scup. The Commission's actions are final and apply to state waters. The Council will forward its federal waters recommendations regarding scup specifications to NOAA Fisheries Greater Atlantic Regional Fisheries Administrator for final approval.

The accompanying table summarizes commercial quotas and recreational harvest limits (RHL) for summer flounder, scup, black sea bass, and bluefish (2017 values are provided for comparison purposes). Please note the 2019 scup specifications may be adjusted based on changes in the fishery or new scientific information.

Scup

The scup stock assessment update, which includes data through 2016, indicates the stock was not overfished and overfishing was not occurring in 2016. Spawning stock biomass was estimated to be 206% of the biomass target. Given the desire to maintain stable measures and take into account management uncertainty raised by the Monitoring Committee, the Commission and Council approved a commercial quota of 23.98 million pounds (a 30% increase from the 2017 quota), and a RHL of 7.37 million pounds (a 34%

increase from the 2017 RHL) for the 2018 and 2019 fishing seasons. The difference between the increases in the commercial quota and RHL is due to projected discard estimates for the commercial and recreational fisheries.

Summer Flounder

For summer flounder, the Commission and Council received a data update, including catch, landings, and survey indices through 2016. The Council and Board maintained the previously approved 2018 specifications based on stock projections from the 2016 assessment update. A benchmark stock assessment is scheduled for peer review in late 2018. A working group is being formed to develop alternative modeling approaches to be considered in the assessment. The Commission and Council were also presented a range of commercial alternatives for possible consideration in the Draft Summer Flounder Amendment. Based on feedback from both bodies, work will continue on the development of management alternatives for permits and latent effort, as well as commercial allocation. The Board and Council will decide which management alternatives to include in the document at a later meeting.

Black Sea Bass

The Commission and Council received a data update for black sea bass, including catch, landings, and survey indices through

2016. The update indicates black sea bass biomass continues to be high, and the 2015 year class appears to be above average. The Commission and Council maintained 2018 specifications, which were set in February 2017 based on stock projections from the 2016 assessment update. An assessment update is tentatively scheduled for 2018.

Bluefish

The Commission and Council also maintained 2018 specifications for bluefish. The 2018 commercial quota and recreational harvest limit are preliminary and will likely change following release of 2017 final Marine Recreational Information Program harvest estimates. These estimates can impact how much is transferred from the recreational sector to the commercial sector. An assessment update is scheduled for 2018.

For all four species, the Commission and Council actions are consistent with the recommendations of the Council's Scientific and Statistical Committee based on the best available scientific information. For more information about summer flounder, scup, or black sea bass, please contact Kirby Rootes-Murdy, Senior FMP Coordinator, at krootes-murdy@asmfc.org. For more information about bluefish, please contact Max Appelman, FMP Coordinator, at mappelman@asmfc.org.

Species	Year	Commercial Quota (millions of pounds)	Commercial Minimum Fish Size (TL)	Commercial Diamond Mesh Size	Recreational Harvest Limit (millions of pounds)
Summer Flounder	2017	5.66	14"	5.5"	3.77
	2018	6.63	14"	5.5"	4.42
Scup	2017	18.38	9"	5"	5.50
	2018	23.98	9"	5"	7.37
	2019	23.98	9"	5"	7.37
Black Sea Bass	2017	4.12	11"	4.5"	4.29
	2018	3.52	11"	4.5"	3.66
Bluefish	2017	8.54	Varies by state		9.65
	2018	7.24	Varies by state		11.58



Photo (c) Bryan Gratwicke

Atlantic Menhaden

In August, the Atlantic Menhaden Management Board approved Draft Amendment 3 to the Interstate Fishery Management Plan (FMP) for Atlantic Menhaden for public comment. The Draft Amendment seeks to manage the menhaden resource in a way that balances menhaden's ecological role as a prey species with the needs of all user groups. To this end, the Draft Amendment considers the use of ecosystem reference points (ERPs) to manage the resource and changes to the allocation method. In addition, it presents a suite of management options for quota transfers, quota rollovers, incidental catch, the episodic events set aside program, and the Chesapeake Bay reduction fishery cap.

The 2015 Benchmark Stock Assessment Report identified the development of ERPs as a high priority for Atlantic menhaden management. Menhaden serve an important role in the marine ecosystem as prey for a variety of species including larger fish (e.g. weakfish, striped bass), birds (e.g. bald eagles, osprey), and marine mammals (e.g. humpback whales, bottlenose dolphins). As a result, changes in the abundance of menhaden may impact the abundance and diversity of predator populations, particularly if the availability of other prey is limited. ERPs provide a method to assess the status of menhaden within the broad ecosystem context. Draft Amendment 3 provides a variety of reference point options, including the continued development of menhaden-specific ERPs as well as the application of precautionary guidelines for forage fish species.

Draft Amendment 3 also considers changes to the allocation method given concerns that the current approach may not strike an appropriate balance between gear types and jurisdictions. Specifically, under the current allocation method, increases in the total allowable catch (TAC) result in limited benefits to small-scale fisheries, and to several states. Furthermore, the current method may not provide a balance between the present needs of the fishery and future growth opportunities. Draft Amendment 3 considers a range of allocation alternatives, including a dispositional quota (bait vs. reduction), fleet-capacity quota (quota divided by gear type), jurisdictional quota, including a fixed minimum quota for each state, and an allocation method based on the TAC. In addition, the document considers five allocation timeframes including 2009-2011, 2012-2016, 1985-2016, 1985-1995, and a weighted approach which considers both historic and recent landings.

The Draft Amendment is available at http://www.asmf.org/files/PublicInput/AtlanticMenhadenDraftAmendment3_PublicComment.pdf or via the Commission website, www.asmf.org (under Public Input). Fishermen and other interested groups are encouraged to provide input on the Draft Amendment either by attending state public hearings (see sidebar for schedule) or providing written comment. Public comment will be accepted until 5:00 PM (EST) on October 24, 2017 and should be forwarded to Megan Ware, FMP Coordinator, 1050 N. Highland St, Suite A-N, Arlington, VA 22201; 703.842.0741 (FAX) or at comments@asmfc.org (Subject line: Draft Amd. 3). Organizations planning to release an action alert in response to Draft Amendment 3 should contact Megan Ware at 703.842.0740.

Final action on the Amendment, as well as specification of the 2018

TAC, is scheduled to occur on November 13-14 at the BWI Airport Marriott, 1743 West Nursery Road, Linthicum, MD. For more information, please contact Megan Ware, Fishery Management Plan Coordinator, at mware@asmfc.org.

Cobia

In August, the South Atlantic State/Federal Fisheries Management Board approved the Draft Interstate Fishery Management Plan (FMP) for Atlantic Migratory Group (AMG) Cobia for public comment. The intent of the Draft FMP is to complement federal AMG cobia management actions and distribute catches among member states through a proposed allocation strategy.

The Draft FMP was initiated in response to recent overages of the federal annual catch limit (ACL) for AMG Cobia. The Draft FMP addresses immediate management and conservation goals in anticipation of a new benchmark AMG cobia stock assessment in 2018. Management options include size, bag, and vessel limits to complement federal measures along with proposed de minimis options for Mid-Atlantic states (Maryland through New York) whose landings are minimal or episodic.

The most significant change may come in the form of state-specific recreational allocations. The current ACL for AMG cobia is 670,000 pounds (620,000 pound recreational ACL and a 50,000

pound commercial quota). Managing the recreational ACL on a coastwide basis has resulted in federal closures and significant overages in 2015 and 2016, disrupting fishing opportunities and jeopardizing the health of the stock. The Draft FMP contains a number of proposed options to allocate a recreational harvest limit (equal to the



Photo (c) Scott Smith, NC DMF

continued, see FISHERY MANAGEMENT ACTIONS on page 16

FROM THE EXECUTIVE DIRECTOR'S DESK (continued)

decided that there is a lot to be gained by states sitting in a body like this to cooperate, to commit to one another to work together on problems, challenges, and opportunities.

In 1993, Congress established the Atlantic Coastal Act; that really put that idea, that concept, that ideal of interstate cooperation into what I would argue is a more mature, modern, cooperative venue with both the carrot to encourage cooperation, as well as a stick to ensure cooperation once a decision had been made.

Clearly, South Carolina doesn't sit on the Summer Flounder Board, and so our interest in that particular management board may not be as great as other states. But I too share Representative Abbott's concerns about the efficacy of this institution as a place where we can come together and work through problems, work through disagreements, and really provide a stable and a vigorous forum for discussions on how to manage these great resources that we are blessed to have the privilege of being stewards of.

With that, Mr. Chairman, I just would like to quote Dr. Franklin, who just before signing the Declaration of Independence remarked, as he concluded his comments, "We must indeed all hang together, or most assuredly we shall all hang separately." I think I speak for my colleagues in South Carolina that we're disappointed with what has brought us here.

But from our perspective, we remain committed to this Compact. We remain committed to each other in terms of the belief that the states are the best place for these decisions to be made, and we will do our best to ensure that folks around here feel like they get a fair hearing. We are committed to continued cooperation."

Both Tom Fote, New Jersey Governor's Appointee, and Adam Nowalsky, the state's Legislative Proxy, shared New Jersey's perspective on the issue, including challenges with the current recreational fisheries management system.

Mr Fote: "I don't take going out of compliance lightly...As a matter of fact, years ago, because of my role as a legislative proxy on one of the Boards, I voted New Jersey out of compliance. I took it seriously, and felt that they should put in the regulation.

...But I also look at the way the law was written. The law was written for a particular purpose to basically help the Compact work, and it gave us a lot of power, an extreme lot of power to basically shut a state down by automatically going to the Secretary of Commerce. But it also laid on the Secretary of Commerce to be the arbitrator sometimes, to look at what he thinks is the right move to make. I don't think the process failed us. They've supported us all the time. They've sent the

letter to New Jersey every time they agreed with the Commission's finding. But this time they thought there was something valid with the arguments we made.

To say the whole system is broken because of one instance where the Secretary of Commerce looks at an issue, felt that maybe it wasn't, with taking all the facts that were put out.

Mr. Nowalsky: "One of the biggest criticisms I've heard of the Secretary's decision is that somehow there is a sense that an individual state won here. We all lost; everyone around this table! I would make the argument NOAA Fisheries, and even the Secretary of Commerce for being forced to get involved in this, and New Jersey lost.

For the first year in 18 years, I'm not running my own vessel this year. It didn't matter if it was three fish at 19 inches or three fish at 18 inches, with almost a month less season. Neither of those regulations served the public; and worse than that when we put forth a proposal that acknowledges that it kills more fish through discards than harvest. We are certainly not serving the resource we claim so ardently to protect.

The concerns about wanting to protect the process -- that's all well and good, when the process is working. But when it comes to recreational fisheries management, the process is not working. It's not, and it's unfortunate that it's had to come to this, and I certainly understand a lot of the criticisms are coming from those states that have not been as impacted by the recreational problems with data collection.

But sometimes it's okay to go ahead, have those concerns, have a third party step in, which is essentially what happened in this case, say take another look at what we're doing. I hope, I truly hope that we can use this as a stepping stone to something better. I sincerely hope that we can look at the information that was provided by the Secretary, and use that as a building block in making our appeals process stronger. Most importantly, recognizing that second element of the noncompliance findings, are the measures that we seek to enforce truly about conservation of the resource?"

Ultimately, Commissioners agreed to seek ways to protect the process, with the first step being a face-to-face meeting with the Secretary of Commerce. At that meeting, the Commission will request to have the Secretarial review process better defined. Specifically, we will seek a process that makes transparent, fully informed, science-based decisions. The Commission will also seek to work with our federal partners to better address the unique challenges of managing recreational fisheries.

The full Policy Board proceedings can be found on the Commission's You Tube Channel at <https://tinyurl.com/yax4vt5x>.

ASMFC Releases Stock Assessment Updates for Atlantic Menhaden and River Herring

In August, the Atlantic Menhaden Board and Shad and River Herring Board were presented the results of stock assessment updates for menhaden and river herring, respectively. Stock assessment updates differ from benchmark stock assessments in that benchmark stock assessments are a full analysis and review of stock condition, focusing on the consideration of new data sources and newer or improved assessment models. This type of assessment is generally conducted every 3-5 years and undergoes a formal peer review by a panel of independent scientists who evaluate whether the data and the methods used to produce the assessment are scientifically sound and appropriate for management use. In between benchmark assessments, the Commission also conducts stock assessment updates, which incorporate data from the most recent years into a peer-reviewed assessment model to determine current stock status (abundance and overfishing levels).

The findings of the Atlantic menhaden and river herring assessment updates are provided below. More detailed overviews of both updates, as well as links to the assessment updates, can be found on the Commission's website, www.asmfc.org, on the respective species pages under Stock Assessment Reports.

Atlantic Menhaden: Resource Remains Healthy; Not Overfished Nor Experiencing Overfishing

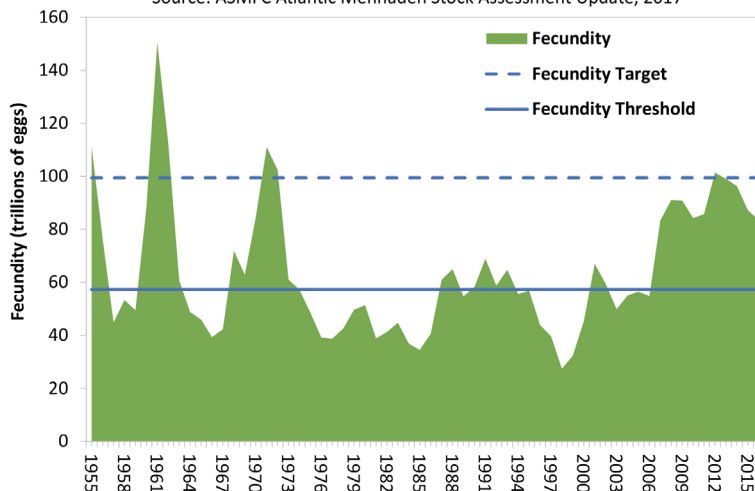
The results of the 2017 Atlantic Menhaden Stock Assessment Update indicate the resource remains healthy; it is not overfished nor experiencing overfishing relative to the current biological reference points. In 2016, population fecundity, a measure of reproductive capacity, is estimated to be 83,486 billion eggs which is well above the threshold (57,295 billion eggs) but below the target (99,467 billion eggs). Additionally, total fishing mortality is estimated to be 0.51, below both the fishing mortality threshold (1.85) and target (0.80). The stock assessment update uses the same modeling approach as the 2015 Atlantic Menhaden Benchmark Stock Assessment but added additional years of data from 2014-2016.

While the stock status was assessed in the same way as the 2015 benchmark report, the reference point values have changed. Adding additional years of data to the model resulted in generally higher fishing mortality values throughout the times series which changed the scale of the reference points. While the scale is different and

CONTINUED, see SCIENCE HIGHLIGHT on page 13

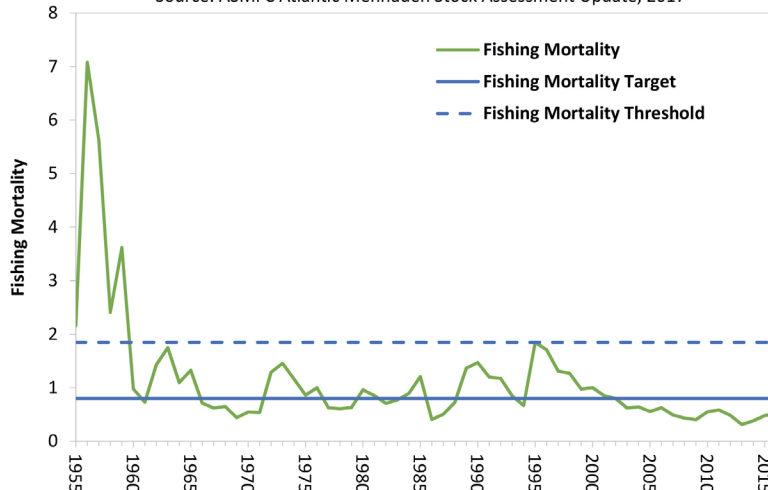
Atlantic Menhaden Fecundity

Source: ASMFC Atlantic Menhaden Stock Assessment Update, 2017



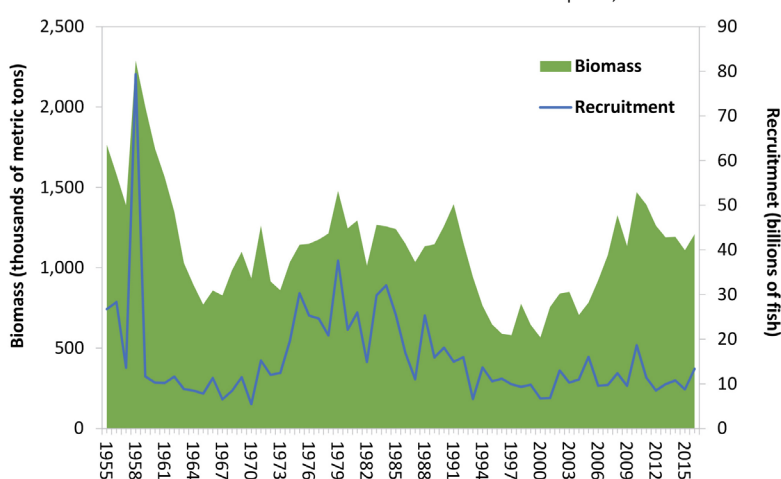
Atlantic Menhaden Fishing Mortality (Ages 2-4)

Source: ASMFC Atlantic Menhaden Stock Assessment Update, 2017



Atlantic Menhaden Biomass and Recruitment

Source: ASMFC Atlantic Menhaden Stock Assessment Update, 2017



ACCSP Submits Regional Recreational Implementation Plan to NOAA Fisheries MRIP

ACCSP recently submitted its Atlantic Coast Recreational Implementation Plan to NOAA Fisheries' Marine Recreational Information Program (MRIP) for final review. In the plan, the ACCSP identifies its top six priorities for improving recreational data collection on the Atlantic coast. MRIP will use the plan to allocate resources strategically, addressing the data needs of fishery scientists and managers in the Atlantic coast region. MRIP is responsible for developing and implementing data collection programs used to estimate total recreational catch and effort in U.S. waters. Scientists and managers use these data along with commercial catch and biological research data to assess and maintain sustainable fish stocks. In recent years, controversy surrounding the management of several fisheries, including red snapper in the Gulf and summer flounder in the Atlantic, has highlighted the statistical uncertainty and perception problems associated with recreational data collection and estimate generation. MRIP is working to address this by improving its data collection programs and building stakeholder confidence through outreach.



Photo (c) Dave Bard, NOAA Fisheries

In addition to MRIP, state and regional programs have been developed over time to provide finer-scale recreational data, i.e., for specific species or geographical areas. Considering the heterogeneity of data collection programs across the U.S. coasts, MRIP has adopted a regional approach to recreational data improvement. To gain a better understanding of each region's recreational data needs, MRIP solicited input from the regional Fisheries Information Networks (FINs), requesting each region's recreational data priorities. As the Atlantic FIN, MRIP requested that ACCSP compile the Atlantic coast's priorities. Staff coordinated the first draft of the plan, then presented it to ACCSP's Recreational Technical Committee (RTC) for revision and approval by the ACCSP Coordinating Council.

As a body comprised of state, federal, Commission, and council fisheries managers and data experts, the RTC provides a good mechanism for coordinating cross-jurisdictional discussions on ways to improve the quality and coverage of recreational data. At the committee's annual meeting, RTC members reviewed current

regional data programs and reached consensus on six priorities for improving recreational data collection on the Atlantic coast over the next five years:

1. Improve precision (PSE) of MRIP catch estimates
2. Comprehensive for-hire data collection and monitoring
3. Improved recreational fishery discard and release data (Equal Priority as above)
4. Biological sampling for recreational fisheries separate from MRIP Access Point Angler Intercept Survey
5. Improved spatial resolution and technical guidance for post-stratification of MRIP estimates
6. Improved timeliness of recreational catch and harvest estimates

More details on potential methods for achieving these priorities, as well as estimated costs, are provided in the draft Atlantic Coast Recreational Implementation Plan that has been submitted to MRIP. You can access the draft here - <http://www.accsp.org/content/atlantic-coast-recreational-implementation-plan>.



ACCSP is a cooperative state-federal program focused on the design, implementation, and conduct of marine fisheries statistics data collection programs and the integration of those data into a single data management system that will meet the needs of fishery managers, scientists, and fishermen. It is composed of representatives from natural resource management agencies coastwide, including the Atlantic States Marine Fisheries Commission, the three Atlantic fishery management councils, the 15 Atlantic states, the Potomac River Fisheries Commission, the D.C. Fisheries and Wildlife Division, NOAA Fisheries, and the U.S. Fish & Wildlife Service. For further information please visit www.accsp.org.



Photo (c) NC DMF

the trend differs in some years, the stock status for both fishing mortality rate and fecundity has been similar over the past decade.

Atlantic menhaden is harvested by both commercial reduction and bait fisheries. In 2013, Amendment 2 to the Fishery Management Plan implemented a total allowable catch (TAC) of 170,800 metric tons (mt). The coastwide TAC was increased by 10% to 187,880 mt for the 2015-2016 fishing years and by

another 6.45% to 200,000 mt for the 2017 fishing year. In 2016, reduction landings were 137,400 mt and accounted for approximately 76% of coastwide landings and bait landings were 43,100 mt and comprised 24% of coastwide landings.

For more information, please contact Megan Ware, Fishery Management Plan Coordinator, at 703.842.0740 or mware@asmfc.org.

River Herring Remain Depleted on a Coastwide Basis Though Improvements Have Occurred in Several River Systems

Also in August, the Shad and River Herring Management Board reviewed the results of the 2017 River Herring Assessment Update, which indicates river herring remain depleted and at near historic lows on a coastwide basis. The “depleted” determination was used instead of “overfished” and “overfishing” because many factors, not just directed and incidental fishing, are contributing to the low abundance of river herring.

Alewife and blueback herring (collectively referred to as river herring) are anadromous species, spending the majority of their life at sea and returning to their natal streams to spawn. While at sea, mixing is believed to occur among multiple river-specific stocks and the incidental catch of river herring in non-targeted ocean fisheries is known to include both immature and mature fish.

The stock assessment update applied the same approaches used in the previous benchmark stock assessment with the incorporation of additional years of data (2011-2015). Of the 54 river herring stocks for which data were available, 16 experienced increasing abundance trends, 2 experienced decreasing abundance trends, 8 experienced stable abundance, 10 experienced no discernible trends in abundance due to high variability, and 18 did not have enough data to assess recent abundance trends (see accompanying table).

Abundance Trends of Select Alewife and Blueback Herring Stocks along the Atlantic Coast from the 2012 Benchmark Assessment and 2017 Assessment Update

State	River	Benchmark Trends (2001-2010)	Updated Recent Trends (2006-2015)
NE U.S. Continental Shelf (NMFS Bottom Trawl) [^]		NA	Increasing ^{A,B}
ME	Androscoggin	Unknown ^A	Increasing ^A
	Kennebec	Unknown ^{RH}	Increasing ^{RH}
	Sebecoocook	Unknown ^A	Increasing ^{RH}
	Damariscotta	Stable ^A	Increasing ^A
	Union	Stable ^A	No Trend ^A
NH	Cocheco	Stable ^{A,B}	Increasing ^{A,B}
	Exeter	Unknown ^{A,B}	Stable ^{RH}
	Lamprey	Increasing ^A	Increasing ^{RH}
	Oyster	Stable ^B	Decreasing ^{RH}
	Taylor	Decreasing ^B	No Returns ^{RH}
	Winnicut	Unknown ^{A,B}	Unknown ^{A,B}
MA	Mattapoissett	Unknown ^A	Increasing ^A
	Monument	Unknown ^A	Increasing ^{A,B}
	Nemasket	Unknown ^A	Increasing ^A
	Parker	Unknown ^A	Stable ^A
	Stony Brook	Unknown ^A	Unknown ^A
RI	Buckeye	Unknown ^A	Increasing ^A
	Gilbert	Decreasing ^A	Stable ^A
	Nonquit	Decreasing ^A	Decrease ^A
CT	Bride Brook	Unknown ^A	Increasing ^A
	Connecticut	Decreasing ^B	Stable ^B
	Farmington	Unknown ^{A,B}	Unknown ^{A,B}
	Mianus	Unknown ^{A,B}	No Trend ^A , Increasing ^B
	Mill Brook	Unknown ^A	No Trend ^A
	Naugatuck	Unknown ^{A,B}	Unknown ^{A,B}
Shetucket	Unknown ^{A,B}	No Trend ^A , Stable ^B	
NY	Hudson	Stable ^{A,B}	Increasing ^{RH}
NJ, DE, PA	Delaware	Unknown ^{A,B}	No Trend ^{A,B}
MD, DE	Nanticoke	Decreasing ^{A,B}	Stable ^A , No Trend ^B
VA, MD, DC	Potomac	Unknown ^{A,B}	Stable ^A , Unknown ^B
VA	James	Unknown ^{A,B}	Unknown ^{A,B}
	Rappahannock	Unknown ^{A,B}	No Trend ^A , Increasing ^B
	York	Unknown ^{A,B}	Unknown ^{A,B}
NC	Alligator	Unknown ^{A,B}	Unknown ^{A,B}
	Chowan	Stable ^{A,B}	No Trend ^A , Stable ^B
	Scuppernong	Unknown ^{A,B}	Unknown ^{A,B}
SC	Santee-Cooper	Increasing ^B	No Trend ^B
FL	St. Johns River	NA	Unknown ^B

[^]NE shelf trends are from the spring, coastwide survey data which encounters river herring more frequently than the fall survey. A = Alewife only; B = Blueback herring only; A,B = Alewife and blueback herring by species; RH = alewife and blueback herring combined.

continued, see SCIENCE HIGHLIGHT on page 14

SCIENCE HIGHLIGHT continued from page 13

While status on a coastwide basis remains unchanged, there are some positive signs of improvement for some river systems, with increasing abundance trends for a number of rivers in the Mid-Atlantic throughout New England region. While abundance in these river systems are still at low levels, dam removals and improvements to fish passage have had a positive impact on run returns. Since the completion of the 2012 assessment, NOAA Fisheries in partnership with the Commission have worked to provide state and local agencies with restoration project funding, leading to dam removals and fish passage improvement projects.

River herring are managed through Amendment 2 to the Interstate Fishery Management Plan for Shad and River Herring, with the goal of conserving and protecting river herring along the coast. The Amendment prohibited state waters commercial and recreational fisheries beginning January 1, 2012, unless a state or jurisdiction had a Sustainable Fishery Management Plan (SFMP) approved by the Board. SFMPs must clearly demonstrate that the state's or jurisdiction's river herring fisheries meet sustainability targets which must be achieved and maintained. Amendment 2 also required states to implement fisheries-dependent and independent monitoring programs, and

contains recommendations to member states and jurisdictions to conserve, restore, and protect critical river herring habitat. As of June 1, 2017, the Shad and River Herring Management Board approved sustainable fishery management plans for Maine, New Hampshire, Massachusetts, New York, and South Carolina. Upon receiving the results of the Stock Assessment Update, the Board did not take any management action at this time.

UPDATE: On August 15th, NOAA Fisheries announced it is initiating a new status review of alewife and blueback herring. The status review will evaluate the best scientific and commercial data available on the current status of the species. NOAA Fisheries uses these reviews to determine whether listing under the Endangered Species Act is warranted. Through its announcement, NOAA Fisheries is requesting submission of information on alewife and blueback herring rangewide, including any information on the status, threats, and recovery of the species that has become available since the previous listing determinations in 2013. Please submit your information by October 16, 2017, either through the [e-Rulemaking portal](#) or by mail to: Tara Trinko Lake, NOAA Fisheries Greater Atlantic Region, 55 Great Republic Drive, Gloucester, MA 01930.

Comings and Goings

STAFF

JESSICA KUESEL

On September 5th, the Commission welcomed Jessica Kuesel as its new Fisheries and Administrative Assistant (FAA) to replace Amy Hirrlinger. Jessica



recently graduated from Duke University with a double major in Biology and Environmental Science & Policy, with concentrations in marine biology and marine conservation, respectively. For her senior thesis, she studied the Pacific rockfish fishery and investigated whether current government regulations are sufficiently protecting the stock, especially with regards to market developments.

As FAA, Jessica will be providing general administrative assistance and technical support to our outreach and fisheries management programs.

CAITLIN STARKS

On August 1st, the Commission welcomed Caitlin Starks as its new Fishery Management Plan Coordinator to replace Ashton Harp. Caitlin received her Masters in Environmental



Management from Duke University, and her Bachelor of Science in Natural Resources, with a concentration in wildlife conservation and management from the University of Arizona. Last last summer she worked with small scale fishermen in Mexico to develop an aquaculture project to improve economics and restore fisheries in the area.

As FMP Coordinator, Caitlin will be coordinating species management programs for black sea bass, bluefish, shad & river herring, and tautog.

Welcome aboard, Jessica and Caitlin!



Photo (c) NOAA Photo Library

SPOT continued from page 5

The 2016 TLA for spot also shows red proportions of greater than the 30% threshold for the harvest metric (Figure 3) and 0% for the abundance metric (Figure 4), indicative of relatively low harvest and high abundance in 2016. Since thresholds were not exceeded for both metrics over the last two years, no management response is necessary for spot.

Atlantic Coastal Management

The Commission adopted the Spot Fishery Management Plan (FMP) in 1987. A major problem addressed in the FMP was the lack of stock assessment data for effective management of the resource. Basic data requirements include information on recruitment, age, size, and sex composition, and variations in these characteristics over time and space. In addition, accurate catch and effort statistics are needed from the recreational and commercial fisheries to assess the effect of fishing activities on the population. Progress has been made on collecting these data elements, but more work remains to improve current estimates for population characteristics and expand the number of usable assessment models. Fishery-independent abundance surveys are being reviewed to determine whether changes to the Atlantic croaker stock, fishery, or environmental factors are impacting these surveys' abilities to accurately represent trends in the stock. Another problem referenced in the FMP was the bycatch of spot in the South Atlantic shrimp trawl, pound net, long haul seine, and trawl fisheries. The magnitude

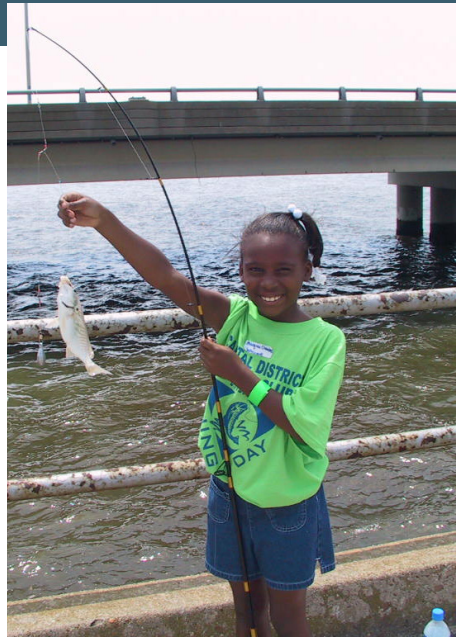


Photo (c) VMRC, 2005 Kiwanis CFC

of the problem was underestimated at the time of FMP development, although it was cited as having potentially significant effect on spot stocks. Since adoption of the original FMP, significant progress has been made in the development of bycatch reduction devices (BRDs) for shrimp trawlers. In some tests, bycatch has been reduced by 50 to 75 percent while still retaining a significant shrimp catch. Although commercial fishermen did not readily accept use of them initially because of their expense and handling problems, the devices are now used by shrimpers throughout the South Atlantic states.

Unlike the majority of the Commission's FMPs, the original Spot FMP did not contain mandatory management measures, as it was adopted prior to passage of the

Atlantic Coastal Fisheries Cooperative Management Act (1993) and adoption of the Interstate Fishery Management Program Charter (1995). As part of managing the spot resource and fishery, the Board initiated an update to the FMP in August 2009, as part of the larger Omnibus Amendment that includes spotted seatrout and Spanish mackerel as well. The Omnibus Amendment, approved by the Commission at its 2011 Summer Meeting, updated all three plans with the requirements of the Act and the Charter. The updated Spot FMP now includes yearly management triggers, using the TLA, to monitor the status of the stock until a full coastwide stock assessment that is suitable for management use can be completed. Further, the plan's adaptive management section provides the states the ability to more quickly implement management changes in the future. Each year, the South Atlantic State-Federal Fisheries Management Board reviews an assessment of the Spot FMP and the TLA, including the current year's landings and data from fishery independent surveys, to determine whether revised management action is required. Although relatively short-lived compared to other species in its family, spot plays an important role as prey and bait, as well as being a targeted fishery. These updates will ensure continued responsive and responsible management.

For more information, please contact Michael Schmidtke, FMP Coordinator, at 703.842.0740 or mschmidtke@asmfc.org.



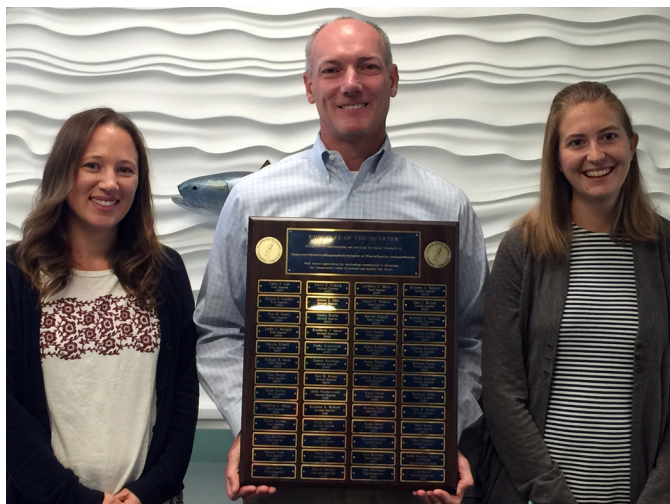
Photo (c) NJ DEP, DE River Seine Survey



Photo (c) NC Division of Parks and Recreation

Kristen Anstead & Megan Ware Named Employees of the Quarter

Each quarter the Commission honors an individual who has made notable contributions to the Commission's mission, vision, programs and activities. This quarter (July – September), due to their impressive individual and collective accomplishments, we had the pleasure of honoring two individuals – Dr. Kristen Anstead, Stock Assessment Scientist, and Megan Ware, Fishery Management Plan (FMP) Coordinator. Both are being recognized not only for their combined efforts on the 2017 Atlantic Menhaden Stock Assessment Update, but for the fact that they did so while also juggling multiple projects of equal weight and merit.



Over the past year, Kristen's tireless work ethic, dedication, and perseverance resulted in substantial progress being made on several stock assessments and fish ageing reports simultaneously. Her work on the Atlantic Menhaden Stock Assessment Update helped to provide a timely and robust scientific basis for the development of Amendment 3 to the Atlantic Menhaden FMP. As an analyst for the spot and Atlantic croaker benchmark stock assessments, Kristen exhibited ambition, thoroughness, and effective communication skills in vetting data sets, developing surplus production models and, ultimately, bringing the assessments to peer review. At the same time, Kristen has been an analyst on the Atlantic Sturgeon Benchmark Stock Assessment and the American Eel Stock Assessment Update -- the findings of both will be presented at the Commission's Annual Meeting in October. In support of American eel management and science activities, Kristen showed perseverance, professionalism, and negotiating skill in working with power companies to provide their data for the assessment update and in supporting Technical Committee reviews of aquaculture proposals. Kristen also produced two ageing reports this year that will improve the age data used in future

stock assessments for several species.

Like Kristen, Megan possesses an impressive arsenal of tools that allow her to excel at her job. Her strong work ethic, dedication to collaboration and teamwork, and passion for the species she coordinates have resulted in continued improvements to the Jonah crab management program, a thorough vetting of issues and options with regards to the rebuilding of Southern

New England lobster, and early efforts to improve lobster harvester reporting and biological data collection. Additionally, she has begun to work on an addendum to increase the resiliency of the Gulf of Maine/Georges Bank lobster stock given signs of reduced settlement. All this while also contributing to the Atlantic Menhaden Stock Assessment Update and investing countless hours to the development of Draft Amendment 3 to the Atlantic Menhaden FMP. At press time, Megan is on the road conducting state hearings up and down the coast on Draft Amendment 3, which is scheduled to be approved in mid-November. Always seeking new challenges and enthusiastic to share her experiences with others, Megan has also taken on mentoring our new Fisheries Administrative Assistant Jessica Kuesel on the ins and outs of fisheries management along the Atlantic coast.

Both Megan and Kristen epitomize the qualities for which the Employee of the Quarter was established: teamwork, initiative, responsibility, quality of work, and positive attitude. As Employee of the Quarter, they both received a cash award and a letter of appreciation to be placed in their personal record. In addition, their names are on the Employee of the Quarter plaque displayed in the Commission's lobby. Congratulations, Kristen and Megan!

FISHERY MANAGEMENT ACTIONS *continued*
from page 9

federal recreational ACL) to the four primary states (Georgia-Virginia) to allow those states more flexibility in developing seasonal options that best suit their specific state's recreational and for-hire interests. At this time, the options for the commercial AMG cobia fishery do not include state specific allocations and generally complement the proposed federal requirements.

The Draft FMP is available at http://www.asmfc.org/files/PublicInput/DraftCobiaFMP_PublicComment_Aug2017.pdf or on the Commission's website, www.asmfc.org, under Public Input. Fishermen and other interested groups are encouraged to provide input on the Draft FMP either by attending state public hearings (see sidebar for schedule) or providing written comment. Public comment will be accepted until 5:00 PM (EST) on October 10, 2017

and should be forwarded to Louis Daniel, FMP Coordinator, 1050 N. Highland St, Suite A-N, Arlington, VA 22201; 703.842.0741 (FAX) or at comments@asmfc.org (Subject line: Draft Cobia FMP). Final action on the Draft FMP is scheduled to occur in October 2017. For more information, please contact Louis Daniel, Fishery Management Plan Coordinator, at daniel@asmfc.org or 252-342-1478.



ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

BRAXTON C. DAVIS
Director

October 20, 2017

MEMORANDUM

TO: Marine Fisheries Commission

FROM: Division of Marine Fisheries and Wildlife Resources Commission American Shad Working Group

SUBJECT: American Shad Management Measures for 2018 and the Sustainable Fishery Plan Update

The North Carolina American Shad Sustainable Fishery Plan for 2013-2017 contains the sustainability parameters for the Albemarle Sound/Roanoke system, Tar/Pamlico, Neuse, and Cape Fear rivers. The plan is evaluated by the Atlantic States Marine Fisheries Commission every five years. The sustainability parameters are updated each fall with the most recent data and the upcoming year's American shad management measures for each system are determined. The N.C. American Shad Work Group (Work Group) conducts the annual updates, determines the seasons for each system, and conducts the five-year evaluations of the sustainable fishery plan. The work group consists of biologists from the N.C. Division of Marine Fisheries and N.C. Wildlife Resources Commission.

The work group met on Aug. 11, 2017 to conduct a five-year evaluation of the Sustainable Fishery Plan from 2013 through 2017 as required by the Atlantic States Marine Fisheries Commission. The work group chose to maintain current sustainability parameters in each of the systems with only two minor changes: 1) Relative F will now be computed by dividing commercial landings by a hind cast three-year average of a survey index whereas the previous plan used a centered three-year average. Indices of relative abundance and estimates of relative F were calculated for each system using data from the previous plan, updated through 2017; and 2) Thresholds (75th and 25th percentiles) for sustainability parameters have now been set using available survey data from 2002 (2003 Cape Fear River only) through 2017 and will remain fixed during the next five-year management period, 2018 through 2022. The updated N.C. Sustainable Fishery Plan was approved by the Atlantic States Marine Fisheries Commission Shad and River Herring Management Board in October 2017 for 2018 implementation.

In addition to the five-year evaluation, the work group also reviewed the 2017 landings and analysis of the sustainability parameters for all systems and set the 2018 management measures for each system (based on the revisions contained in the recently approved 2018-2022 Sustainable Fishery Plan noted above). For the Albemarle Sound, none of the sustainability parameters exceeded the threshold in 2017 (Figures 1-3). It is critical to note that although the commercial seasons for American shad in 2014, 2015, 2016, and 2017 for the Albemarle Sound were the same, March 3 – March 24 for a total of 22 days, landings have declined from 107,131 pounds in 2014 to 59,667 pounds in 2017, a reduction of approximately 56 percent from 2014 landings (Figure 4). It must be recognized that even though the work group recommended continuing with the same commercial season for 2018 in the Albemarle Sound of

March 3 – March 24, resultant 2018 landings are difficult to predict due to several factors. Annual American shad harvest is highly variable due to environmental conditions during the spring, amount of harvest effort such as gill net trips, gear restrictions, area closures, and relative strength of the year classes in the run (Figure 4). None of the sustainability parameters in the other systems exceeded any of their thresholds. Therefore, the ASWG agreed to maintain the 2017 American shad measures for the 2018 season in all systems (Table 1).

Table 1. Management measures for the 2018 American shad season by system.

<p><u>Albemarle Sound/Roanoke</u></p> <ul style="list-style-type: none"> • Recreational: 10 fish shad aggregate, 1 A. shad limit • Commercial: March 3 – March 24 	<p><u>Tar/Pamlico</u></p> <ul style="list-style-type: none"> • Recreational: 10 fish shad aggregate • Commercial: February 15 – April 14
<p><u>Neuse</u></p> <ul style="list-style-type: none"> • Rec: 10 fish shad aggregate, 1 A. shad limit • Comm: February 15 – April 14 	<p><u>Cape Fear</u></p> <ul style="list-style-type: none"> • Recreational: 10 fish shad aggregate, 5 A. shad limit • Commercial: February 20 – April 11

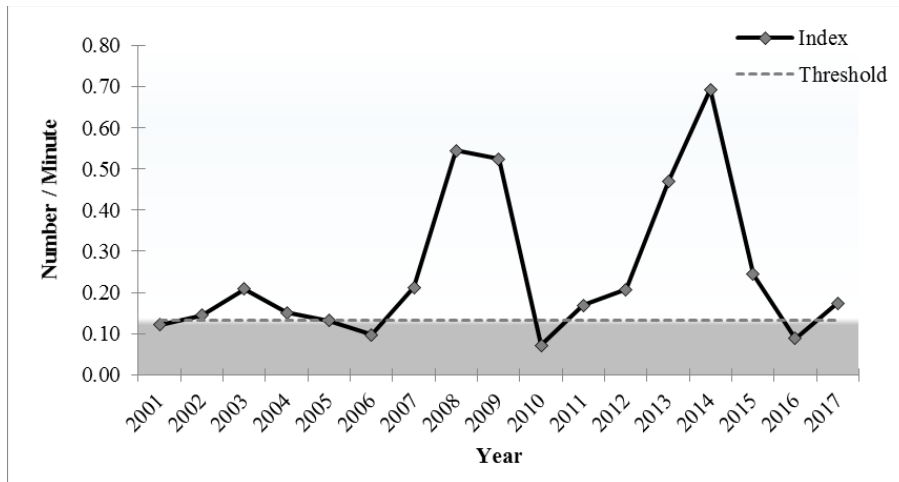


Figure 1. Female American Shad catch-per-unit-effort index of abundance from the electrofishing survey, 2000-2017, Roanoke River, NC. The threshold represents the 25th percentile (where 75 percent of all values are higher). The grey portion of the graph indicates the area where the threshold has been exceeded. *The 2017 index value did not exceed the threshold.*

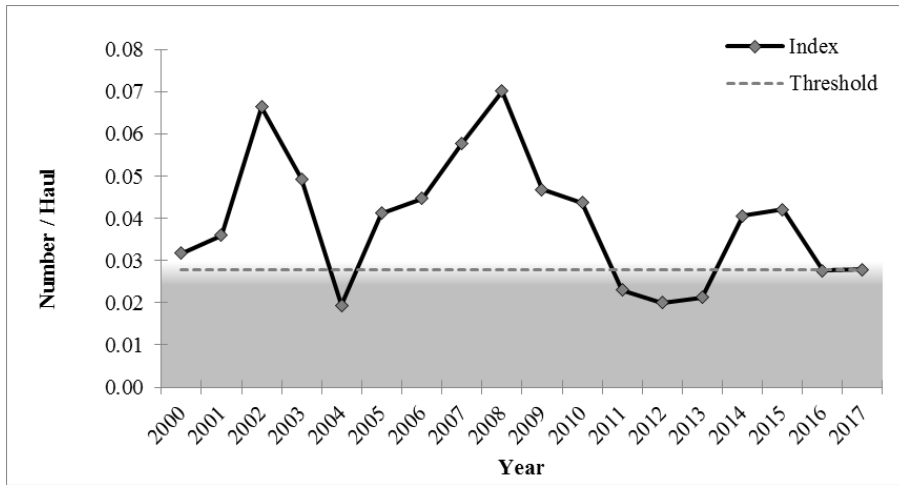


Figure 2. Female American shad catch-per-unit-effort index of abundance from the independent gill net survey for 2000–2017, Albemarle Sound, NC (January-May). The threshold represents the 25th percentile (where 75 percent of all values are greater). The grey portion of the graph indicates the area where the threshold has been exceeded. *The 2017 index value is nearly equal to the 2017 threshold.*

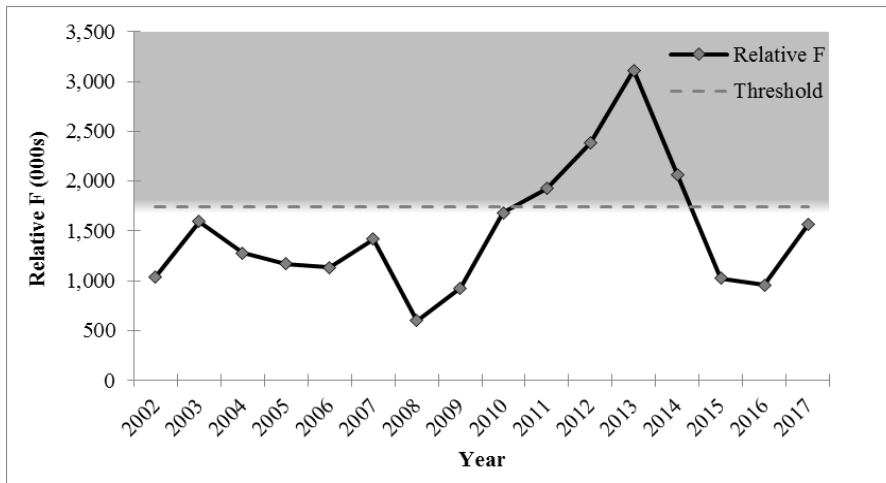


Figure 3. Estimates of American shad female relative F based on female CPUE from the independent gill net survey for 2000-2017, Albemarle Sound, NC. The threshold represents the 75th percentile (where 25 percent of all values are greater). The grey portion of the graph indicates the area where the threshold has been exceeded. *The 2017 index value did not exceed the threshold.*

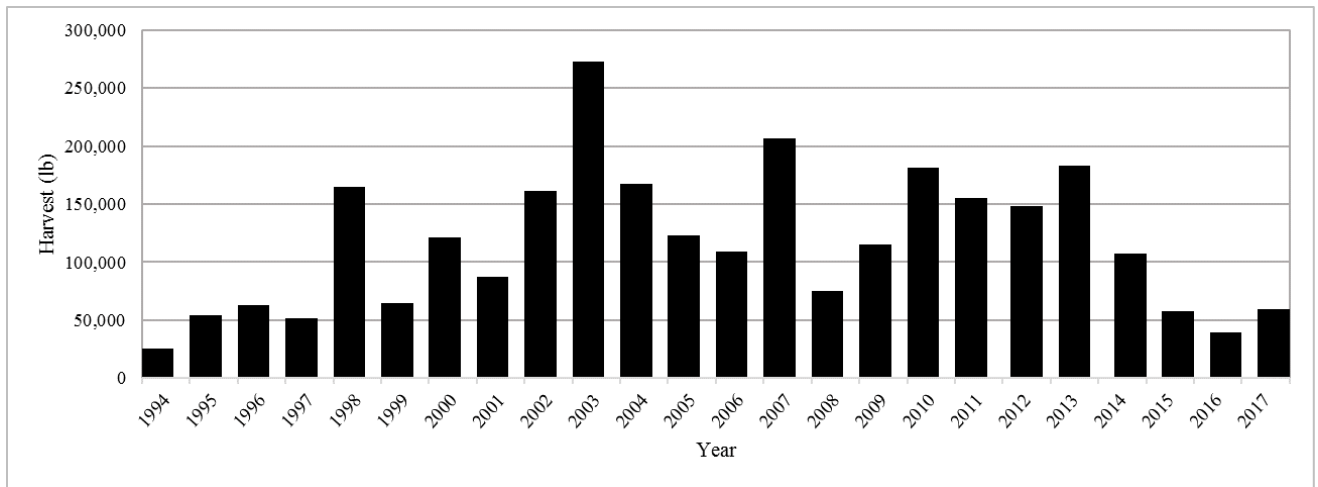


Figure 4. American shad commercial landings for 1994-2017, Albemarle Sound, NC.



ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

BRAXTON C. DAVIS
Director

November 1, 2017

MEMORANDUM

Cobia 11-17

TO: Marine Fisheries Commission

FROM: Steve Poland, Fisheries Management Section

SUBJECT: Atlantic States Marine Fisheries Commission Interstate Fishery Management Plan for Cobia and State Specific Management Options

The South Atlantic State/Federal Fisheries Management Board of the Atlantic States Marine Fisheries Commission reviewed public comment and selected final management measures for the Interstate Fishery Management Plan for Atlantic Migratory Group Cobia at their Oct. 19 meeting. The interstate plan is a complementary plan to the South Atlantic Fishery Management Council's Framework Amendment 4 to the Coastal Migratory Pelagics Fishery Management Plan and adopts many of the commercial and recreational regulations it contains.

Under the interstate plan, regulations for the commercial fishery for cobia will complement the measures from Framework Amendment 4, which include a 33-inch fork length minimum size and a two fish per person bag limit, not to exceed six fish per vessel per day. The commercial fishery will be managed under the commercial Annual Catch Limit of 50,000 pounds, which is allocated to the entire commercial fishery from Georgia through New York, and will close once the catch limit has been met.

The recreational fishery will be managed with a 36-inch fork length size limit and a one fish per person bag limit, not to exceed six fish per vessel per day. Each state will be free to set their own seasons and vessel limits, but must constrain harvest to state-specific soft targets based on the coastwide 5-year/10-year average proportion of landings for each state of the Federal Annual Catch Limit. Under soft targets, overages from one year will not be deducted from the targets for the next. Overharvest will be evaluated over a three-year period. If overages occur, then states will be required to implement new management measures to reduce harvest to the state-specific target over the next three-year period. The North Carolina recreational landings target is set to 236,316 pounds starting in 2018.

The Northern Regional, Southern Regional, and Finfish advisory committees met Oct. 24, 25, and 26 to review the interstate plan and to provide staff and the Marine Fisheries Commission input on potential season and vessel limits options to be considered for North Carolina. Staff presented options with associated landings estimates and the advisory committees selected preferred management measures that attempt to constrain harvest to the recreational harvest limit



established in the interstate plan. All advisory committees favored adjusting vessel limits to achieve the recreational harvest target in lieu of implementing a season for the fishery and cited low confidence in the Marine Recreational Information Program estimates of landings used in the interstate plan to determine the recreational harvest targets. The Finfish Advisory Committee also requested that all fished harvested be tagged and reported to the Division of Marine Fisheries.

Table 1. Motions passed by the Northern, Southern, and Finfish Advisory Committees

Northern Advisory Committee	Southern Advisory Committee	Finfish Advisory Committee
<p>Motion by Jim Rice that the Northern Advisory Committee notes there is substantive uncertainty in the projected N.C. recreational harvest estimates provided in the <i>table of Analysis of Recreational Management Option, 2012-2015</i> and that the selection of the 5-year/10-year average as the base timeframe for setting the 236,316 pound annual N.C. recreational harvest limit (RHL) disadvantaged our fisheries. Committee recommends for the charter sector no closed season and a 4-fish vessel limit, and for the private vessel no closed season and a 2-fish vessel limit. Projected harvest for this recommendation is 259,763 pounds which exceeds RHL by 23,447 pounds, however this is within the 35,726 pounds difference shown for 2017 between the projected take (297,240 pounds) and the preliminary harvest (261,514 pounds) for 2017. Seconded by Raymond Pugh Jr – motion carries 6-1.</p>	<p>Motion by Randy Proctor to recommend to the MFC a 36-inch fork length, 1 fish per person, 2 fish per vessel for all sectors (private and charter) with no season closure. The motion was seconded by Fred Scharf. The motion passed unanimously.</p>	<p>Motion by Brent Fulcher to allow up to 4 fish per day for charter provided 4 individuals are on vessel and allow private boats to have 2 per day provided at least two individuals are on vessel and keep shore based possession at with one fish per person per day with caveat that fish must be tagged in system to be developed by the DMF. If you don't achieve 50% RHL by July 1, then you would increase possession limit to maximum allowed of 6 per vessel. Second by Scott Whitley. Motion carries 7-0</p>



After the February business meeting, staff investigated the authority and feasibility of requiring recreational fisherman to report cobia landings. Concerns about authority to require mandatory reporting were raised after investigating the current rules and statutes regarding compliance requirements for licensees and biological sampling requests. Currently, it is not clear if the Fisheries Director or the commission has authority to require recreational anglers to report their harvest.

The division recommends a one fish per vessel limit for private boats and a three fish per vessel limit for charter boats, with no season closure. These measures will constrain landings below the recreational harvest limit for North Carolina and allow for landings in the fishery throughout the year. Staff will present season and vessel limit options and the associated estimated landings to the Marine Fisheries Commission at its November business meeting for consideration. The options will include the preferred vessel limit selections from the regional and Finfish advisory committees and the recommended vessel limits from the division.

States are required to submit an implementation plan to the Atlantic States Marine Fisheries Commission by Jan. 1, 2018 for Technical Committee review. The South Atlantic State/Federal Fisheries Management Board will review the Technical Committee comments and approve each state's management measures and final approval of the plan at its February, 2018 meeting with management measures effective April 1, 2018.





ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

BRAXTON C. DAVIS
Director

November 15, 2017

MEMORANDUM

Landings 11-17

TO: Marine Fisheries Commission
FROM: DMF License and Statistics Section
SUBJECT: Landings Update

Attached are the current landings for red drum and southern flounder.

Red drum landings are presented by month for the Sept. 1, 2016 through Aug. 31, 2017 fishing season. Monthly landings of southern flounder are presented for 2014-2017. Southern flounder landings by gear from 2012 to 2017 are also provided.

2016 landings have been finalized. 2017 data are preliminary and only complete through July. Confidential data were denoted with ***.



Year	Month	Species	Pounds	Dealers	Trips	Average (2007-2009)
2014	1	SOUTHERN FLOUNDER	2,978	29	183	7,713
2014	2	SOUTHERN FLOUNDER	1,823	29	285	4,617
2014	3	SOUTHERN FLOUNDER	3,430	43	677	23,512
2014	4	SOUTHERN FLOUNDER	18,997	71	933	68,389
2014	5	SOUTHERN FLOUNDER	16,001	93	681	122,514
2014	6	SOUTHERN FLOUNDER	80,142	123	1,988	154,090
2014	7	SOUTHERN FLOUNDER	84,702	141	2,148	170,387
2014	8	SOUTHERN FLOUNDER	105,208	137	2,204	201,862
2014	9	SOUTHERN FLOUNDER	404,143	153	3,588	396,301
2014	10	SOUTHERN FLOUNDER	634,514	146	3,436	781,717
2014	11	SOUTHERN FLOUNDER	320,773	121	1,991	392,150
2014	12	SOUTHERN FLOUNDER	800	5	7	37,303
2015	1	SOUTHERN FLOUNDER	1,984	30	237	7,713
2015	2	SOUTHERN FLOUNDER	495	21	93	4,617
2015	3	SOUTHERN FLOUNDER	10,750	62	768	23,512
2015	4	SOUTHERN FLOUNDER	20,824	88	1,074	68,389
2015	5	SOUTHERN FLOUNDER	42,454	117	1,282	122,514
2015	6	SOUTHERN FLOUNDER	53,838	116	1,482	154,090
2015	7	SOUTHERN FLOUNDER	42,806	106	1,144	170,387
2015	8	SOUTHERN FLOUNDER	43,900	111	1,152	201,862
2015	9	SOUTHERN FLOUNDER	255,067	122	2,335	396,301
2015	10	SOUTHERN FLOUNDER	429,234	127	2,554	781,717
2015	11	SOUTHERN FLOUNDER	301,489	90	1,755	392,150
2015	12	SOUTHERN FLOUNDER	89	7	10	37,303
2016	1	SOUTHERN FLOUNDER	2,625	33	264	7,713
2016	2	SOUTHERN FLOUNDER	1,643	31	291	4,617
2016	3	SOUTHERN FLOUNDER	9,183	58	914	23,512
2016	4	SOUTHERN FLOUNDER	10,558	72	628	68,389
2016	5	SOUTHERN FLOUNDER	24,522	90	821	122,514
2016	6	SOUTHERN FLOUNDER	44,952	100	1,242	154,090
2016	7	SOUTHERN FLOUNDER	43,574	102	1,132	170,387
2016	8	SOUTHERN FLOUNDER	53,057	106	1,409	201,862
2016	9	SOUTHERN FLOUNDER	245,870	131	3,004	396,301
2016	10	SOUTHERN FLOUNDER	279,618	117	2,161	781,717
2016	11	SOUTHERN FLOUNDER	182,148	102	1,465	392,150
2016	12	SOUTHERN FLOUNDER	14	5	5	37,303
2017	1	SOUTHERN FLOUNDER	1,677	38	122	7,713
2017	2	SOUTHERN FLOUNDER	2,758	55	215	4,617
2017	3	SOUTHERN FLOUNDER	8,254	67	874	23,512
2017	4	SOUTHERN FLOUNDER	9,591	83	788	68,389
2017	5	SOUTHERN FLOUNDER	33,113	105	1,121	122,514
2017	6	SOUTHERN FLOUNDER	75,013	115	1,908	154,090
2017	7	SOUTHERN FLOUNDER	72,495	104	1,698	170,387
2017	8	SOUTHERN FLOUNDER	94,869	91	2,166	201,862
2017	9	SOUTHERN FLOUNDER	161,653	53	2,131	396,301
2017	10	SOUTHERN FLOUNDER	944	4	26	781,717

2017 data are preliminary and only complete through July.

***data are confidential

Year	Species	Gear	Pounds	Dealers	Trips
2012	SOUTHERN FLOUNDER	GIGS	149,387	112	3,000
2012	SOUTHERN FLOUNDER	GILLNETS	879,373	168	14,713
2012	SOUTHERN FLOUNDER	OTHER	47,989	105	1,462
2012	SOUTHERN FLOUNDER	POUND NET	569,388	35	1,754
2013	SOUTHERN FLOUNDER	GIGS	118,489	101	2,408
2013	SOUTHERN FLOUNDER	GILLNETS	1,096,060	178	16,968
2013	SOUTHERN FLOUNDER	OTHER	46,953	104	2,093
2013	SOUTHERN FLOUNDER	POUND NET	924,889	41	2,112
2014	SOUTHERN FLOUNDER	GIGS	135,273	109	2,655
2014	SOUTHERN FLOUNDER	GILLNETS	659,394	145	11,778
2014	SOUTHERN FLOUNDER	OTHER	18,628	115	1,887
2014	SOUTHERN FLOUNDER	POUND NET	860,216	39	1,806
2015	SOUTHERN FLOUNDER	GIGS	130,277	92	2,616
2015	SOUTHERN FLOUNDER	GILLNETS	392,384	133	8,471
2015	SOUTHERN FLOUNDER	OTHER	12,422	102	1,002
2015	SOUTHERN FLOUNDER	POUND NET	667,847	40	1,803
2016	SOUTHERN FLOUNDER	GIGS	126,983	92	2,657
2016	SOUTHERN FLOUNDER	GILLNETS	361,570	126	8,422
2016	SOUTHERN FLOUNDER	OTHER	10,953	84	838
2016	SOUTHERN FLOUNDER	POUND NET	398,258	39	1,423
2017	SOUTHERN FLOUNDER	GIGS	98,858	78	2,144 **
2017	SOUTHERN FLOUNDER	GILLNETS	294,840	107	7,679 **
2017	SOUTHERN FLOUNDER	OTHER	6,650	80	741 **
2017	SOUTHERN FLOUNDER	POUND NET	60,020	17	487 **

**2017 data are preliminary and only complete through July.

Red Drum Landings 2016-2017

Landings are complete through July 31, 2017

2016 landings are final. 2017 landings are preliminary.

Year	Month	Species	Pounds	2009-2011 Average	2013-2015 Average
2016	9	Red Drum	18,748	28,991	35,003
2016	10	Red Drum	13,907	43,644	63,662
2016	11	Red Drum	2,308	14,318	27,643
2016	12	Red Drum	1,990	3,428	2,197
2017	1	Red Drum	1,313	5,885	1,699
2017	2	Red Drum	2,799	3,448	3,996
2017	3	Red Drum	5,392	5,699	3,971
2017	4	Red Drum	4,402	7,848	6,528
2017	5	Red Drum	7,775	13,730	9,664
2017	6	Red Drum	12,517	12,681	6,985
2017	7	Red Drum	13,818	13,777	15,618
2017	8	Red Drum	16,854	21,252	15,846

Fishing Year (Sept 1, 2016 - Aug 31, 2017) Landings **101,823**

Year	Month	Species	Pounds	2009-2011 Average	2013-2015 Average
2017	9	Red Drum	20,477	28,991	35,003

Fishing Year (Sept 1, 2017 - Aug 31, 2018) Landings **20,447**

*partial trip ticket landings only

***landings are confidential



ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

BRAXTON C. DAVIS
Director

October 27, 2017

MEMORANDUM

PR 11-17

TO: Marine Fisheries Commission

FROM: Chris Batsavage, Protected Resources Section Chief/Special Assistant for Councils

SUBJECT: Protected Resources Section Update

Observer Program

Tables summarizing observer coverage and protected species interactions from January through August 2017 are found in the briefing book. These tables provide the number of estimated trips, observed trips, observer coverage, and protected species interactions for anchored large and small mesh gill nets by month and management unit. Please note that observer coverage is based on the average number of trips from previous years' finalized data because 2017 trip data are preliminary.

A total of 16 sea turtle interactions were observed in anchored large mesh gill nets and one in anchored small mesh gill nets from January through August 2017, with most interactions occurring in Management Unit B. Six self-reported sea turtle interactions by gill net fishermen occurred during this time.

A total of 39 Atlantic sturgeon interactions were observed in anchored large mesh gill nets and two in anchored small mesh gill nets from January through August 2017, with most interactions occurring in Management Unit A. One self-reported Atlantic sturgeon interaction by a gill net fisherman occurred during this time.

Management Unit Openings and Closures

The following management unit(s) either opened or closed in accordance with the Sea Turtle and Atlantic Sturgeon Incidental Take Permits:

- Management Unit A south of the Highway 64/264 bridges over Croatan and Roanoke sounds remains closed to large and small mesh anchored gill nets to minimize sea turtle interactions. The closed area was extended to east of the Alligator Bridge and south of



the Highway 158 Bridge over Currituck Sound on Oct. 29 to minimize sea turtle interactions.

- The eastern and southern portions of Management Unit B closed to anchored large mesh gill nets on Sept. 1, 2017 to minimize sea turtle interactions. These areas reopened to large mesh gill nets on Sept. 25.
- Management Unit C reopened to anchored large and small mesh anchored gill nets on Sept. 1, 2017 to coincide with the new Sea Turtle Incidental Take Permit fishing year (Sept. 1, 2017-Aug. 31, 2018).
- Management Unit D1 reopened to large mesh anchored gill nets on Oct. 16 in accordance with the Sea Turtle Incidental Take Permit.



Table 1. Preliminary data collected for anchored large mesh gill nets by month and management unit through the NCDMF Observer Program through August 2017.

Month	Unit	Trips		Observer Large Mesh				Observed Takes By Species									
		Estimated ¹	Actual ²	AP Attempts ³	Trips	Yards	Coverage ⁴	Kemp's		Green		Loggerhead		Unknown	A.Sturgeon		
								Live	Dead	Live	Dead	Live	Dead	Live	Live	Dead	
January	A	265	94	40	3	2,900	1.1										
	B	30	4	9	0	0	0.0										
	C	15	6	23	0	0	0.0										
	D1	0	0	5	0	0	0.0										
	D2	0	1	9	0	0	0.0										
February	E	6	5	49	0	0	0.0										
	A	527	281	66	76	45,535	13.8										
	B	52	6	13	0	0	0.0										
	C	102	74	26	26	10,585	24.8										1
	D1	0	0	2	0	0	0.0										
March	D2	1	5	10	1	600	0.0										
	E	22	13	50	0	0	0.0										
	A	1,146	873	30	99	72,525	9.0										33
	B	69	18	22	0	0	0.0										
	C	655	736	13	67	41,455	10.2										3
April	D1	1	0	6	0	0	0.0										
	D2	7	8	7	2	500	35.3										
	E	59	32	69	5	1,450	7.5										
	A	759	726	28	69	39,040	8.6										
	B	136	35	18	0	0	0.0										
May	C	163	170	8	11	4,100	7.8										
	D1	4	0	6	0	0	0.0										
	D2	21	34	4	3	1,500	15.5										
	E	74	78	57	15	6,900	20.9										1
	A	284	176	55	13	14,500	5.4										
June	B	292	21	22	1	600	0.3										
	C	97	119	33	18	6,700	18.5										
	D1	10	0	1	0	0	0.0										
	D2	43	77	4	5	2,300	10.8										
	E	121	149	47	35	10,600	28.3										
July	A	431	305	54	18	16,700	4.8										
	B	309	296	26	36	18,390	9.6			2							
	C	188	163	32	14	7,120	7.4				1						
	D1	0	0	2	0	0	0.0										
	D2	41	42	5	8	3,850	17.6					1					
August	E	185	205	49	30	14,660	16.7					2					
	A	353	208	35	17	18,815	5.1										
	B	269	432	15	52	27,620	14.5	2		2	1		1				
	C	188	166	17	13	5,975	7.0			1	1						
	D1	0	0	4	0	0	0.0										
Total	D2	25	62	11	0	0	0.0										
	E	155	154	18	36	13,890	23.9										
	A	554	474	33	31	38,169	6.2										1
	B	233	534	27	42	25,770	13.1			2							
	C	264	53	36	1	300	0.4										
D1	0	0	2	0	0	0.0											
D2	57	150	13	14	7,100	24.3											
E	166	116	43	46	15,200	28.6											
Total		8,378	7,101	1,154	807	475,349	9.6	2	0	7	6	1	0	0	0	39	0

¹ Finalized trip ticket data averaged from 2012-2016

² Preliminary trip ticket data for 2017

³ Alternative Platform trips where no fishing activity was found

⁴ Based on estimated trips and observer large mesh trips

Table 2. Preliminary data collected for anchored large mesh gill nets by month through the NCDMF Observer Program through August 2017.

Month	Trips		Observer Large Mesh				Observed Takes By Species									
	Estimated ¹	Actual ²	AP Attempts ³	Trips	Yards	Coverage ⁴	Kemp's		Green		Loggerhead		Unknown	A. Sturgeon		
							Live	Dead	Live	Dead	Live	Dead	Live	Live	Dead	
January	316	110	135	3	2,900	1.0	0	0	0	0	0	0	0	0	0	0
February	705	379	167	103	56,720	14.1	0	0	0	0	0	0	0	0	1	0
March	1,936	1,667	147	173	115,930	9.1	0	0	0	0	0	0	0	0	36	0
April	1,156	1,043	121	98	51,540	8.4	0	0	0	0	0	0	0	0	1	0
May	847	542	162	72	34,700	8.5	0	0	0	0	0	0	0	0	0	0
June	1,155	1,011	168	106	60,720	9.1	0	0	2	4	0	0	0	0	0	0
July	990	1,022	100	118	66,300	11.2	2	0	3	2	1	0	0	0	0	0
August	1,273	1,327	154	134	86,539	10.4	0	0	2	0	0	0	0	0	1	0
Total	8,378	7,101	1,154	807	475,349	9.6	2	0	7	6	1	0	0	0	39	0

¹ Finalized trip ticket data averaged from 2012-2016

² Preliminary trip ticket data for 2017

³ Alternative Platform trips where no fishing activity was found

⁴ Based on estimated trips and observer large mesh trips

Table 3. Preliminary data collected for anchored small mesh gill nets by month and management unit through the NCDMF Observer Program through August 2017.

Month	Unit	Trips		Observer Small Mesh			Observed Takes By Species											
		Estimated ¹	Actual ²	Trips	Yards	Coverage ³	Kemp's		Green		Loggerhead		Unknown	A. Sturgeon				
							Live	Dead	Live	Dead	Live	Dead	Live	Live	Dead			
January	A	394	341	13	5,810	3.3												
	B	151	287	1	100	0.7												
	C	47	131	10	3,600	21.5												
	D1	1	1	0	0	0.0												
	D2	21	18	2	400	0.0												
February	E	27	21	1	600	3.7												
	A	515	320	31	16,530	6.0												
	B	108	337	4	1,335	3.7												
	C	64	161	10	4,200	15.7												
	D1	1	1	0	0	0.0												
March	D2	13	4	5	1,000	0.0												
	E	14	24	1	120	7.4												
	A	575	101	3	1,800	0.5												
	B	262	530	8	3,445	3.1												
	C	87	204	8	1,960	9.2												
April	D1	6	14	4	1,185	72.7												
	D2	4	6	0	0	0.0												
	E	23	22	3	1,330	13.2												
	A	388	148	5	1,240	1.3												
	B	689	750	11	6,900	1.6												
May	C	59	70	2	325	3.4												
	D1	25	20	4	1,860	16.0												
	D2	12	27	0	0	0.0												
	E	63	52	6	2,510	9.6												
	A	190	96	2	700	1.1												
June	B	390	241	2	2,800	0.5												
	C	75	50	6	1,800	8.0												
	D1	8	1	0	0	0.0												
	D2	21	14	0	0	0.0												
	E	98	65	5	1,000	5.1												
July	A	123	31	3	1,250	2.4												
	B	324	220	5	3,300	1.5												
	C	120	34	9	4,410	7.5												
	D1	3	1	0	0	0.0												
	D2	12	12	1	300	8.3												
August	E	78	75	3	1,450	3.8												
	A	78	25	1	250	1.3												
	B	325	242	2	300	0.6												
	C	96	22	1	300	1.0												
	D1	3	9	0	0	0.0												
Total	D2	11	10	1	80	9.3												
	E	84	55	1	20	1.2												
	A	79	37	0	0	0.0												
	B	398	271	3	900	0.8												
	C	96	3	0	0	0.0												
Total	D1	4	10	0	0	0.0												
	D2	31	26	2	600	6.5												
	E	91	47	0	0	0.0												
	Total	6,279	5,187	179	75,710	2.9	0	0	1	0	0	0	0	0	2	0		

¹ Finalized trip ticket data averaged from 2013-2016

² Preliminary trip ticket data for 2017

³ Based on estimated trips and observer small mesh trips

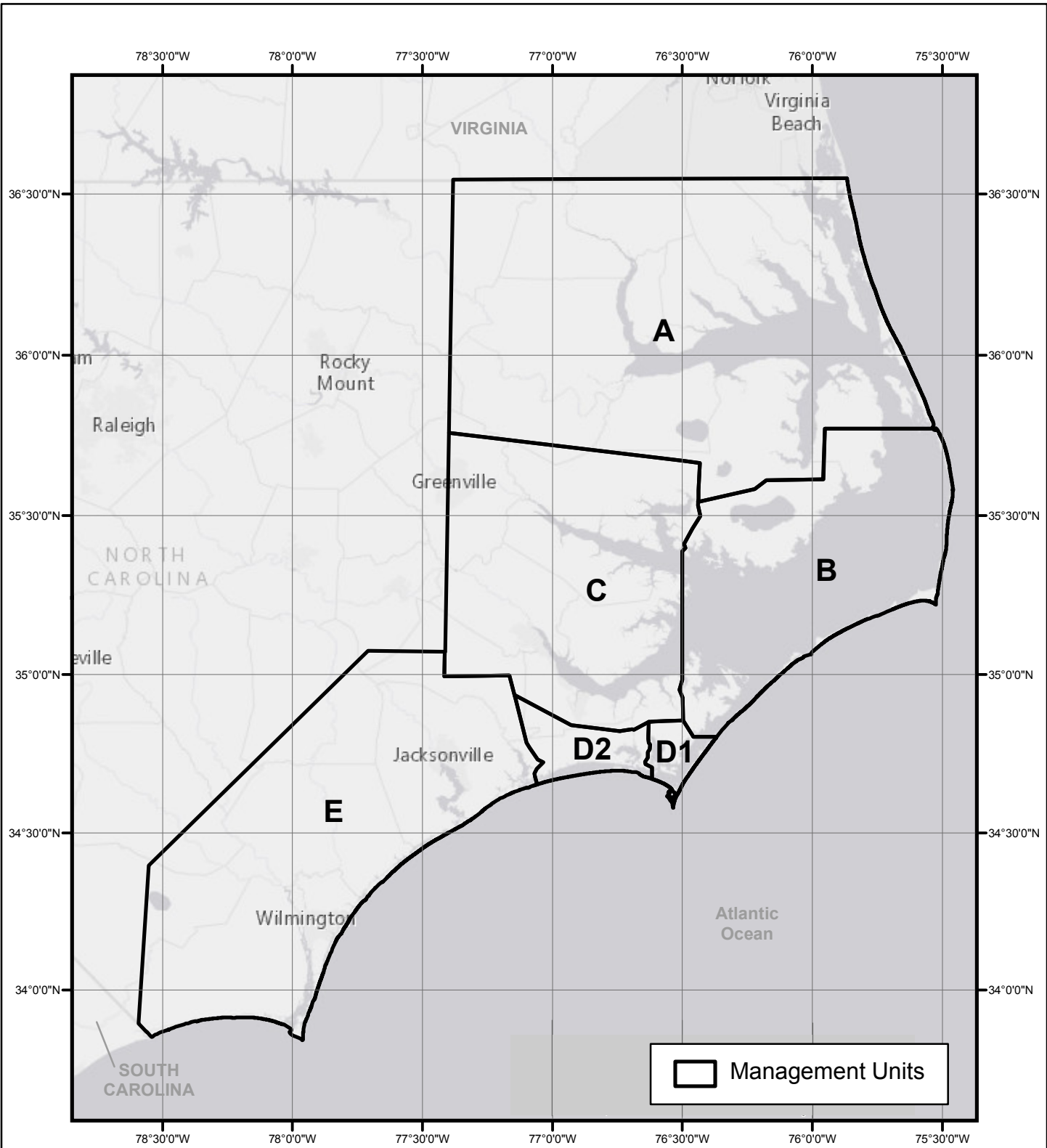
Table 4. Preliminary data collected for anchored small mesh gill nets by month through the NCDMF Observer Program through August 2017.

Month	Trips		Observer Small Mesh			Observed Takes By Species									
	Estimated ¹	Actual ²	Trips	Yards	Coverage ³	Kemp's		Green		Loggerhead		Unknown	A. Sturgeon		
						Live	Dead	Live	Dead	Live	Dead	Live	Live	Dead	
January	639	799	27	10,510	4.2	0	0	0	0	0	0	0	0	0	0
February	713	847	51	23,185	7.2	0	0	0	0	0	0	0	0	0	0
March	957	877	26	9,720	2.7	0	0	0	0	0	0	0	0	0	0
April	1,235	1,067	28	12,835	2.3	0	0	0	0	0	0	0	2	0	0
May	781	467	15	6,300	1.9	0	0	0	0	0	0	0	0	0	0
June	659	373	21	10,710	3.2	0	0	1	0	0	0	0	0	0	0
July	597	363	6	950	1.0	0	0	0	0	0	0	0	0	0	0
August	699	394	5	1,500	0.7	0	0	0	0	0	0	0	0	0	0
Total	6,279	5,187	179	75,710	2.9	0	0	1	0	0	0	0	0	2	0

¹ Finalized trip ticket data averaged from 2013-2016

² Preliminary trip ticket data for 2017

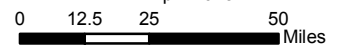
³ Based on estimated trips and observer small mesh trips



NCDMF ESTUARINE GILLNET PERMIT MAP



April 2015





ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

BRAXTON C. DAVIS
Director

October 20, 2017

MEMORANDUM

MAFC 11-17

TO: Marine Fisheries Commission

FROM: Chris Batsavage, Protected Resources Section Chief/Special Assistant for Councils

SUBJECT: Mid-Atlantic Fishery Management Council Meeting Summary-Aug. 8-10, 2017

The Mid-Atlantic Fishery Management Council met on Aug. 8-10 in Philadelphia, PA. The council met jointly with the Atlantic States Marine Fisheries Commission's Summer Flounder, Scup, and Black Sea Bass and Bluefish Management Boards to discuss several topics related to management of summer flounder, scup, black sea bass, and bluefish. Highlights of the management actions taken by the council are discussed below.

Summer Flounder, Scup, Black Sea Bass, and Bluefish Specifications

The council and the commission's Summer Flounder, Scup, and Black Sea Bass Board and the commission's Bluefish Board reviewed previously implemented 2018 specifications (quotas and regulations) for summer flounder, scup, black sea bass, and bluefish, and considered setting specifications for scup for 2019. The council and board recommended no changes to the 2018 summer flounder specifications. The commercial quota for summer flounder in 2018 will be 6.63 million pounds and the recreational harvest limit will be 4.42 million pounds. North Carolina's 2018 commercial quota will be approximately 1.82 million pounds. A benchmark stock assessment for summer flounder is tentatively scheduled for peer review in late 2018.

The council and board received an assessment update for scup that indicates the stock was not overfished and overfishing was not occurring in 2016. Spawning stock biomass is estimated to be over two times greater than the biomass target. The council and board amended their recommendations for 2018 commercial and recreational quotas and set quotas for 2019 based on the stock assessment update, the council's goal of maintaining stable measures over 2018-2019, and the management uncertainty issues raised by the Monitoring Committee. The commercial quota for scup will be 23.98 million pounds and the recreational harvest limit will be 7.37 million pounds in 2018 and 2019.

The council and board recommended no changes to the 2018 black sea bass and bluefish specifications. The commercial quota for black sea bass will be 3.52 million pounds and the recreational harvest limit will be 3.66 million pounds in 2018. An assessment update is tentatively scheduled for black sea bass in 2018. The commercial quota for bluefish will be 7.24



million pounds and the recreational harvest limit will be 11.58 million pounds in 2018. The 2018 commercial quota and recreational harvest limit are preliminary and will likely change based on final 2017 Marine Recreational Information Program harvest estimates since these estimates impact how much is transferred from the recreational sector to the commercial sector. An assessment update for bluefish is scheduled for 2018.

Summer Flounder Fishery Management Plan Amendment Update

The council and board considered the July 2017 recommendations from the council's Demersal Committee on draft alternatives for commercial issues (federal moratorium permits, commercial allocations, and landings flexibility) within the Summer Flounder Fishery Management Plan Amendment. The council and board accepted the committee recommendation to move forward with analysis of requalifying criteria options for existing federal summer flounder moratorium permits, and to drop alternatives based on tiered permit systems. The options are based on landings thresholds over different time periods ending on July 31, 2014, which is before the federal summer flounder permit control date. These management options would not apply to state-specific permits. The council and board did not agree with the committee's recommendation to indefinitely postpone any analysis of commercial allocation options in this amendment. Therefore, the Demersal Committee will continue to develop options for this issue at their meeting on Nov. 8 and 9 in Baltimore, MD. The council and board approved the committee recommendation to encourage states to develop cooperative agreements toward more flexible landings policies for commercial summer flounder and voted to remove landings flexibility as an immediate management option within the amendment. However, the council and board voted to include, for future consideration, an option that adds landings flexibility as a framework option within the council's fishery management plan.

Black Sea Bass Recreational Fishery Issues

The council and board were updated on the progress of Addendum XXX to the commission's Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan, which will establish state recreational management measures in 2018. The council and board also discussed the potential re-opening of the recreational Wave 1 (January-February) black sea bass fishery in 2018 but decided not to open the Wave 1 fishery in 2018 due to concerns about the implications to the rest of the 2018 recreational season and the potential disproportionate impacts to states that may not participate in the Wave 1 fishery. There was also concern for the lack of biological data collection associated with this fishery. The council is continuing its development of a framework that would open the Wave 1 fishery in federal waters in 2019 under a Letter of Authorization program and will consider another option for re-opening the Wave 1 fishery at its October meeting.

The recreational black sea bass fishery has been closed during Wave 1 over the past several years because of no recreational harvest estimates available for the states north of North Carolina during this time (North Carolina has Wave 1 recreational harvest estimates). Therefore, the challenge for opening the recreational black sea bass fishery during this wave is to develop a system that accounts for the harvest.

Upcoming Meeting

The next regularly scheduled meeting of the Mid-Atlantic Fishery Management Council will be Oct. 10-12, 2017 at the Hyatt Long Island East End in Riverhead, NY.





ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

BRAXTON C. DAVIS
Director

October 26, 2017

MEMORANDUM

MAFC 11-17

TO: Marine Fisheries Commission

FROM: Chris Batsavage, Protected Resources Section Chief/Special Assistant for Councils

SUBJECT: Mid-Atlantic Fishery Management Council Meeting Summary-Oct. 10-12, 2017

The Mid-Atlantic Fishery Management Council met on Oct. 10-12 in Riverhead, NY. Highlights of the management actions taken by the council are discussed below.

Spiny Dogfish 2018 Specifications

The council reviewed previously implemented 2018 specifications (quotas and regulations) for spiny dogfish. After considering input from the Scientific and Statistical Committee, the Spiny Dogfish Advisory Panel, and the Monitoring Committee, the council made no changes to the previously-recommended specifications, which are a 38.2 million-pound coastwide commercial quota and a 6,000-pound trip limit in federal waters. The Atlantic States Marine Fisheries Commission manages spiny dogfish under their Spiny Dogfish Fishery Management Plan, and the commission approved the same coastwide commercial quota at their meeting on Oct. 16. North Carolina's commercial allocation of spiny dogfish in 2018 (before the unused quota rollover is applied) is 5.4 million pounds.

2018 Recreational Black Sea Bass Fishery

The council reconsidered the potential re-opening of the recreational Wave 1 (January-February) black sea bass fishery in 2018 after deciding not to reopen the Wave 1 fishery in August at a joint meeting of the council and the Atlantic States Marine Fisheries Commission's Summer Flounder, Scup, and Black Sea Bass Management Board. A new option that opens the fishery from Feb. 1-28 with a 12.5-inch minimum size limit and a 15-fish bag limit was considered at this meeting. After much discussion, including confirmation from New Jersey that their staff could collect biological information from this fishery, the council approved these measures for federal waters. The council also stipulated that the 2018 recreational harvest limit will be reduced by 100,000 pounds to account for the expected harvest during the February season and that any adjustments to the 2018 recreational management measures to account for this harvest will only be required of those states that participate in the February fishery. The Atlantic States Marine Fisheries Commission's Summer Flounder, Scup, and Black Sea Bass Management Board approved these measures at their meeting on Oct. 18. The council is continuing its



development of a framework that would open the Wave 1 fishery in federal waters in 2019 under a Letter of Authorization program.

Upcoming Meeting

The next regularly scheduled meeting of the Mid-Atlantic Fishery Management Council will be Dec. 11-14, 2017 at the Westin Annapolis in Annapolis, MD.



August 2017 Council Meeting Report

August 8-10, 2017

Philadelphia, Pennsylvania

The following summary highlights actions taken and issues considered at the Mid-Atlantic Fishery Management Council's August 2017 meeting in Philadelphia, PA. Presentations, briefing materials, and webinar recordings are available on the Council website at www.mafmc.org/briefing/august-2017.

Summer Flounder, Scup, Black Sea Bass, and Bluefish Specifications

The Council met jointly with the Atlantic States Marine Fisheries Commission's (Commission) Summer Flounder, Scup, and Black Sea Bass Board (Board) and Bluefish Board to review previously implemented 2018 specifications for summer flounder, scup, black sea bass, and bluefish, and to consider setting specifications for scup for 2019. The table below summarizes commercial quotas and recreational harvest limits for summer flounder, scup, black sea bass, and bluefish (2017 values are provided for comparison purposes). Note that scup specifications for 2019 will be reviewed by the Council and Board in 2018.

Species	Year	Commercial Quota (millions of pounds)	Commercial Minimum Fish Size (TL)	Commercial Diamond Mesh Size	Recreational Harvest Limit (millions of pounds)
Summer Flounder	2017	5.66	14"	5.5"	3.77
	2018	6.63	14"	5.5"	4.42
Scup	2017	18.38	9"	5"	5.50
	2018	23.98	9"	5"	7.37
	2019	23.98	9"	5"	7.37
Black Sea Bass	2017	4.12	11"	4.5"	4.29
	2018	3.52	11"	4.5"	3.66
Bluefish	2017	8.54	Varies by state		9.65
	2018	7.24	Varies by state		11.58

Summer Flounder

The Council and Board received a data update for summer flounder, including updated catch, landings, and survey indices through 2016. The Council and Board maintained the previously implemented 2018 specifications, set in August 2016.

A benchmark stock assessment for summer flounder is tentatively scheduled for peer review in late 2018. An assessment working group is currently being formed to begin work on this assessment in order to consider alternative modeling approaches.

Scup

The Council and Board received an assessment update for scup, incorporating data through 2016. The assessment update indicates that the stock was not overfished and overfishing was not occurring in 2016. Spawning stock biomass is estimated to be 206% of the biomass target. The Council and Board adopted the revised 2018 Acceptable Biological Catch (ABC) recommended by the Scientific and Statistical Committee (SSC), which represents a substantial (45%) increase over the previously implemented 2018 ABC. However, given the

Council’s goal of maintaining stable measures over 2018-2019, and taking into account some management uncertainty issues raised by the Monitoring Committee, the Council and Board adopted a slightly lower Annual Catch Target (ACT) for 2018 compared to what would be taken if the ACT were set equal to the Annual Catch Limit (ACL). The ACTs adopted for 2018-2019 are based on the calculations for 2019 that assume ACL=ACT. The resulting commercial quota for 2018 and 2019 is 23.98 million pounds, and the 2019-2019 recreational harvest limit is 7.37 million pounds.

Black Sea Bass

The Council and Board received a data update for black sea bass, including updated catch, landings, and survey indices through 2016. The data update indicates that black sea bass biomass continues to be high, and the 2015 year class appears to be above average. The Council and Board maintained the previously implemented 2018 specifications, set in February 2017 based on stock projections from the December 2016 assessment update. An assessment update is tentatively scheduled for black sea bass in 2018.

Bluefish

The Council and Commission did not recommend any changes to the 2018 specifications for bluefish. The 2018 commercial quota and recreational harvest limit are preliminary and will likely change following release of 2017 final Marine Recreational Information Program harvest estimates. These estimates can impact how much is transferred from the recreational sector to the commercial sector. Additionally, an assessment update is scheduled for 2018.

Summer Flounder Amendment

The Council and Board considered the July 2017 recommendations from the Council’s Demersal Committee on draft commercial issues alternatives within the Comprehensive Summer Flounder Amendment.

Federal moratorium permits: The Council and Board accepted the Committee recommendation to move forward with analysis of requalifying criteria options for existing federal summer flounder moratorium permits, and to drop alternatives based on tiered permit systems. Several qualifying time period and landings threshold options were recommended for analysis, as listed below, resulting in a total of 20 initial options for time period/landings threshold combinations. These management options would not apply to state-specific permits.

Qualifying time period and landings threshold options recommended for analysis

Time periods:	Landings thresholds:
<ul style="list-style-type: none"> • August 1, 1994 – July 31, 2014 (20 years) • August 1, 1999 – July 31, 2014 (15 years) • August 1, 2004 – July 31, 2014 (10 years) • August 1, 2009 – July 31, 2014 (5 years) 	<ul style="list-style-type: none"> • Landed ≥1 lb in any one year in the time period • Landed ≥ 1 lb in 20% of the years in the time period • Landed a ≥ 1 lb in 40% of the years in the time period • Landed ≥ 1 lb in 60% of the years in the time period • Landed at least 1,000 lb cumulatively over the entire time period

These options are based on the federal summer flounder control date published August 1, 2014; however, the Council and Board noted that they may consider revising the specific start and end dates to align with the permit year or the fishing year.

Commercial Allocation: The Council and Board considered the Committee recommendation to postpone indefinitely any analysis of commercial allocation options in this amendment, but did not approve this motion. Commercial allocation options will be considered by the Demersal Committee at their next meeting.

Landings Flexibility: The Council and Board approved the Committee recommendation to encourage states to develop cooperative agreements toward more flexible landings policies for commercial summer flounder. The Council and Board also voted to remove landings flexibility as an immediate management option within the amendment but to include an option to add landings flexibility as a frameworkable issue within the Council's fishery management plan (FMP).

Black Sea Bass Recreational Issues

The Council and Commission discussed various recreational black sea bass issues and potential management actions for 2018. An update was provided on recent Commission activities including changes to the Wave 6 (November-December) possession limits and the development of draft addendum XXX that will establish state recreational management measures in 2018. The Council and Commission also discussed the potential re-opening of the recreational Wave 1 (January-February) black sea bass fishery in 2018. After extensive discussion and deliberation, the Council and Commission ultimately decided not to open the Wave 1 fishery in 2018 due to concerns about the implications to the rest of the 2018 recreational season and the potential disproportionate impacts to states that may not participate in the Wave 1 fishery. The Council is continuing its development of a framework that would open the Wave 1 fishery in federal waters in 2019 under a Letter of Authorization program.

Atlantic Surfclams and Ocean Quahogs

Excessive Shares Amendment

Council staff presented a summary of scoping comments on the Excessive Shares Amendment. The amendment will consider options to ensure that no individual, corporation, or other entity acquires an excessive share of the Surfclam and Ocean Quahog Individual Transferable Quota (ITQ) privileges. In addition, the amendment will include a review and potential revision of the goals and objectives for the SCOQ FMP.

The Council held 4 public hearings and received 24 written comments during the scoping process. All of the comments were provided by individuals or groups associated with the commercial surfclam and ocean quahog industry, all of whom expressed opposition to development of an excessive shares definition. Commenters generally felt that the amendment is not necessary because the FMP goals and objectives are continuing to work well and the excessive shares issue has already been adequately addressed through Amendment 8 to the SCOQ FMP. However, guidance from NOAA's Office of General Counsel has indicated that additional action is needed to ensure that the SCOQ FMP is in compliance with the requirements of National Standard 4 guidelines under the Magnuson-Stevens Fishery Conservation and Management Act. The Council considered these comments and agreed to proceed with development of a range of alternatives for discussion at a future meeting.

Information and updates on this amendment are available at <http://www.mafmc.org/actions/scoq-excessive-shares-amendment>.

Surfclam Overfishing Limit

The Council revisited issues related to the Atlantic surfclam OFL and ABC. As background, in June 2017 the Council received the results of a benchmark stock assessment for Atlantic surfclams. Although the stock was not overfished and overfishing was not occurring, the SSC determined that the OFL reported in the assessment was unreliable, and decided not to specify an OFL for 2018-2020. Members of the surfclam industry expressed concern that the lack of an OFL could jeopardize the industry's certification with the Marine Stewardship Council (MSC). In response to these concerns, the Council agreed to review the issue further.

During the meeting, staff presented information regarding MSC certification and the role of SCS Global, which determines whether the fishery meets the MSC standards. After considering this information, as well as the sustainable condition of the fishery and the governance/management process in place, the Council did not recommend further action to be taken to modify the OFL and/or ABC. Several members of the public expressed

opposition to this conclusion. The Council considered these comments and agreed to send a follow-up letter to the Northeast Fishery Science Center to request the assessment scientists continue to work to improve the stock assessment. The SSC will receive updated information to review its ABC recommendations in 2018.

Risk Policy Omnibus Framework

The Council held the first meeting for the Risk Policy Omnibus Framework Action. In 2010, the Council approved an Omnibus Amendment which implemented mechanisms to specify ABCs, ACLs, and accountability measures for all managed resources contained within its six FMPs to bring them into compliance with the new requirements of the Magnuson Stevens Act Reauthorization of 2007. This amendment contemplated a Council review of the ABC control rules it established after five years of implementation in cooperation with its SSC. As a result, the Council has initiated a Risk Policy Omnibus Framework to provide for a review of the existing ABC control rule framework and risk policy and to recommend any changes, as appropriate. This action is expected to be completed in December 2017.

Ecosystem Approaches to Fisheries Management Risk Assessment

In 2016 the Council approved the "Ecosystem Approach to Fisheries Management (EAFM) Guidance Document." An integral part of this document was the initial steps toward the development of a matrix of Risk Elements. During the meeting, the Council reviewed the existing elements, many presented in the guidance document, and provided feedback and suggestions for additional risk elements that should be considered. Staff will use these elements to work with the NEFSC, EOP Committee, and Species Committees to identify existing information sources for each element and develop an initial ranking of Risk Elements for Council consideration at the October Council meeting. The final risk elements and rankings will be integrated into the Council's 2018 implementation plan and 5-year strategic plan (2019-2023) to identify potential actions needed to develop science and management responses to the prioritized risk elements.

Other Business

Martha's Vineyard/Nantucket Squid Buffer Framework

The Council has recently received a number of public comments regarding the longfin squid fishery activity south of Nantucket. The Council included consideration of buffer zone options in this area on its list of "Possible Additions" in the 2017 Implementation Plan. The Council expects to hold a first framework meeting in December 2017. If the Council decides to move forward with the framework, a second and final framework meeting would likely be held in April 2018.

Webinar Policy

The Council reviewed a draft policy regarding webinar procedures for various types of meetings. The final policy is available at <http://www.mafmc.org/s/MAFMC-Webinar-Policy.pdf>.

2018 Council Meetings

The schedule of 2018 Council meetings available on the Council website at www.mafmc.org/meetings.

Next Meeting

October 10-12, 2017

Hyatt Long Island East End
451 East Main St., Riverhead, NY 11901
(631) 208-0002



October 2017 Council Meeting Report

October 10-12, 2017

Riverhead, New York

The following summary highlights actions taken and issues considered at the Mid-Atlantic Fishery Management Council's October 2017 meeting in Riverhead, NY. Presentations, briefing materials, and webinar recordings are available on the Council website at www.mafmc.org/briefing/october-2017.

Surfclam and Ocean Quahog Goals and Objectives

The Council is considering potential revisions to the Surfclam and Ocean Quahog (SCOQ) Fishery Management Plan (FMP) goals and objectives. This was initiated in support of the Council's 2014-2018 Strategic Plan, which identified reviewing and updating FMP goals and objectives as a priority to ensure that they provide meaningful guidance and are consistent with today's fisheries and management context.

During the meeting, the Council was presented with a revised set of goals and objectives developed by the Fishery Management Action Team (FMAT) in consultation with the Fisheries Leadership and Sustainability Forum (FF). After reviewing feedback from public scoping hearings, interviews with advisors and Committee members conducted by FF, and considering additional public testimony, the Council approved the revised goals and objectives for inclusion in a public hearing document for the SCOQ Excessive Share Amendment. The Council and public will have additional opportunities to provide input on this issue during the continued development of the amendment. Information and updates on this action are available at <http://www.mafmc.org/actions/scoq-excessive-shares-amendment>.

Golden Tilefish Individual Fishing Quahog Program Review

Council staff presented the results of a 5-year review of the golden tilefish Individual Fishing Quota (IFQ) program. The 2007 reauthorization of the Magnuson-Stevens Act included new requirements related to the monitoring and review of limited access privilege programs, which includes fisheries managed under IFQ programs. A Fishery Management Action Team that included staff from the Mid-Atlantic Council, the Northeast Fisheries Science Center, and the Greater Atlantic Regional Fisheries Office was formed to conduct this review. The report provides the first comprehensive review of the progress of the Golden Tilefish IFQ Program towards achieving the stated goals of reducing overcapacity and eliminating the problems associated with derby fishing. In general terms, it was found that overcapacity has been reduced since the program was implemented, and it appears that derby-style fishing has subsided and that ex-vessel prices have improved under the IFQ system. The review also addresses recent administrative changes to the program, and summarizes future research needs and recommended changes to the program.

The Council agreed to postpone final approval of the report until December 2017 to allow an opportunity for the public to comment on the report. A link to the full report and an online comment form are available on the at <http://www.mafmc.org/comments/golden-tilefish-5yr-review>. Comments are due by November 17.

Lobster Standardized Bycatch Reporting Methodology Framework

Following the New England Fishery Management Council's vote to approve final action on the Lobster Standardized Bycatch Reporting Methodology (SBRM) Framework, the Mid-Atlantic Council also selected Alternative 2 as its preferred alternative and approved the framework for submission to NMFS. The Council's preferred alternative would stipulate that SBRM New England and Mid-Atlantic lobster pot fleets include all active vessels that use this gear in federal waters. For more background information on this action, see the June 2017 Council Meeting Report: <http://www.mafmc.org/s/2017-06-Council-Report.pdf>.

2018 Spiny Dogfish Specifications

The Council reviewed spiny dogfish specifications for 2018, which will be year 3 of 2016-2018 multi-year specifications. After considering input from the Scientific and Statistical Committee, the Spiny Dogfish Advisory Panel, and the Spiny Dogfish Monitoring Committee, the Council made no changes to the previously-recommended specifications, which are described at the link below. The Council also briefly discussed the potential for a male-only fishery, which could be feasible after the completion of a benchmark stock assessment. The Council requested a spiny dogfish assessment update for 2018 and a benchmark stock assessment as soon as possible.

2016-2018 Spiny Dogfish Specifications:

<https://www.greateratlantic.fisheries.noaa.gov/nr/2016/August/16dogfish20162018specsphl.pdf>

Ecosystem Approach to Fisheries Management Risk Assessment

The Council reviewed and approved a list of risk elements to include in an Ecosystem Approach to Fisheries Management (EAFM) Risk Assessment. As background, in August 2016 the Council approved a guidance document to facilitate the transition to an ecosystem approach to fisheries management in the Mid-Atlantic. When fully implemented, EAFM will integrate multiple ecosystem considerations into decisions for Council-managed species. These considerations include predator/prey interactions, changing habitats, shifting species distributions, social and economic dynamics, and others. The first step in implementation of EAFM is completion of a risk assessment which will be used to analyze the highest risk interactions for each species and identify strategies for addressing these risks. The risk elements approved by the Council are defined as “aspects that may threaten achieving the biological, economic, or social objectives that the Council desires from a fishery.” For a complete list, go to http://www.mafmc.org/s/EAFM-Risk-Elements_2017-11-11.pdf.

2018 Recreational Black Sea Bass Wave 1 Fishery

The Council reconsidered the potential opening of the recreational Wave 1 (January-February) black sea bass fishery in 2018. The issue was first considered in August at a joint meeting of the Council and the Atlantic States Marine Fisheries Commission’s Summer Flounder, Scup, and Black Sea Bass Board (Board). Although the Council and Board considered several options for a Wave 1 fishery, none were approved at the time (see the [meeting report](#) for details). Following the August meeting, a new option was proposed which would include a season from February 1 - 28, 2018, a 15-fish possession limit, and a 12.5-inch minimum size. After extensive deliberation, the Council approved these measures for federal waters. The Council also stipulated that the 2018 recreational harvest limit that applies to the remainder of the fishing year will be reduced by 100,000 pounds to account for expected harvest during the February season and that any adjustments to the 2018 recreational management measures to account for this harvest will only be required of those states that participate in the February fishery. This option will now be considered by the Board at their meeting on October 18, 2017. If approved by the Board, these measures would be in place for 2018 while the Council and Board consider the implementation of a Letter of Authorization (LOA) program for the 2019 recreational black sea bass Wave 1 fishery.

Summer Flounder, Scup, and Black Sea Bass Commercial Accountability Measures Framework

The Council met for the first framework meeting to consider modifying the commercial accountability measures (AMs) for summer flounder, scup, and black sea bass. The framework considers adding flexibility in the commercial accountability measures for these species based on stock status, similar to the AMs in place for the Council’s recreational species. Although the framework was only intended to address black sea bass when it was initiated in December 2016, the Council later decided to also include summer flounder and scup. The framework presents alternatives to the existing AMs with a focus on evaluating and accounting for commercial discards with options for both (1) evaluation of ACL overages and (2) responses to non-landing overages to account for the latest information and current stock status.

The Council reviewed initial staff analyses and evaluations of the draft alternatives. The Council supported the draft alternatives offered for consideration and the continued development of the framework. Final action on this framework is expected in early 2018.

2019-2023 Strategic Plan

In 2018 the Council will enter the final year of the 2014-2018 Strategic Plan and will need to develop a new plan to guide its activities for the next five years. During the meeting, the Council reviewed and provided feedback on a proposed timeline and approach for development of the next strategic plan. The approach proposed by staff will build upon the considerable data gathering and synthesis that led to the 2014-2018 Strategic Plan and will be augmented by additional outreach and public engagement. The Council expects to begin stakeholder outreach and data gathering in December 2017. Updates on this process will be posted to <http://www.mafmc.org/strategic-plan> as they become available.

Executive Committee – 2018 Implementation Plan

The Executive Committee met to receive an update on 2017 Implementation Plan progress and to review a draft list of priorities and activities for the 2018 implementation plan. The Committee recommended adding two items to the draft list of deliverables for 2018, including (1) an evaluation of incidental permit issues in the blue line and golden tilefish fisheries, and (2) ongoing involvement in relevant offshore energy issues in the Mid-Atlantic. The Committee also recommended the addition of several items under the category of “Possible Additions.” Council staff will incorporate the Committee’s recommendations and present a revised draft for Council consideration at the December meeting.

Other Business

Swearing in of New and Reappointed Council Members

The Council swore in new Council members Sonny Gwin of Maryland and Steve Heins of New York (Heins was recently appointed as an obligatory member after previously serving as a designated state official). The Council also swore in reappointed members Laurie Nolan of New York, Warren Elliott of Pennsylvania, and Dewey Hemilright of North Carolina.



Election of Officers

During the yearly election of officers, the Council reelected Mike Luisi as Council Chairman and Warren Elliott as Vice-Chairman. Mr. Luisi is the director of the Fisheries Monitoring and Assessment Division at the Maryland Department of Natural Resources. Mr. Elliott serves as the Pennsylvania Citizen Representative to the Chesapeake Bay Commission and as a member of the Pennsylvania Fish and Boat Commission.



Reelected Council Leadership: Chairman, Mike Luisi (right) and Vice-Chairman, Warren Elliott (left)

Regional Planning Body - Draft Vessel Monitoring System, Communities at Sea, and Ecologically Rich Areas Data Presentation

Nick Napoli presented an update on several data development activities associated with the Mid-Atlantic regional ocean action plan. His briefing included updates on the Ecologically Rich Area (ERA) data development process, draft 2015-2016 Vessel Monitoring System (VMS) data products, and draft Communities at Sea (CAS) data products.

2018 Council Meetings

The schedule of 2018 Council meetings available on the Council website at www.mafmc.org/meetings.

Next Meeting

December 11-14, 2017

Westin Annapolis

100 Westgate Circle, Annapolis, MD 21401

(410) 972-4300



ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

BRAXTON C. DAVIS
Director

October 20, 2017

MEMORANDUM

SAFMC 11-17

TO: Marine Fisheries Commission
FROM: Michelle Duval
SUBJECT: South Atlantic Fishery Management Council Meeting Summary (Sept. 25-29, 2017)

The South Atlantic Fishery Management Council met Sept. 25-29, 2017 in Charleston, South Carolina. The meeting was originally planned for Sept. 11-15, 2017 but was rescheduled due to Hurricane Irma. The attached meeting report compiled by council staff contains a summary of the major issues addressed and actions taken. The report includes links to the post-meeting news release, briefing materials, and the graphical and more detailed summary of the meeting via the September 2017 Council Meeting Round-up Story Map (<https://arcg.is/vDj41>). Links to summary motions, public comments, the meeting report, as well as the above items for any Council meeting can be found on the main Council Meetings webpage (<http://safmc.net/safmc-meetings/council-meetings/>). Items that may be of interest to the commission are highlighted below:

- **Red Snapper:** The council voted to approve an emergency rule request to NOAA Fisheries for a limited reopening of red snapper harvest in 2017. The council's request specified a total allowable harvest limit of 42,510 fish split between the recreational and commercial sectors per the existing allocation formula (69.43 percent recreational, 30.57 percent commercial). This equates to a harvest limit of 29,656 fish for the recreational sector and 124,815 pounds (whole weight) for the commercial sector. Should the emergency rule request be approved, harvest restrictions similar to previous limited openings would apply. Recreational harvest would occur only on weekends (Friday/Saturday/Sunday) and would be limited to one red snapper per person per day with no minimum size limit. Commercial harvest would begin upon publication of the rule and close when the harvest limit is projected to be met, and would be limited to 75 pounds (gutted weight) per trip with no minimum size limit. The earliest that the emergency rule might be approved is late October or early November. (See attached news release announcing 2017 red snapper season.)

The council approved Amendment 43 for secretarial review, which would implement an interim harvest limit for 2018 identical to that requested in the emergency rule. The existing commercial and recreational management measures described above would also apply. The council will continue to work on actions related to the use of descending devices, recreational reporting, etc. via Amendment 46 at its December meeting.

- **Cobia:** The council reviewed scoping comments for Coastal Migratory Pelagics Amendment 31, which considers either transferring management authority to the Atlantic States Marine Fisheries Commission (Commission), or to continue complementary management of cobia. This amendment is being developed in response to a request from the commission to consider a transfer of management authority. The council voted to continue development of the amendment, and is scheduled to approve a document for January public hearings at its December meeting.
- **Red Grouper:** According to the results of a new stock assessment received in June, the red grouper population is overfished, overfishing is occurring and the stock is not making adequate progress toward rebuilding. The

assessment indicates that recruitment (young fish entering the population) has been well below average. The council has requested an expedited framework action for its December meeting to adjust the annual catch limit, which will result in a significant decrease in allowable catch levels. Red grouper has been an important recreational and commercial species in the Carolinas, and the assessment results are consistent with concerns expressed by commercial fishermen regarding the status of the stock.



South Atlantic Fishery Management Council

News Release

FOR IMMEDIATE RELEASE
October 27, 2017

CONTACT: Kim Iverson
Public Information Officer
Toll Free 866/SAFMC-10 or 843/571-4366
kim.iverson@safmc.net

Council's Request for Red Snapper Season in 2017 Approved *NOAA Fisheries announces red snapper recreational mini-season and commercial catch limits*

At the request of the South Atlantic Fishery Management Council, and working closely with NOAA Fisheries, an interim annual catch limit has been approved that will open the red snapper fishery to limited harvest in 2017. NOAA Fisheries announced today that the red snapper recreational fishery in the South Atlantic region will open for two consecutive 3-day weekends beginning November 3rd. Recreational fishermen may harvest red snapper in federal waters (from 3 to 200 nautical miles) November 3rd through 5th and November 10th through 12th. The recreational bag limit is 1 fish per person/day and there is no minimum size limit. The commercial fishery will open November 2nd with a 75-pound (gutted weight) trip limit and no minimum size limit. Commercial trip limits are limits on the amount of the applicable species that may be possessed on board or landed, purchased, or sold from a vessel per day.

“We sincerely appreciate the decision by the Secretary of Commerce to allow limited harvest of red snapper this year,” said Council Chair Charlie Phillips. “Approving the Council’s request for an interim catch limit for 2017 will allow fishermen limited access to the resource as the stock continues to rebuild, provide an economic boost to fishing communities impacted by Hurricane Irma, and present an opportunity for data to be collected from both recreational and commercial fishermen.” The 2017 red snapper season is based on the approved interim annual catch limit of 42,510 fish. The recreational sector is allocated 71.93% of the total annual catch limit.

During the open red snapper season, state marine resource agency personnel will be conducting surveys at various locations and collecting samples from fishermen. Anglers are encouraged to cooperate with samplers and to provide carcasses (after fillets have been removed) for data collection.

Fishermen are also urged to use best fishing practices to minimize the number of released red snapper and help improve the likelihood that released fish will survive. “The red snapper fishery has remained closed since 2014 because mortality estimates of the number of released fish exceeded the annual catch limit,” explained Captain Mark Brown, Council Vice-Chair and a full-time charter captain based in Mt. Pleasant, SC. “It is imperative that we use best practices. The key to having future access to red snapper lies in reducing the mortality of fish that are released.”

Best Practices:

- Once you have met your red snapper bag limit, move away from areas likely to have red snapper. If you are approaching your vessel limit, move to a different area. When red snapper are out of season avoid areas where they are common.
- Use single hook rigs – since the bag limit is one per person, this potentially reduces the number of red snapper caught on one drop.

(Continued)

- If you catch a red snapper and plan to release the fish, keep the fish in the water as you remove the hook and return the fish back to the water as quickly as possible. [Tips on how to use a dehooking device](#)
- Recognize signs of barotrauma: bulging eyes, stomach protruding from mouth, distended intestines, bloated belly. [Information on signs of barotrauma](#).
- If the stomach is protruding from the mouth of the fish, do not puncture or push the stomach back in before releasing the fish.
- Use descending devices if releasing fish with barotrauma. There are a variety of devices available. [Information on different types of descending devices and their use](#).

New Pilot Program for Recreational Reporting

Recreational anglers will have the opportunity to report individually about their red snapper fishing trips via a voluntary pilot program being tested for the first time as the red snapper mini-season opens. [MyFishCount.com](#) is a new web portal that allows anglers to report their catches using photos to document lengths, as well as depths fish are caught, release techniques, hook type, and other information. Anglers are encouraged to register online and to take photos and keep written records of the information while offshore.

Additional information on this pilot program as well as other items of interest for the upcoming red snapper season is available from the Council's website at: <http://safmc.net/electronic-reporting-projects/red-snapper-reporting>.

Season for 2018

In addition to the emergency rule request to allow an opening this year, the Council also approved measures in Amendment 43 to the Snapper Grouper Fishery Management Plan during its September 25, 2017 meeting. The amendment would revise the process for calculating the annual catch limit with the intent to allow a red snapper season in 2018. If approved by the Secretary of Commerce, the recreational fishery would open the second Friday in July (July 13, 2018) and the commercial fishery the second Monday in July (July 9, 2018).

The catch rate during the 2017 season will be considered in setting the length of any 2018 season, so fishermen are encouraged to follow the best fishing practices and to be conservative in how many red snapper they catch during 2017. The amendment is currently under review and an announcement from NOAA Fisheries about a 2018 red snapper season is expected in early 2018.

<p>The South Atlantic Fishery Management Council, one of eight regional councils, conserves and manages fish stocks from three to 200 miles offshore of North Carolina, South Carolina, Georgia and east Florida.</p>
--



SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

4055 Faber Place Drive, Suite 201, North Charleston SC 29405
 Call: (843) 571-4366 | Toll-Free: (866) SAFMC-10 | Fax: (843) 769-4520 | Connect: www.safmc.net

Charlie Phillips, Chair | Mark Brown, Vice Chair
 Gregg T. Waugh, Executive Director

SEPTEMBER 25-29, 2017 COUNCIL MEETING REPORT CHARLESTON, SOUTH CAROLINA

The following summary highlights the major issues discussed and actions taken at the South Atlantic Fishery Management Council’s September 2017 meeting in Charleston, South Carolina.

Briefing materials, presentations, and public comments are available on the Council’s website at: <http://safmc.net/briefing-books/briefing-book-september-2017-council-meeting/>. Final Committee Reports contain more details of what was accomplished for each committee and are located on the September briefing book page. In addition, the Summary of Motions on the Council’s website includes all motions from the meeting. Read further details and see images and other links at the September 2017 Council Meeting Round-up Story Map: <https://arcg.is/vDj41>. The Meeting News Release is available at: <http://safmc.net/news-releases/092917-safmc-news-release-september-2017-council-meeting/>

Issue:	Action Taken:	Schedule:
Red Snapper	<p>The Council requested emergency action for red snapper to have a 2017 season through Preferred Alternative 4: Temporarily allow limited harvest of red snapper in 2017 and specify a total annual catch limit equal to 42,510 fish. Commercial annual catch limit equals 124,815 pounds (whole weight) and recreational annual catch limit equals 29,656 fish.</p> <ul style="list-style-type: none"> • Recreational bag limit = 1/person/day • Commercial trip limit = 75 pounds gutted weight • No size limit <p>The Council approved Amendment 43 for formal review to set a 2018 red snapper season opening through Preferred Alternative 4:</p> <ul style="list-style-type: none"> • Remove the process and equation used to determine the red snapper ACL as specified in Snapper Grouper Amendment 28. • Specify a total annual catch limit equal to 42,510 fish. • Commercial annual catch limit equals 	<p>Official notice about the 2017 fishing season will be available from NMFS very soon. If approved, the season is expected to open in late October or early November.</p> <p>The Council’s goal is to have measures in place in time to allow limited harvest beginning in July of 2018.</p>

	<p>124,815 pounds (whole weight).</p> <ul style="list-style-type: none"> • Recreational annual catch limit equals 29,656 fish. • If approved, the recreational fishery would open the second Friday in July (July 13, 2018) and the commercial fishery would open the second Monday in July (July 9, 2018). • Recreational bag limit = 1/person/day • Commercial trip limit = 75 pounds gutted weight • No size limit 	<p>The Council will work on additional items in a new red snapper amendment (Amendment 46) at the December 2017 meeting.</p>
Issue:	Action Taken:	Schedule:
Recreational Visioning Amendment	Regulatory Amendment 26: Provided guidance and approved a new approach. Under this new approach, the recreational aggregates would be divided into three groups - deep-water species, shallow-water groupers, and other shallow-water species. Alternatives include options for modifications to bag limits, seasons for deep-water species and shallow-water groupers, and size limits for deep-water species and triggerfish that would help streamline the regulations for anglers, law enforcement, and managers.	Review and finalize actions & alternatives and purpose and need in December 2017. Review analyses, select preferred alternatives, and approve for public hearings in March 2018. Review public comments, modify document, and approve all actions in June 2018. Review and approve for formal review in September 2018.
Commercial Visioning Amendment	Regulatory Amendment 27: Provided guidance to staff on alternatives for trip limits, size limits, split seasons, seasons, and other measures.	Approved the same timing as shown above for the Recreational Visioning Amendment.
Golden Tilefish	<p>The Council received an update from NMFS that the interim measures to reduce overfishing by setting the ACL for 2018 at the projected yield at 75%F_{MSY} (323,000 pounds gutted weight) is on schedule.</p> <p>Briefly reviewed new update & projections prior to the SSC review.</p>	<p>The goal is to implement the new ACL prior to the start of the 2018-fishing season.</p> <p>Review at December 2017 meeting after the SSC review.</p>
Red Grouper	<p>Directed staff to prepare an expedited framework to adjust red grouper ABC & ACL using “low recruitment” projections. The reductions will be substantial given red grouper are overfished and undergoing overfishing.</p> <p>Directed that the SSC review the projections and provide guidance on ABC, stock status, and rebuilding alternatives.</p>	<p>The expedited framework will be available in the December briefing book. The public will have a chance to comment prior to and at the December meeting. The Council will review comments & SSC recommendations, and take final action at the December meeting. The intent is to implement these measures ASAP in 2018.</p>

Issue:	Action Taken:	Schedule:
Mackerel Cobia	<p>The Council provided guidance on CMP Amendment 31 to evaluate options for a complementary plan with the Atlantic States Marine Fisheries Commission and removal of Atlantic Migratory Group Cobia from the FMP.</p> <p>Directed staff to begin work on a framework amendment for an Atlantic king mackerel commercial trip limit of 75 fish from March 1-31.</p>	<p>Review draft Amendment 31 with approved alternatives for management of Atlantic cobia and approve for public hearings at the December 2017 meeting.</p> <p>Review the options at the December 2017 meeting.</p>
Habitat and Ecosystem Based Management	<p>The Council reviewed, modified, and approved the Essential Fish Habitat Policy Statement on Artificial Reefs.</p> <p>The Council reviewed the Draft FEP II Implementation Plan & FEP II Dashboard and provided guidance to staff to develop a draft roadmap to guide implementation.</p>	<p>Revise and post to the Council's website.</p> <p>Prepare materials for review during the November Habitat Ecosystem Advisory Panel meeting and completion for consideration and possible approval at the December 2017 Council meeting.</p>
SEDAR	<p>The Council adjusted their assessment priorities:</p> <ul style="list-style-type: none"> • Conduct Spanish mackerel in 2020 (standard) • Move red grouper to 2021 (standard) • Add black sea bass in 2021 (update) • Move white grunt to 2022 (benchmark) <p>Request the SEFSC develop a plan for updating the wreckfish assessment. In the event there are impediments to updating the existing assessment, consideration should be given to alternative approaches that could be used to provide the Council information on stock status, and give the SSC information to provide an updated ABC recommendation.</p> <p>Request that the SSC document the specific changes to be considered in the next golden tilefish assessment that justify the standard category, and consider whether an update would be adequate for snowy grouper.</p>	<p>These priorities will be presented to the SEDAR Steering Committee at its next meeting.</p> <p>SEFSC to report status to the Council in December 2017.</p> <p>SSC will address at the October 2017 meeting and report to the Council in December 2017.</p>



South Atlantic Update

Published for fishermen and others interested in federal marine resource conservation issues Winter 2017

Council Reviews Input from Winter Public Hearing and Scoping Meetings *Management options for red snapper, Visioning, and yellowtail snapper considered in March*

Council members and staff traveled from Hatteras, NC to Key West, FL in January and February to solicit public input on management issues affecting some of the 55 species within the snapper grouper management unit that includes snappers, grouper, porgies, jacks, tilefish, and grunts. A total of 241 people attended the public hearing/scoping meetings with additional input solicited through webinars and via the Council's online comment forms.

Public scoping comments were solicited on options for red snapper and recreational reporting through Snapper Grouper Amendment 43 and two Vision Blueprint Regulatory Amendments with options for recreational and commercial sectors as outlined through the Council's 2016-2020 Vision Blueprint. Scoping is the first stage of the process to amend a fishery management plan after an issue has been identified and allows the public to comment before the Council decides whether or not to move forward with an amendment. During the scoping process, the Council asked for input on a number of questions.

Public Scoping:

Red Snapper - Snapper Grouper Amendment 43

How can the number of discarded red snapper be reduced? How could survival of these released fish be improved? How could catch, discard, and effort estimates in the recreational fishery for red snapper be improved?

These are some of the questions the Council is asking of stakeholders as they consider options for management of red snapper in Snapper Grouper Amendment 43. The fishery remains closed to harvest primarily due to the estimated number of dead discards in the recreational fishery as the stock continues to rebuild.

Data collected by NOAA Fisheries through the Marine Recreational Information Program (MRIP) estimate that over 500,000 red snapper were caught and released in 2015. Estimates used in the most recent stock assessment indicate that 28.5% of red snapper released by recreational fishermen do not survive. The number of discards present a challenge as the Council



Council member and full-time charter captain Mark Brown (left) prepares to release a red snapper landed by a client off the coast of Charleston, SC. The Council will review public comment on options for the red snapper fishery during its March meeting in Jekyll Island, GA.

considers viable management options to reduce the number of discards and perhaps allow limited harvest.

Fishermen and others attending the scoping/public hearing meetings questioned the MRIP data being used for estimates of landings and discards and the estimated discard mortality rate. Some expressed concerns that efforts to reduce discards could lead to large area closures. There was some support for having closed areas for certain months if that time is known to have a high abundance of red snapper, creating a snapper grouper season in shallower water, and modifications to tackle. Some fishermen suggested discards could be reduced by allowing harvest of some red snapper because people would stop fishing after they caught red snapper.

There was general support for requiring the use of descending devices to reduce discard mortality as well continued use of circle

(Continued page 4)



**March 6-10, 2017
Council Meeting
Jekyll Island, GA**
See page 7 for details

**Formal Public Comment
Wednesday, March 8
at 4:30 PM**

Inside This Issue:

From the Chair	2
In The News	3
Law Enforcement Officer of the Year	3
Amendments at a Glance	5
From the Executive Director's Desk	6
March 2017 Meeting Agenda	7
Calendar	8

SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

Gregg T. Waugh **Dr. Brian Chevront, Deputy**
Executive Director John Carmichael, Deputy

VOTING MEMBERS

Designated State Officials

<p>Dr. Michelle Duval - Chair Morehead City, NC (252) 808-8011</p> <p>Doug Haymans Brunswick, GA (912) 264-7218</p>	<p>Jessica McCawley Tallahassee, FL (850) 487-0554</p> <p>Mel Bell Charleston, SC (843) 953-9007</p>
---	--

Appointed Obligatory Members

<p>Ben Hartig Hobe Sound, FL (772) 546-1542</p> <p>Zack Bowen Savannah, GA (912) 398-3733</p>	<p>Tim Griner Charlotte, NC 980/722-0918</p> <p>Chris Conklin Murrells Inlet, SC 843/543-3833</p>
---	---

Appointed At-Large Members

<p>W. Chester Brewer West Palm Beach, FL (561) 655-4777</p> <p>Mark Brown Mt. Pleasant, SC (843) 881-9735</p>	<p>Charlie Phillips, Vice Chair Townsend, GA (912) 832-3149</p> <p>Anna Barrios Beckwith Morehead City, NC (252) 671-3474</p>
---	---

NMFS Regional Administrator

Dr. Roy Crabtree
St. Petersburg, FL
(727) 824-5301

Non-Voting Members

<p>Robert Beal ASMFC Washington, DC (202) 289-6400</p> <p>LT Tara Pray U. S. Coast Guard Miami, FL (305) 415-6778</p>	<p>Dr. Wilson Laney U. S. Fish & Wildlife Raleigh, NC (919) 515-5019</p> <p>Deirdre Warner-Kramer State Department Washington, DC (202) 647-2883</p>
---	--

Editor's Note

The *South Atlantic Update* is published by the South Atlantic Fishery Management Council. Its purpose is to report developments in fisheries management that would be of interest to its readers. Please credit the Council when reprinting articles used in this newsletter. Submissions may be mailed to Kim Iverson, Editor, *South Atlantic Update*, 4055 Faber Place Dr., Suite 201, N. Charleston, SC 29405, or may be sent via the internet; Email address: kim.iverson@safmc.net.

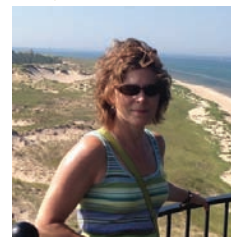
A publication of the South Atlantic Fishery Management Council Pursuant to National Oceanic and Atmospheric Administration Award No. NA15NMF4410010.



Chairman's Perspective

Dr. Michelle Duval, Council Chair

"Hope Springs Eternal" Navigating a New Year and a New Administration



It's a new year, and the rapid pace from 2016 has certainly carried forward into 2017 – as I consider the many items on the Council's plate, I feel as though I can already see December (and more gray hair and wrinkles) peeking at me through the doorway...

As with any new year, there are always a few changes and this one is no exception, most notably a new Administration that has moved quickly to implement several priorities. Our federal partners are still navigating the new regulatory environment of the President's recent Executive Order and what that means for Council actions that have already been submitted for secretarial review. Congressman Young (R-Alaska) introduced H.R. 200, "Strengthening Fishing Communities and Increasing Flexibility in Fisheries Management Act," which is something of a resurrection of previously-introduced legislation that would modify and reauthorize the Magnuson-Stevens Act. Finally, the appointment of a new Assistant Administrator for Fisheries has yet to be made (although rumors abound). You can be certain that all Councils will be paying close attention to each of these items.

Closer to home, the start of a new year means a new round of scoping and public hearings for a variety of items: the future of red snapper management, yellowtail snapper allocation, and our first Vision Blueprint amendments. All of these issues present challenges and opportunities – challenges to our current way of approaching problems inside the confines of the Magnuson Act, and opportunities to work alongside our stakeholders to develop solutions and use our tools in new and different ways. The Vision Blueprint embodies this approach, and I have appreciated the thoughtful input regarding these two amendments during the past month.

Our Citizen Science Program, which is moving forward thanks to a shift in staff responsibilities, relies entirely on stakeholder participation to address our data and information gaps. It's clear that there is no one silver bullet that will address all issues to everyone's satisfaction; but perhaps if we can agree that the appropriate tool is a wrench, different types of situations will call for an adjustable wrench vs. a socket wrench vs. a hex key...

An extremely overused cliché is that "hope springs eternal," and at this time of the year I am usually still pretty hopeful that we can work our way through the challenges of 2017, if not to everyone's complete satisfaction, at least to everyone's agreement and acceptance.

Michelle

In the News:

NOAA Fisheries Announces Atlantic Cobia (GA to NY) Closed for 2017

Recreational fishing for Atlantic cobia in **federal waters** from Georgia to New York will remain closed until January 1, 2018. In 2016, the recreational and total annual catch limits of Atlantic migratory group cobia were exceeded. Therefore, the 2017 recreational season must account for this overage.



With the understanding that recreational harvest of cobia will remain open in some state waters during the federal closure, NOAA Fisheries has determined that the annual catch limit in 2017 will likely be exceeded as the majority of cobia landings come from state waters.

NOAA Fisheries will reevaluate the federal closure if state regulations change in 2017. Access the *Fishery Bulletin* from NOAA Fisheries at: http://sero.nmfs.noaa.gov/fishery_bulletins/index.html.

MREP Southeast Accepting Applicants for 2017 Workshops

The Marine Resources Education Program (MREP) Southeast is formally inviting applications for all individuals interested in attending the 2017 Fisheries Science and Management workshops in Tampa-St. Petersburg, Florida.

MREP Southeast is for anyone with a vested interest in federally managed marine fish from Texas to North Carolina. The workshop-based program specifically runs through the fisheries science and management processes, demystifies the acronyms and vocabulary, and equips fishermen with the tools to engage with tough issues facing the managers of our offshore fisheries.

MREP provides a neutral setting away from contentious management issues for fishermen to work through the 'how' of the whole process, meet the people behind agency jobs, and share important feedback from the fishing community.

The program is offered as a series of workshops that build upon each other. Travel expenses are covered and seats are limited.



MREP Southeast Schedule

- **Fishery Science Workshop**
May 2-4, 2017
St. Petersburg, FL
- **Fishery Management Workshop**
September 19-21, 2017
Tampa, FL

Learn more and apply online at:
<http://www.gmri.org/mrep-southeast>

Special Agent Richard Chesler Awarded Law Enforcement Officer of the Year

Annual award honors law enforcement personnel going above and beyond the call of duty in protecting natural resources



Council Chair Dr. Michelle Duval and Law Enforcement Officer of the Year Special Agent Richard Chesler

Members of the South Atlantic Fishery Management Council presented its annual Law Enforcement Officer of the Year award to NOAA Office for Law Enforcement Special Agent Richard Chesler during its December meeting in Morehead City, NC.

"We are fortunate to have dedicated men and women working tirelessly in the field and behind the scenes, at both the state and federal level to help protect our marine resources," said Council Chair Dr. Michelle Duval. "I am very pleased to

have the opportunity to present the award to Agent Chesler, who has exemplified these characteristics throughout his law enforcement career."

Special Agent Chesler began his career nearly two decades ago as a U.S. Coast Guard recruit, working counter-drug and U.N. Sanction enforcement in the Caribbean, Eastern Pacific, and Northern Arabian Gulf. His duties also included working as a boarding officer enforcing fisheries regulations off the coast of Alaska, where he developed a passion for natural resources. Before becoming a Special Agent with NOAA Fisheries Office of Law Enforcement in 2003 he also worked as a Deputy U.S. Marshal.

As a Special Agent based in Port Orange, Florida Chesler conducts complex criminal and civil investigations of violations of federal fisheries law under the Magnuson-Stevens Act as well as those impacting endangered species, marine mammals, and regulations covered under the Lacey Act. He also works field enforcement including patrols and surveillance and provides liaison and training as part of the joint enforcement agreement (JEA) with the Florida Fish and Wildlife Conservation Commission, working closely with the offshore patrol

vessel program.

With an outgoing personality, SA Chesler has coordinated or participated in numerous outreach events, presented to the Council on law enforcement issues, and authored the law enforcement component of the Oculina Evaluation Plan, outlining enforcement approaches for the managed area.

"It is both an honor and privilege to join the elite group of fisheries enforcement professionals who have received this award," said Chesler. Nominees may be submitted annually from each of the southeastern state law enforcement agencies, the U.S. Coast Guard, and NOAA Fisheries.



Special Agent Richard Chesler talks with students during an outreach event to increase awareness of the Oculina Bank and the deepwater corals found there.

Scoping/Public Hearing Meetings (Continued from page 1)

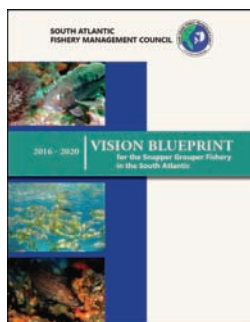
hooks and venting tools with additional outreach and education. Some fishermen supported using the Council's developing Citizen Science Program to help verify discard estimates or discard mortality.

Most fishermen suggested a recreational season to allow harvest of red snapper, suggesting the population is doing much better than in the past. There were a variety of combinations of bag limits, size limits, and seasons suggested. There was also some support for recreational reporting, primarily using electronic technology, and a possible tag program to allow harvest.

At the Council's request, a Red Snapper Discard Mortality Review is included in the briefing book materials for the Council's March meeting. The Council will review all comments and continue to discuss options during the meeting.

Snapper Grouper Visioning Amendments - for recreational and commercial sectors

Should aggregate bag limits for snapper grouper species be modified? Should the current shallow water grouper spawning season closure be modified? Should the recreational size limit for black sea bass change? How should commercial split seasons be structured?



The Council's **2016-2020 Vision Blueprint** for the Snapper Grouper Fishery is the culmination of three years of the Council working with stakeholders to develop a long-term plan for the fishery. Learn more by visiting the *Science and Statistics* section of the Council's website at www.safmc.net.

Most commentors supported retaining the current shallow-water grouper closure with some modifications recommended. Comments specific to the commercial fishery included support for a split season for red porgy (similar to the current split seasons for vermilion snapper and gray triggerfish), considering management measures specific to "traditional" bandit boats, removing minimum size limits for deepwater species, and other measures. Summaries of the scoping comments are available in the briefing book materials for the March meeting of the Snapper Grouper Committee.

Input on these and other issues was solicited as part of public scoping for Vision Blueprint Regulatory Amendment 26 addressing recreational options and Regulatory Amendment 27 focusing on commercial options as identified in the Council's Vision Blueprint for the Snapper Grouper Fishery.

Recommendations for changes to the current aggregate bag limit varied. Some fishermen felt the aggregate limits were confusing. There was some support for changing the species in the aggregate limits to reflect harvest depth instead of species composition to help reduce discards and simplify regulations. Many supported reducing the recreational black sea bass minimum size limit from 13 inches to 12 inches to help reduce discards.

Public Hearing:

Yellowtail Snapper - Snapper Grouper Amendment 44

The Council also solicited public comment on actions addressing allocations for yellowtail snapper. The Council had initially included both yellowtail snapper and dolphin in a joint amendment to consider modifying allocations between commercial and recreational sectors after the commercial fishery was closed for both species in 2015. During its December meeting, the Council decided to consider measures for dolphin in a separate amendment and move forward with yellowtail snapper actions in Amendment 44.



Yellowtail Snapper Fishery

- Fishery occurs primarily in South Florida and FL Keys
- ACL = 3,037,500 lbs. (ww)
- Current allocation:
 - 47.44% recreational
 - 52.56% commercial

The yellowtail fishery primarily occurs in southern Florida and the stock is not overfished or undergoing overfishing. Currently 75% of the total Acceptable Biological Catch is designated to the South Atlantic Council and 25% to the Gulf of Mexico Council. An action to specify a single ABC and subsequently combine annual catch limits were met with opposition by the majority of fishermen and others that provided both written and in-person public comment. Among the comments there were concerns that combining the ACLs could set a precedent for other species managed by the two councils.

An action to modify the current allocation of yellowtail snapper between commercial and recreational sectors in the South Atlantic was met with similar opposition. There were concerns that transfer of allocation isn't the best way to address closures and that several options in the amendment could cause a closure of the recreational fishery if quota were transferred. Commentors also noted the recent change in the fishing year (August 1 - July 31) to allow for a winter fishery for yellowtail snapper and the need to wait and see the effects on the fishery before making any other changes.

The Council will consider all public comments received for each of the amendments during its March 6-10, 2017 meeting in Jekyll Island, Georgia. Read Public Hearing and Scoping Meeting comments on the Council's website at: <http://safmc.net/safmc-meetings/public-hearing-and-scoping-meeting-schedule/>

Learn More and Submit Your Comments on Issues Addressed at the March 2017 Council Meeting



- Meeting materials for the March Council meeting are now available and include copies of each amendment and discussion documents.
- Submit comments online for issues being addressed by the Council at the March 2017 meeting and read what others are saying.

<http://safmc.net/safmc-meetings/council-meetings/>

Amendments at a Glance - A quick reference for proposed and recently implemented measures

Keeping track of the various amendments to fishery management plans as they are being developed and subsequent regulation changes can be a challenge. Below is a brief overview of amendments in various stages of development and implementation. Draft copies of the amendments are available in the briefing book materials for each Council meeting. Public hearing summaries and scoping documents outlining proposed management measures are also available prior to scheduled meetings. Materials are posted on the Council's website at www.safmc.net as they become available. Information on all implemented amendments is available from the "Fishery Management Plan" page of the website.

Currently Under Development by the Council

Snapper Grouper Amendment 44 – Yellowtail Snapper Allocations

The amendment proposes to specify a single Acceptable Biological Catch and Annual Catch Limit for South Atlantic and Gulf of Mexico yellowtail snapper and modify allocations between the commercial and recreational sectors for the South Atlantic yellowtail snapper fishery. Alternatives in the amendment include temporary and permanent allocation shifts, establishing a common pool for the annual catch limit to be used by either sector, and a reserve category with a roll over credit. **Status:** Public hearings held in Jan/Feb 2017. Council to review public comment in March 2017.

Once an amendment is approved by the Council, the document is then sent to NOAA Fisheries as part of the Secretarial review process. Additional public comment is accepted on actions proposed in the amendment before they are approved, partially approved, or disapproved by the Secretary of Commerce.

Snapper Grouper Amendment 43 Red Snapper

The amendment includes options to reduce discards of red snapper, improve estimates - including recreational reporting, and options to possibly allow a fishery as the stock continues to rebuild. **Status:** Public scoping conducted in Jan/Feb 2017. Council will review public comment and options during its March 2017 meeting.

Snapper Grouper Visioning Amendments – Regulatory Amendment 26 (Recreational) and Regulatory Amendment 27 (Commercial) measures

The Council is developing two sector-specific amendments that include options for management measures identified as part of the Council's 2016-2020 Vision Blueprint for the Snapper Grouper Fishery. **Status:** Public scoping conducted in Jan/Feb 2017. Council will review public comment and options during its March 2017 meeting.

Dolphin Wahoo Amendment 10 – Measures for dolphin

The amendment includes options for Optimum Yield, allocations, allowable gear, and operator permit cards. The Council will review the draft amendment during its March meeting and continue to develop actions and alternatives.

Approved by Council/Under Secretarial Review

South Atlantic For-Hire Electronic Logbook Amendment Requirement for Weekly Reporting by Charter Vessels

The amendment would require weekly trip-level electronic reporting for charter (6-pack) vessels to better monitor landings and discards, and better assess the impacts of regulations on the for-hire industry fishing in federal waters. The amendment would also modify the current timing of headboat reporting. **Status:** Public hearings were held in Jan/Feb 2016. The Council approved the amendment for Secretarial review during its December 2016 meeting.

Snapper Grouper Amendment 41 – Mutton Snapper

The amendment revises biological parameters, catch levels, and management measures for mutton snapper. Actions include reducing the recreational bag limit and commercial trip limit and increasing the minimum size limit. Scoping meetings were held in Jan/Feb 2016 and public hearings August 2016. **Status:** The Council approved the amendment for Secretarial review at its December 2016 meeting.

Under Secretarial Review (continued)

Snapper Grouper Amendment 37 – Hogfish

Recent studies indicate there are two separate genetic stocks of hogfish in the South Atlantic. The amendment specifies two separate stocks: 1) the Florida Keys/East Florida stock and 2) the GA/NC stock. A 2014 benchmark stock assessment was completed for hogfish and it was determined that the FL Keys/E FL stock was overfished and undergoing overfishing. The amendment establishes a rebuilding plan for the FL Keys/EFL stock and would reduce bag limits and commercial trip limits, increase minimum size limits, implement a recreational season of May - October for the FL Keys/E FL stock, and other measures. Public hearings were held in Jan/Feb 2016. **Status:** The Council approved the amendment for Secretarial review in September 2016. NOAA Fisheries issued the Proposed Rule in December 2016. Rulemaking continues.

Coastal Migratory Pelagics Framework Amendment 4 Atlantic Migratory Cobia

In March 2016, the Council began development of this framework amendment with actions intended to help lengthen the recreational season for Atlantic cobia (GA through NY) beginning in 2017. The recreational season closed in Federal waters on June 20, 2016 due to the landings in 2015 exceeding the recreational annual catch limit. NOAA Fisheries has announced that due to overages in 2016, the Atlantic cobia recreational fishery will remain closed in 2017 in federal waters. Actions include changes to bag limits, vessel limits, minimum size limits, and accountability measures. **Status:** Council approved the amendment during its September 2016 meeting. NOAA Fisheries is accepting public comment on the Proposed Rule until March 23, 2017.



Snapper Grouper Amendment 36

Spawning Special Management Zones

The amendment would establish Spawning Special Management Zones to help protect spawning snapper grouper species. **Status:** Approved by Council in March 2016. NOAA Fisheries is accepting comments on the amendment and Proposed Rule until March 6, 2017.

Dolphin Wahoo Regulatory Amendment 1

Dolphin Commercial Trip Limit

Status: Council approved in December 2015. Sent to NOAA Fisheries on 2/16/16. Comment period by NOAA Fisheries on the Proposed Rule for regulations ended August 1, 2016. **NOTE:** Implementation is delayed until March 21, 2017 in accordance with an executive memorandum from the White House.

Coastal Migratory Pelagics Amendment 26 – King Mackerel ACLs, boundary and mixing zone changes, other measures

Status: Approved by the South Atlantic Council in March 2016 and the Gulf Council in April 2016. Sent to NOAA Fisheries in July 2016. NOAA Fisheries announced the Proposed Rule in December 2016. Rulemaking continues.

Note: This listing is an overview and is not all-inclusive. For a complete list of amendments, visit www.safmc.net.

From The Executive Director's Desk

Sustainable Fisheries = Sustainable Jobs



Gregg Waugh

The overall objective of the Council's work is to ensure sustainable fisheries – and that leads to sustainable jobs. So much of the focus right now is on

regulations that limit or reduce the amount of fish available to fishermen, and this has resulted in efforts to reduce the number of regulations (e.g., the Executive Order for a freeze on regulations and a requirement to remove 2 regulations for every new regulation). The effort to eliminate or reduce fishing regulations, along with the extensive delays in the review and approval process, combine to have negative social and economic impacts on recreational and commercial fishermen and fishing communities.

Historically, the South Atlantic Council has, for the most part, set the Annual Catch Limits (ACLs) at the highest poundage possible given the stock assessment/science available and the requirement of the Magnuson-Stevens Act. What does this mean? Well it means that some of our regulations are good for jobs; they promote more economic returns for both recreational and commercial fishermen. Two of many examples are:

1. Snapper Grouper Regulatory Amendment 16 (black sea bass pot closure and gear markings)

The amendment contains two actions: the first addresses the prohibition on use of commercial black sea bass pots from November 1 through April 30 that was implemented on October 23, 2013 to aid in the protection of migrating whales; the second action specifies new black sea bass pot gear modifications that aid in gear identification in the event of a whale entanglement. The amendment, which allows for the commercial winter fishery to reopen within defined boundaries, was approved by the Council and sent for Secretarial review on March 4, 2016. The Final Rule published on December 29, 2016 and regulations were effective to allow for the pot fishery to reopen on December 29, 2016, and for enhanced gear markings on January 20, 2017. The Council's intent was to have the new regulations in place to allow the fishery to open in November 2016.

While the 10 months required for review and implementation cost black sea bass

pot fishermen lost income (and the related lost jobs) from fishing with pots during the months of November and December 2016, the final rule does allow for an annual winter fishery once again.

Under the new Executive Order delaying the implementation of regulations, the requirements for buoy line markings have been delayed from January 20 to March 21, 2017. This delay in requiring markings on black sea bass pot lines could negatively impact the commercial industry if a whale is entangled in a pot line that is not marked. Such entanglements could be attributed to the black sea bass pot fishery when in fact it was from another fishery.

2. Joint Coastal Migratory Pelagic Amendment 26 (king mackerel ACLs, re-designation of KM boundaries, and mixing zone, and other king mackerel actions)

This amendment contains actions to increase the Gulf and Atlantic king mackerel ACLs based on the results of the latest stock assessment (SEDAR 38); modify the stock boundary to be consistent with the stock boundary used in SEDAR 38; and other measures.

Public hearings were held in January/February 2016. The amendment was sent for formal review on July 7, 2016. The Notice of Availability published on December 15, 2016, with a comment period



until February 13, 2017. The Proposed Rule published on December 29, 2016 with comments due by January 30, 2017. The South Atlantic and Gulf Councils sent a comment letter dated 1/30/17 requesting waiver of the 30-day cooling-off period to increase the ACL as soon as possible.

The 7 months and counting required for review and implementation is costing king mackerel fishermen lost income (and the related lost jobs) from not being able to fish under higher catch limits and other regulations.

Lack of adequate data and the resulting uncertainty in assessment results is also costing jobs. The Council is moving forward with a Citizen Science Program to work with fishermen and scientists to improve our data/science and ensure results are used in improving our stock assessments.

New Projects Funded

The Council received very exciting news about two new projects that are being funded to improve data by partnering with the National Marine Fisheries Service (NMFS), the Atlantic Coastal Cooperative Statistics Program (ACCSP), the Snook & Gamefish Foundation, and Harbor Light Software:

1. **Recreational Stamp/Logbook** – the public is very concerned about having valid recreational data. To gather additional data, a mobile App would be modified by the Snook & Gamefish Foundation that would create an electronic recreational snapper grouper permit for individual fishermen (immediately sent to the applicant) and provide a platform to report recreational catch and discard data electronically. The public and managing partners would access the data through ACCSP. The application would also collect information on the size composition of discards and alert fishermen about managed areas. Improved private recreational catch estimates and other data would improve stock assessment results and in many cases lead to more jobs.

2. **Outreach for the New For-Hire Electronic Reporting Requirement** – the project includes pre-implementation and implementation training and outreach programs about electronic reporting systems targeting charter captains and law enforcement officers throughout the region. The project, in cooperation with Harbor Light Software will also develop a customer service support system to provide real-time troubleshooting guidance on issues that may arise with the electronic reporting system. Better accounting of the charter catches may help prevent unnecessary recreational closures and would improve stock assessment results and in many cases lead to more jobs.

The Council remains committed to maximizing jobs within the fishing industry and the resulting social and economic benefits to fishing communities on a sustainable basis. To accomplish this goal, it is critical that we maintain the ability to implement management measures as needed and fix the data shortcomings, and the Council is actively working to fill these data gaps.

Gregg

Know Before You Go!

SA Fishing Regulations App Available
Keep up with the latest federal fishing regulations



Scan the appropriate QR code below or search "SA Fishing Regulations" to download your free App today!

Apple/Iphone



Android



SAFMC Meeting Dates and Locations 2017 Schedule

March 6-10, 2017
Westin Jekyll Island
110 Ocean Way
Jekyll Island, GA
Phone: 912/635-4545

September 11-15, 2017
Town & Country Inn
2008 Savannah Highway
Charleston, SC
Phone: 843/571-1000

June 12-16, 2017
Sawgrass Marriott
1000 PGA Tour Blvd.
Ponte Vedra Beach, FL
Phone: 904/285-7777

December 4-8, 2017
Doubletree Oceanfront
2717 W. Ft. Macon Rd.
Atlantic Beach, NC
Phone: 252/240-1155

South Atlantic Fishery Management Council Meeting March 6-10, 2017



110 Ocean Way
Jekyll Island, GA 31527
Phone: 888/627-8316 or 912/635-4545

A detailed agenda is posted on the Council's website at www.safmc.net or contact the Council office toll free at 1-866/SAFMC-10 or 843/571-4366.

MEETING AGENDA

Monday	8:30 - 10:00	Advisory Panel Selection Committee (Closed)
	10:00 - 11:00	SEDAR Committee
	11:00 - 12:00	Protected Resources Committee
	1:30 - 2:30	Spiny Lobster Committee
	2:30 - 5:00	Habitat Protection & Ecosystem-Based Management Committee
Tuesday	8:30 - 11:00	Dolphin Wahoo Committee
	11:00 - 12:00	Snapper Grouper Committee
	1:30 - 5:00	Snapper Grouper Committee (continued)
Wednesday	8:30 - 3:30	Snapper Grouper Committee
	3:30 - 4:30	Mackerel Cobia Committee
	4:30	Formal Public Comment
Thursday	8:00 - 9:00	Mackerel Cobia Committee (continued)
	9:00 - 10:00	Citizen Science Committee
	10:00 - 12:00	Executive Finance Committee
	1:30 - 5:00	- Council Session -
Friday	8:30 - 12:00	- Council Session -

Note! Follow the Council meeting live online

Watch the Council meeting from Jekyll Island, GA via webinar. Registration information is available from the March 2017 Meeting Information page at www.safmc.net.



Channel SAFMC



www.facebook.com/SouthAtlanticCouncil

Acronyms

ABC - Acceptable Biological Catch
ACCSP - Atlantic Coast Cooperative Statistics Program
ACL - Annual Catch Limit
AM - Accountability Measure
ACT - Annual Catch Target
AP - Advisory Panel
ASMFC - Atlantic States Marine Fisheries Commission
BRD - Bycatch Reduction Device
EEZ - Exclusive Economic Zone
EFH - Essential Fish Habitat
EFH/HAPC - Essential Fish Habitat/Habitat Area of Particular Concern
FMP - Fishery Management Plan
HMS - Highly Migratory Species
ITQ - Individual Transferable Quota
MSA - Magnuson-Stevens Act
MSY - Maximum Sustainable Yield
MRIP - Marine Recreational Information Program
NMFS - National Marine Fisheries Service
OY - Optimum Yield
SEDAR - Southeast Data, Assessment, and Review (stock assessment process)
SSC - Scientific & Statistical Committee
TAC - Total Allowable Catch
VMS - Vessel Monitoring System

U.S. DEPARTMENT OF COMMERCE
National Oceanic And Atmospheric Administration

**South Atlantic
Fishery Management Council**
4055 Faber Place Drive, Suite 201
North Charleston, SC 29405

Electronic Service Requested

Presorted First Class
U.S. Postage
PAID
Charleston, SC
Permit 25



Printed on
recycled paper

www.safmc.net

Mark your calendar...

- Feb 28-March 1** *Council Coordinating Committee Meeting*
Washington, DC www.fisherycouncils.org
- March 15-17** *SEDAR 48 Data Workshop for Black Grouper*
St. Petersburg, FL www.sedar.org
- April/May** *SAFMC Advisory Panel Meetings*
Charleston, SC www.safmc.net
- April 3-6** *Gulf of Mexico Fishery Management Council Meeting*
Birmingham, AL www.gulfcouncil.org
- April 11-13** *Mid-Atlantic Fishery Management Council Meeting*
Avalon, NJ www.mafmc.org
- April 24-27** *SAFMC Scientific and Statistical Committee Meeting*
Charleston, SC www.safmc.net
- May 8-11** *Atlantic States Marine Fisheries Commission Meeting*
Alexandria, VA www.asafc.org
- May 16-18** *Council Coordinating Committee Meeting*
Washington, DC www.fisherycouncils.org

South Atlantic Fishery
Management Council
Meeting
March 6-10, 2017
Jekyll Island, GA



Know Before You Go!
Download the FREE
SA Fishing Regulations
mobile App today.

2017



ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

BRAXTON C. DAVIS
Director

October 19, 2017

MEMORANDUM

HMS 11-17

TO: Marine Fisheries Commission
FROM: Randy Gregory, Division of Marine Fisheries, NCDEQ
SUBJECT: Highly Migratory Species Update

The Highly Migratory Species Advisory Panel met on Sept. 6-7, 2017 in Silver Spring, MD. The advisory panel discussed the Amendment 7 bluefin tuna management three-year review; requests for regulatory changes in the pelagic longline fishery, general category bluefin tuna fishery, charter/headboat permits and the commercial and recreational shark fisheries; and progress updates regarding the exempted fishing permit request to conduct research in pelagic longline closed areas and shark research.

Sharks

Management measures for Amendment 5b for commercial and recreational shark fisheries will soon become effective to reduce fishing mortality on dusky sharks to end overfishing and rebuild the dusky shark population. Effective Jan. 1, 2018, recreational Highly Migratory Species permit holders fishing for sharks will be must obtain a shark endorsement, which requires completion of an online shark identification and fishing regulation training course, plus additional recreational fisheries outreach. Circle hooks will be required for recreational permit holders targeting sharks and all commercial directed shark permit holders using bottom longline. More details on those measures can be found at:

http://www.nmfs.noaa.gov/sfa/hms/documents/fmp/am5/a5b_index.html.

Bluefin Tuna

Effective Oct. 5, 2017, the National Marine Fisheries Service closed the Atlantic bluefin tuna General category fishery for large medium and giant bluefin tuna. The General category September subquota (September, October, November) was reached and a closure was warranted. The intent of this closure is to prevent overharvest of the General category during October and November to help ensure reasonable fishing opportunities in the December subquota time period. The General category will reopen Dec. 1, 2017 with a daily retention limit of one large medium or giant bluefin tuna (measuring 73 inches or greater) per vessel per day/trip.

The recreational bluefin tuna fishery remains open for Highly Migratory Species Angling category-permitted vessels and Charter/Headboat category-permitted vessels. The daily retention limit is the default limit of one bluefin tuna between 27 inches and 73 inches curved fork length.





Marine Fisheries
ENVIRONMENTAL QUALITY

Fish Dealer Report

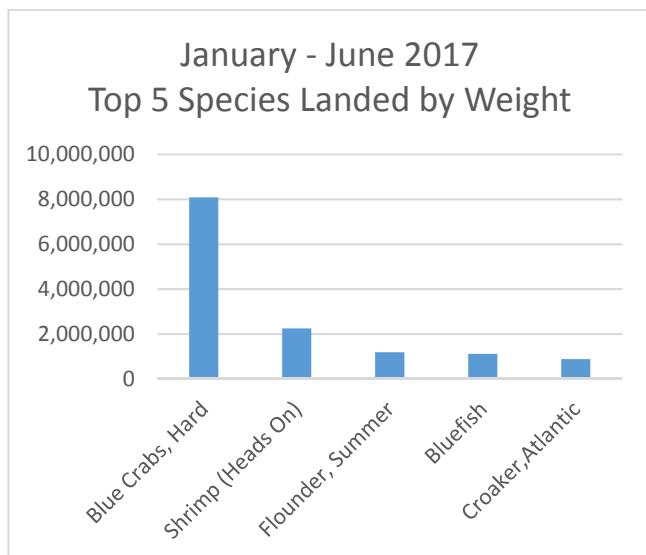
License & Statistics Section, PO Box 769, Morehead City, NC 28557

2017 COMMERCIAL LANDINGS REVIEW

According to the North Carolina Division of Marine Fisheries Trip Ticket Program, North Carolina fishermen landed 22.6 million pounds of seafood from January through June, 2017. These landings represent a 1 percent decline in total landings over the same period in 2016, and a 2 percent decline over the previous five-year average.

The top five species landed were Hard Blue Crab (8.1 million pounds), shrimp (2.2 million pounds), Summer Flounder (1.2 million pounds), Bluefish (1.1 million pounds) and Atlantic Croaker (878,466 pounds). The number of trips reported in the first half of 2017 was down 6 percent from the first half of 2016.

Shrimp landings in the first half of 2017 were up 192 percent from the first half of 2016. This increase in landings is due in part to the increase in shrimping effort in northern ocean waters that began in the fall of 2016, and continued through the winter.



DUSKY AND SANDBAR SHARK REPORT

In August 2017, the Trip Ticket Program completed a report that characterizes the commercial sandbar and dusky shark fisheries of North Carolina. Using data collected through trip tickets and the division license program, the report analyzes trends in landings and effort. To date, it is the most comprehensive characterization report that is based on these two data sources. The report can be found here: <http://portal.ncdenr.org/web/mf/marine-fisheries-catch-statistics> under Additional Statistics Resources at the bottom of the webpage.

COOPERATIVE STATISTICS PROGRAM

The Cooperative Statistics Program is a federal data sharing and grant program that provides funding for commercial fisheries data collection in North Carolina and other South Atlantic states. The grant provided by the program helps pay for the Trip Ticket Program's data clerks and port agents. The five-year grant cycle ended in the spring of 2017, and the completion report was finished in September. The completion report outlines the accomplishments of the trip ticket program, and provides statistics describing the work completed during the previous five years. A copy of this report is available to interested parties upon request by contacting: Scott.Smith@ncdenr.gov or 252-808-8095.

ESTUARINE GILL NET PERMIT

The North Carolina Division of Marine Fisheries requires fishermen to obtain an Estuarine Gill Net Permit for any anchored small or large mesh fishing operation in internal coastal waters. The permit is a requirement of federal incidental take permits for sea turtles and Atlantic sturgeon. A condition of the incidental take permits is to

maintain certain levels of observer coverage statewide. The permit requires fishermen to provide an active phone number where they can be reached to schedule observer trips so that the division can maintain the observer coverage needed to stay in compliance with the incidental take permits. If the required coverage is not maintained, large and small mesh anchored gill nets could be prohibited in all internal coastal waters. To date for fiscal year 2018, there have been 2,310 permits issued. Fishermen can obtain or renew their annual permit when they renew their license at division offices or via mail.

WEB-BASED TRIP TICKET REPORTING

The North Carolina Trip Ticket Program is working with Bluefin Data, the developer of the current trip ticket software, on a web-based application that will allow trip ticket reporting via your browser. We are currently evaluating this software and will be soliciting seafood dealer input in the next few weeks. The review of this software is, in part, due to requests from dealers on the 2017 dealer survey sent out in January.

NEW DATA CLERK

The North Carolina Trip Ticket Program has hired a new data clerk, Brooklynne Book. Brooklynne will be handling dealer submittals, entering and validating trip tickets, and any dealer questions. Brooklynne can be reached at 252-808-8105

TECH TIPS

Did you know that you can attach your dock ticket or invoice number to your trip ticket in the electronic trip ticket software? This is useful for keeping better tabs on your data, and allows you to search by trip ticket number or by dock ticket number. On the new ticket window, simply add the dock ticket number to the "Tracking #" field as seen below.

# Crew	Tracking #	Trans #
1		1

For more information, consult the electronic software reporting manual or contact Grace.Kemp@ncdenr.gov.

TRIP TICKET CODE UPDATES

New species and gear codes have been implemented within the past few months to better suit the reporting requirements of North Carolina seafood dealers. These codes are currently available in the electronic reporting software, or can be written in on a paper trip ticket. The codes include: Fiddler Crab, Guttled Blue Runner, Rainbow Runner, Guttled Almaco Jack, Ribbed Mussels, and American Eel market grade 'Glass'. Based on a Mid-Atlantic Fisheries Management Council request, the following codes were also changed: Unclassified Shellfish were split into Unclassified Crustaceans, Unclassified Mollusks, and Unclassified Echinoderms (). These changes were made to better facilitate data sharing between state and federal managers. In addition to species code changes, the trip ticket program created new gear codes in response to changing fishing practices. These gears included: bandit gear, buoy gear, and Elec-tra-mate electronic rod and reel. In January, the program also updated the paper tickets, and included a box for disposition based on a request from the North Carolina Marine Fisheries Commission. For a full list of codes, please see your electronic software or email Scott.Smith@ncdenr.gov.

QUESTIONS OR CONCERNS

If you have any questions or concerns, or would like to request access to your landings data, please contact the trip ticket coordinator, Alan Bianchi at: Alan.Bianchi@ncdenr.gov.

The Division of Marine Fisheries is dedicated to ensuring sustainable marine and estuarine fisheries and habitats for the benefit and health of the people of North Carolina.

NORTH CAROLINA DIVISION OF MARINE FISHERIES



Marine Fisheries
ENVIRONMENTAL QUALITY

Semiannual Fisheries Bulletin

2017 Commercial Statistics

License and Statistics Section, PO Box 769, Morehead City, NC 28557

October 2017

FINFISH	January – June (Pounds – rounded)				
	2013	2014	2015	2016	2017
Amberjacks ¹	49,509	80,311	77,568	74,828	58,919
Anglerfish (Monkfish & Monklivers)	5,329	62,244	99,957	48,963	51,739
Bluefish	722,850	1,514,841	472,082	803,087	1,109,781
Bonito	8,543	6,468	18,467	8,274	9,752
Butterfish	40,379	18,992	35,257	24,085	31,680
Carp	10,839	15,363	35,271	22,605	14,819
Catfishes	277,558	308,317	474,148	587,375	705,213
Cobia	19,824	20,686	18,697	18,578	17,633
Croaker, Atlantic	1,291,520	2,054,885	1,576,129	1,662,982	878,466
Cutlassfish, Atlantic	22,445	132,155	166,469	1,135	41,751
Dolphinfish	153,437	405,221	320,371	334,863	196,209
Drum, Black	44,251	6,289	24,596	14,818	43,464
Drum, Red	41,037	19	39,843	20,942	34,198
Eel, American	3,506	1,824	2,723	2,234	3,418
Flounder, Southern	153,753	123,370	130,344	93,483	130,406
Flounder, Summer	160,645	2,410,119	2,323,303	1,875,669	1,181,768
Flounders, Other	*	2,638	964	1,209	*
Garfish	5,159	4,378	35,679	12,586	19,641
Grouper, Gag	44,127	41,529	41,346	33,419	25,497
Grouper, Red	37,056	28,008	22,772	9,477	8,326
Grouper, Scamp	20,374	21,654	24,080	22,559	15,957
Grouper, Snowy	13,999	23,155	22,431	70,403	65,044
Groupers, Other	5,170	6,336	3,594	6,269	4,775
Grunts	14,887	14,411	13,870	16,574	16,863
Hakes	455	622	1,262	2,635	2,506
Harvestfish (Starbutters)	130,239	89,348	114,842	96,956	36,458
Herring, River (Alewife and Blueback)	743	1,139	0	0	0
Hogfish (Hog Snapper)	3,812	4,971	3,866	3,206	5,069
Jacks (Crevalle and Blue Runner)	190	1,129	448	2,040	833
Mackerel, Atlantic (Boston)	19	555	1,338	160	629
Mackerel, King	62,789	97,663	32,296	55,875	137,601
Mackerel, Spanish	139,875	137,529	187,252	223,015	248,578
Menhaden, Atlantic	213,942	598,814	562,512	271,290	538,339
Mullet, Sea (Kingfishes)	229,057	227,647	369,303	279,129	356,177
Mullet, Striped	193,182	206,085	235,458	203,490	189,317
Perch, White	253,118	149,389	121,004	201,119	167,441
Perch, Yellow	29,810	64,326	40,574	27,462	15,562
Pigfish	8,430	8,853	6,253	2,164	2,489
Pinfish	23	7	34	193	79
Pompano	1,424	1,128	1,266	4,408	1,164
Porgies	21,761	44,952	20,235	12,483	32,914
Pufferfish	3,260	189	807	1,453	1,955
Scup	5,240	145,917	210,156	99,632	154,708
Sea Basses	91,973	391,715	382,873	321,340	376,117
Seatrout, Spotted	191,509	67,989	87,530	54,004	97,733

	January – June (Pounds – rounded)				
	2013	2014	2015	2016	2017
Shad, American	256,598	192,982	97,678	63,211	92,715
Shad, Gizzard	87,996	84,590	53,556	82,948	120,414
Shad, Hickory	71,227	109,106	148,236	96,203	73,337
Sharks	333,999	683,740	359,330	457,610	560,584
Sharks, Dogfish, Smooth	658,882	455,409	209,485	132,247	152,938
Sharks, Dogfish, Spiny	3,006,857	4,558,556	4,247,173	2,243,146	390,805
Sheepshead	16,107	15,152	20,407	19,344	14,418
Skates	2,186	16,925	43,216	23,650	39,454
Skippers	10,777	15,315	10,166	9,002	9,147
Snapper, Vermilion (Beeliner)	69,519	101,450	75,045	124,373	105,757
Snappers, Other	2,357	2,676	4,118	4,996	2,159
Spadefish	5,143	13,121	6,310	8,377	7,968
Spot	56,449	123,811	30,769	10,457	29,422
Striped Bass	83,672	72,118	110,408	124,712	84,076
Swordfish	885,331	555,153	436,592	346,005	294,680
Tilefish	97,311	84,972	30,926	32,766	71,617
Triggerfish	110,628	116,492	81,324	59,388	53,134
Tuna, Bigeye	54,918	80,283	93,504	57,080	43,170
Tuna, Bluefin	105,832	80,178	85,145	154,123	303,781
Tuna, Yellowfin	301,568	311,926	259,715	249,162	529,868
Tunas, Other	67,271	125,874	110,225	80,437	52,705
Tunny, Little (False Albacore)	85,684	92,881	31,646	53,461	88,013
Wahoo	6,891	7,312	8,429	9,527	14,546
Weakfish (Grey Trout)	52,967	37,760	24,636	34,139	34,507
Unclassified for Industrial Use or Bait	19,369	21,753	31,873	16,236	72,310
Unclassified Fish for Food	66,416	64,958	86,975	60,241	54,579
TOTAL FINFISH	11,242,996	17,567,667	15,056,156	12,181,311	10,327,094
SHELLFISH					
Blue Crabs, Hard	5,947,780	6,962,482	7,647,153	8,342,139	8,086,413
Blue Crabs, Peeler	336,436	515,197	579,795	362,986	719,987
Blue Crabs, Soft	284,130	332,286	332,207	263,320	407,398
Clams, Hard (Meats)	165,637	224,555	214,360	191,700	152,575
Clams, Hard (<i>Numbers</i>)	8,503,146	11,691,611	10,896,705	9,877,133	7,989,642
Octopus	*	86	*	146	124
Oysters (Meats)	188,289	327,260	267,056	327,808	407,909
Oysters (<i>Bushels</i>)	35,593	61,864	50,483	61,967	77,109
Scallops, Bay (Meats)	1,337	0	0	0	0
Scallops, Sea (Meats)	1,491	15,830	105,566	116,287	92,827
Shrimp ² (Heads On)	449,361	338,650	351,542	770,523	2,246,970
Stone Crabs	1,853	2,759	2,911	4,289	3,658
Squid	1,557	9,283	15,462	31,945	18,406
Whelks/Conchs (Meats)	36,631	43,375	59,334	70,475	47,679
Unclassified Shellfish	72,964	61,598	79,297	92,489	82,035
TOTAL SHELLFISH	7,487,466	8,833,361	9,654,683	10,574,106	12,265,980
GRAND TOTAL	18,730,462	26,401,028	24,710,839	22,755,416	22,593,074

¹ Includes species from genus *Seriola* (greater amberjack, lesser amberjack, almaco jack, and banded rudderfish.)

² Includes brown, pink, and white shrimp.

* Units not shown to avoid disclosure of private enterprise.

NOTE: Landings collected by North Carolina Division of Marine Fisheries Trip Ticket Program (October 2017).



ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

BRAXTON C. DAVIS
Director

Nov. 1, 2017

MEMORANDUM

Rules 11-17

TO: Marine Fisheries Commission
FROM: Catherine Blum, Fishery Management Plan and Rulemaking Coordinator
SUBJECT: Rulemaking Update

This memo provides a rulemaking update for the November 2017 commission meeting. Background information is provided below, followed by a summary of recent actions, as well as steps in the process scheduled to begin in 2018. There are no action items for the commission at this meeting.

Background on the Periodic Review and Expiration of Existing Rules

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, followed by the re-adoption of rules. The process began for the commission at its February 2017 business meeting with approval of the draft report on the rules in Title 15A, Environmental Quality, Chapter 03, Marine Fisheries. This report contains 211 rules and is due to the Rules Review Commission December 2017.

Nine of these 211 rules are jointly adopted by the Marine Fisheries Commission and the Wildlife Resources Commission. They are subtitled “Jurisdiction of Agencies: Classification of Waters” and are found in 15A NCAC 03Q .0100. Similarly, the Wildlife Resources Commission has 11 rules that are jointly adopted and have the same subtitle; they are found in 15A NCAC 10C .0100. For the required steps in the periodic review process, both agencies must approve both sets of rules, since the rules were all jointly adopted. These approvals occurred at the Marine Fisheries Commission’s February and May 2017 business meetings and the Wildlife Resources Commission’s April 2017 meeting.

For the reports, the first step is for each agency to make a determination as to whether each rule is necessary with substantive public interest, necessary without substantive public interest, or unnecessary. After the draft reports are approved, they are posted on the Division of Marine Fisheries website for public comment for a minimum of 60 days. It is important to note, for the purposes of these requirements, “public comment” means written comments from the public objecting to the rule. The agency must review the public comments and prepare a brief response addressing the merits of each comment. This information becomes the final report.



The second part of the periodic review process is the readoption of rules; this will begin for the Marine Fisheries Commission in 2018. The final report determines the process for re-adoption. Rules determined to be necessary and without substantive public interest and for which no public comment was received remain in effect without further action and receive a 10-year expiration date. Rules determined to be unnecessary and for which no public comment was received expire on the first day of the month following the date the report becomes effective. Rules determined to be necessary with substantive public interest must be readopted as though the rules were new rules. The Rules Review Commission works with each agency to consider the agency's rulemaking priorities in establishing a deadline for the readoption of rules.

Recent Action Items for the Periodic Review and Expiration of Existing Rules

The final report for each commission's group of rules was approved at the Marine Fisheries Commission's August 2017 business meeting and the Wildlife Resources Commission's August 2017 meeting. The final reports have been submitted to the Rules Review Commission for its December 2017 meeting, which, if approved, will be forwarded to the Joint Legislative Administrative Procedure Oversight Committee for final determination by Spring 2018. Only one public comment was received for one rule and it was determined not to have merit. Consequently, the final reports were unchanged from the draft reports.

Items Scheduled to Occur in 2018

Following approval of the reports by the Joint Legislative Administrative Procedure Oversight Committee and dependent upon the classification each rule received, rules will either receive a new 10-year expiration date (36 rules), be expired (three rules) or be readopted (163 rules). The process of rule readoption is scheduled to begin at the Marine Fisheries Commission's May 2018 business meeting. This will be the first of four years to readopt rules as a result of the periodic review.

Additionally, the report process is scheduled to begin for the commission's 164 rules in 15A NCAC 18A .0100, .0300-.0900, and .3400, regarding shellfish sanitation and recreational water quality requirements. This process will begin at the commission's February 2018 meeting and will follow the same timing that occurred in 2017 for the previous rule reports. Please see Figure 1 depicting the schedule for all the commission's rules.

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

Rules	2017	2018	2019	2020	2021
Chapter 03 (211 rules)	Report	Rule Readoption			
Chapter 18A (164 rules)		Report	Rule Readoption		



Committee Reports





ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

BRAXTON C. DAVIS
Director

MEMORANDUM

TO: N.C. Marine Fisheries Commission
MFC Nominating Committee

FROM: Michelle Duval and Nancy Fish
Division of Marine Fisheries, DEQ

DATE: Oct. 20, 2017

SUBJECT: Marine Fisheries Commission Nominating Committee Meeting Minutes

The N.C. Marine Fisheries Commission Nominating Committee met on Wednesday, Oct. 4, 2017 at 4 p.m. at the N.C. Division of Marine Fisheries Headquarters Office, 3441 Arendell Street, Morehead City, N.C.

The following were in attendance:

Committee members: Chuck Laughridge (Chairman), Sammy Corbett, Mike Wicker (via phone)
Staff: Chris Batsavage, Michelle Duval, Nancy Fish
Public: none

Chairman Laughridge called the meeting to order. The agenda was approved without modification.

Motion by Mike Wicker to approve the minutes from the March 23, 2016 Nominating Committee meeting, seconded by Sammy Corbett. Motion passed without dissent.

Public comment

No members of the public were in attendance, nor was any public comment received via email.

Review of N.C. General Statutes and federal Magnuson-Stevens Act requirements

Duval briefly reviewed the N.C. General Statutes pertaining to the selection of nominees for federal fishery management council seats. She stated that the N.C. Marine Fisheries Commission must approve a slate of candidates for the governor's consideration, and that the statutes allow the governor to consult with the commission regarding additions to the list of candidates. Duval also described the federal statutes and regulations pertaining to qualification of candidates and noted that the governor must submit a list of no less than three nominees for an appointment. The commission will review the list of candidates approved by the committee at its business meeting in Kitty Hawk on Nov. 15-16, 2017.

Review and selection of candidates for South Atlantic Fishery Management Council and Mid-Atlantic Fishery Management Council at-large appointments

Duval reviewed the bios of the candidates for the South Atlantic Fishery Management Council at-large seat, briefly describing the background and qualifications of each: Anna Beckwith (incumbent), Robert Lorenz and Thomas Roller. She noted that Mrs. Beckwith is completing her second three-year term and is eligible for a third and final three-year term. She also reminded commissioners that staff always advises the committee and the full commission that they not select a preferred candidate for any appointment, but rather leave this decision to the governor.

After a brief discussion of the candidates, the committee made the following motion:

Motion by Mike Wicker to forward the names of Anna Beckwith, Robert Lorenz and Thomas Roller to the Marine Fisheries Commission for consideration for the South Atlantic Fishery Management Council at-large seat. Seconded by Sammy Corbett. Motion passed unanimously.

Duval then reviewed the bios of the candidates for the Mid-Atlantic Fishery Management Council at-large seat: Sara Winslow (incumbent), Dr. Roger Rulifson and Joseph Smith. She stated that Ms. Winslow is completing her first three-year term. Chris Batsavage, the director's liaison to the Mid-Atlantic Fishery Management Council, provided additional background regarding the three candidates. After some additional discussion, the committee made the following motion:

Motion by Mike Wicker to forward the names of Sara Winslow, Roger Rulifson and Joseph Smith to the Marine Fisheries Commission for consideration for the Mid-Atlantic Fishery Management Council at-large seat. Seconded by Sammy Corbett. Motion passed unanimously.

The committee engaged in additional discussion regarding the timeline associated with the nominations process and the deadline for Governor Cooper to submit the names of nominees (March 15, 2017).

Meeting adjourned.

Ms. Sara Elliott Winslow, Hertford, NC.

Ms. Winslow graduated from Perquimans County High School in Hertford, NC in 1973. She received a B.S. Degree in Marine Biology from UNC-Wilmington in 1978. Ms. Winslow began her career with the NC Division of Marine Fisheries in January 1979 as a Marine Fisheries Technician II in the Northern District Office in Elizabeth City. She worked on anadromous species projects until May 1982 when she was promoted to Biologist I where she served as the Project leader for a Shad and River Herring Federal Aid Project until June 1986 when she was promoted to Biologist II. In 1988, Ms. Winslow was promoted to the Northern District Biologist Supervisor position. In that capacity, she was responsible for overseeing biological staff and projects in N.C. Division of Marine Fisheries offices located in Elizabeth City, Manteo and Columbia. In December 2000, Ms. Winslow was promoted to Northern District Manager position where she was responsible for all regional N.C. Division of Marine Fisheries projects and served as staff lead for the Northeast Advisory Committee. She also served on the division's Rules Advisory Team, the Management Review Team and participated in numerous division and N.C. Marine Fisheries Commission meetings and activities until her retirement in February 2011.

Ms. Winslow served as Project Leader for Phase II Striped Bass stocking and tag returns from 1980 to 2009. She served as Project Leader on N. C. Shad and River Herring projects where she was responsible for field sampling, data analysis and preparing project reports. She was responsible for reviewing and commenting on habitat alteration and coastal development permits (N.C. Division of Coastal Area Management Act, N.C. Division of Water Quality, U.S. Army Corps of Engineers, etc.) for 23 years. During her career, she was involved with the development of several fishery management plans, including serving as the lead on the N.C. River Herring Fishery Management Plan, as well as co-lead and later mentor for the N.C. Estuarine Striped Bass Fishery Management Plan.

At the interstate level, Ms. Winslow served on Atlantic States Marine Fisheries Commission Technical Committees for Shad and River Herring, Striped Bass and the Striped Bass Tagging Committee. For 21 of 23 years, Ms. Winslow participated in the Cooperative Winter Tagging Cruise, a collaborative effort among the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, the N.C. Division of Marine Fisheries and several other Atlantic coast states including Virginia, Maryland, Delaware and New Jersey. As a cruise participant, she was responsible for data collection and tagging striped bass, flounder, red drum, Atlantic sturgeon, and spiny dogfish.

Ms. Winslow currently serves on the N.C. Marine Fisheries Commission Finfish and Northern Regional Advisory Committees. Ms. Winslow was appointed to the Mid-Atlantic Fishery Management Council in August 2015 and her first term ends August 2018. In 2016/2017, she serves on the following Council committees: Demersal and Coastal Migratory, Mackerel, Squid and Butterfish, Ecosystem, Protected Resources, Highly Migratory Species and Executive. Ms. Winslow is currently serving as the Chair of the Mid-Atlantic Fishery Management Council's River Herring and Shad Committee.

Ms. Winslow's hobbies are salt and freshwater fishing, hunting and gardening.

Dr. Roger A. Rulifson, Greenville, NC.

Dr. Rulifson is the Thomas Harriot College of Arts and Sciences Distinguished Professor, and Senior Scientist within the Institute for Coastal Science and Policy at East Carolina University. He received his B.S. in Biology and French from the University of Dubuque (Iowa), and M.S. in Marine Science and Ph.D. in Marine Science & Engineering at N.C. State University. Dr. Rulifson has over 35 years of fisheries research and teaching experience, with topics ranging from anadromous species life history and population estimates to cooperative gear research and bycatch reduction. His current research focuses on population demographics of species such as spiny dogfish and Atlantic sturgeon, use of analytical techniques including otolith microchemistry to determine critical habitat, and gear development including bycatch reduction and finfish separator devices. He has authored or co-authored over 200 publications, technical reports, and book chapters during his career.

Dr. Rulifson has participated in multiple advisory committees and technical panels at both the state and federal level. He has been a member of both the N.C. River Herring Fishery Management Plan Advisory Committee, as well as the N.C. Estuarine Striped Bass Fishery Management Plan Advisory Committee serving as co-chair of each in 2013 and 2010, respectively. At the interstate and federal level, Dr. Rulifson was a member of the Spiny Dogfish Stock Assessment Review Committee (SARC 37) for the Atlantic States Marine Fisheries Commission, served on the NMFS Transboundary Resources Assessment Committee (TRAC) for Spiny Dogfish, and participated in the Fisheries and Oceans Canada, Maritimes Region Science Advisory Process for Spiny Dogfish. He is also currently a member of the Atlantic Acoustic Tracking Network and the NMFS River Herring Technical Expert Workgroup.

Dr. Rulifson has received several awards, including the Governor's Conservation Achievement Award (Water Conservationist of the Year, 1991), the American Fisheries Society Meritorious Service Award (2007-2008) and the East Carolina University Lifetime Achievement Award for Research and Creative Service (2012-2013). He is an active member of the American Fisheries Society, having served as both President and Past President of the Marine Fisheries Section, as well as on the Board of Governors.

Mr. Joseph W. Smith, Morehead City, NC.

Mr. Joseph W. Smith was born in Philadelphia, PA, and graduated from St. Joseph's University in 1975 with a Bachelor's Degree in Biology. He received a Master's Degree in Marine Science from the College of William and Mary in Williamsburg, VA, in 1980. His first professional job was in Charleston, SC, in 1979 with the South Carolina Wildlife and Marine Resources Department (SCWMRD) at Fort Johnson. During his 4-year tenure at the SCWMRD he wrote species profiles for several inshore gamefish for the Recreational Finfish Section, managed port agents who collected catch/effort data on the state's marine commercial fisheries, and participated in nearshore cruises of the MARMAP program to assess fisheries resources of the South Atlantic Bight.

Mr. Smith and his family left Charleston in 1983 when he accepted a position with the Menhaden Program at the Beaufort Laboratory of the National Marine Fisheries Service (NMFS) in Beaufort, NC. He was hired as a port agent to sample menhaden at the fish factories in Beaufort and to maintain menhaden vessel catch records. By the early 1990s Mr. Smith supervised port sampling efforts for the Atlantic and Gulf menhaden fisheries from Maine to Louisiana; by the mid-1990s he was responsible for collection and maintenance of all fishery-dependent data – catch records, port samples, and daily vessel logbooks - for the menhaden fisheries, as well as acting as liaison between the NMFS and the menhaden industry. He oversaw computerization of historical and contemporary menhaden vessel logbooks and their incorporation into a geographic information system (GIS), data which assisted state and federal managers in making informed decisions about the menhaden fisheries. Mr. Smith represented the Southeast Fisheries Science Center (SEFSC) of the NMFS on the Atlantic States Marine Fisheries Commission's (ASMFC) Atlantic Menhaden Technical Committee and the Atlantic Menhaden Stock Assessment Committee, as well as the Gulf States Marine Fisheries Commission's Gulf Menhaden Advisory Committee. In 2011, Mr. Smith received ASMFC's Annual Excellence Award for Science. He has published numerous peer-reviewed journal articles on Atlantic and Gulf menhaden, as well as cownose rays, Atlantic thread herring, cobia, and Southern kingfish.

Mr. Smith retired from the NMFS in 2015 after 32 years of service. He resides in Morehead City, NC, with his wife, two adult children who live nearby, and two grandchildren. He is an avid saltwater fisherman.

Mrs. Anna Beckwith, Morehead City, NC.

Mrs. Beckwith holds a B.S. degree in Environmental Science and Policy from Florida International University in Miami, FL and a M.S. degree in Biological Oceanography with a Minor in Geographic Information Science from N.C. State University in Raleigh, NC.

Mrs. Beckwith currently serves in an at-large seat on the South Atlantic Fishery Management Council and is chair of the Dolphin/Wahoo, and Highly Migratory Species (HMS) Committees. As Chair of the HMS Committee she also serves on the HMS Advisory Panel for the National Marine Fisheries Service and the ICCAT Advisory Committee. She attended the International Commission for the Conservation of Atlantic Tunas (ICCAT) 2014, 2015 and 2016 annual meeting as part of the U.S. delegation.

Mrs. Beckwith has served on the N.C. Marine Fisheries Commission beginning in 2009 and served as Vice-Chair from 2011 to 2015.

Mrs. Beckwith and her husband own Down East Guide Service, a North Carolina recreational fishing guide service and international travel agency for sport fisherman specializing in Costa Rica, Argentina, and Belize. They are the managing partner of Dragin Fly Sportfishing based out of Los Suenos Marina Costa Rica.

Prior to 2007 Mrs. Beckwith taught Environmental Science and Biology at the high school level and sixth, seventh and eighth grade science in eastern North Carolina. She was a research consultant (post-graduate work) from 2004 through 2006 monitoring red drum spawning habitat using passive acoustics, water quality, and egg/larval monitoring in the Neuse River Estuary, Pamlico River, Pamlico Sound and Ocracoke Inlet.

Previous to pursuing her graduate degree Mrs. Beckwith was employed as Program Manager (1999-2001) for the American Farmland Trust in Washington, DC and was a marine fellow for The Nature Conservancy (1999).

Mr. Robert J. Lorenz, Wilmington, NC.

Mr. Lorenz received a B.S. degree in Biological Science-Marine Biology from Florida Institute of Technology in 1975. He is retired from a 29-year career in the pharmaceutical industry starting in research and development, and culminating in manufacturing management. From 1998 - 2005, he maintained a consulting practice in pharmaceutical technical operations and manufacturing controls. Mr. Lorenz currently pursues interests in business and personal investing. He engages in volunteer work and activism for good stewardship of the ocean and environment, with a focus on marine fisheries. Mr. Lorenz's career expertise was in developing and improving manufacturing and business processes. He assured that all work and processes complied with federal regulations, particularly those enforced by FDA, DEA, OSHA and EPA. His specialty was to work with company manufacturing operations under regulatory and business stress, some under consent decrees and US Justice Department actions.

Mr. Lorenz has maintained a lifelong interest in environmental science, conservation, and fisheries. He is an avid recreational fisherman and scuba diver. He fishes from southern North Carolina through the Florida Keys and targets Snapper/Grouper, Wahoo, Dolphin, and the Mackerels. He dives off North Carolina and Florida and has made trips to the Cayman Islands and the Great Barrier Reef. He has worked as a volunteer on fisheries projects such as SAV surveys, water/seine sampling, and at the NC Aquarium at Fort Fisher. He worked as crew on a shrimp boat in summer and occasionally pulled a beach seine in winter, in northern Florida while in college. Mr. Lorenz was the 2014 and 2016 President of the Investors Roundtable of Wilmington (160 investors) and a board member the past 8 years. He serves on boards of civic and environmental groups (Cape Fear River Watch Striper Foundation, CCA North Carolina, Wilmington Renaissance). Mr. Lorenz served as Chair for the NCDMF Sea Turtle Advisory Committee from 2011 through 2015. He served on the NCDMF Southern Advisory Committee 2014 - 2016. He currently serves on the South Atlantic Fishery Management Council (SAFMC) Snapper/Grouper Advisory Panel. He is co-chair for a SAFMC Citizen Science Action Team focused on recruitment, education, use and retention of volunteers. The volunteers will provide an expanded data pool, from the field, for South Atlantic commercial and recreational fisheries. He completed the Marine Resources Education Program science and the management training modules in 2016.

Mr. Lorenz is a frequent attendee of NC Marine Fisheries Commission meetings, Division of Marine Fisheries meetings and public forums, and South Atlantic Fishery Management Council meetings and public forums.

Mr. Thomas N. Roller

Mr. Roller is the owner and operator of Waterdog Guide Service. For the past 14 years, he has been a full-time nearshore and inshore fly fishing and light tackle guide operating along the Crystal Coast of North Carolina. Mr. Roller is a licensed U.S. Coast Guard captain with extensive knowledge of southeastern North Carolina's waterways, and spends over 200 days on the water annually with clients. Species managed by the South Atlantic Fishery Management Council, including Spanish mackerel, cobia, amberjack, and many snapper grouper complex species, are important mainstays of his guiding business.

Mr. Roller is an active participant in fisheries management, attending meetings and providing input at the state, interstate, and federal levels. He is highly involved in the South Atlantic Fishery Management Council process, currently serving as a field tester for the for-hire logbook and as a member of the Council's Cobia/Mackerel Advisory Panel. He was also appointed to the newly formed Citizen Science Advisory Panel as a member of the Education/Outreach Action Team. In addition, he has served on the Mid-Atlantic Fishery Management Council's Bluefish AP since 2015. He is a longtime participant in North Carolina's state management process, and was recently appointed to the North Carolina Marine Fisheries Commission's Blue Crab Fishery Management Plan Advisory Committee. Mr. Roller is a strong advocate for informed involvement in the management process and recently attended the Gulf of Maine Research Institute's Marine Resource Education Program fisheries science workshop.

Mr. Roller is a member of the Executive Board of the Coastal Conservation Association of North Carolina, and has served on the organization's Fisheries Committee as chairman since February 2016 and as a member of the Executive Board since January 2014. He has developed policy and position statements on behalf of the organization for communication with decision-makers and other stakeholders, as well as public testimony on issues of interest. Mr. Roller received a B.A. in English and history from Duke University in 2003 and resides in Beaufort, North Carolina.



ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

BRAXTON C. DAVIS
Director

MEMORANDUM

TO: Marine Fisheries Commission
Strategic Habitat Area Region 4 Advisory Committee

FROM: Anne Deaton
Casey Knight
Division of Marine Fisheries

DATE: October 16, 2017

SUBJECT: Strategic Habitat Area Region 4 Advisory Committee Meeting

The Strategic Habitat Area Region 4 Advisory Committee met at 9:00 am September 12, 2017 at the Department of Environmental Quality Wilmington Regional Office, 127 Cardinal Dr. Ext., Wilmington, NC. The following attended:

Advisers: Troy Alphin, Fred Scharf, Mike Mallin, Fritz Rohde, Dawn York, Hope Sutton, Jeremy Humphrey, Robb Mairs, Hope Sutton, Kyle Rachels

Absent: Jessie Jarvis, Nora Deamer

Staff: Anne Deaton, Casey Knight, Joe Facendola, Ash Wileman

Troy Alphin opened the meeting.

MODIFICATIONS TO THE AGENDA

The meeting agenda was approved unanimously without modification.

APPROVAL OF MINUTES

The August 8, 2017 minutes were approved unanimously without modification.

PUBLIC COMMENT

No public comments were offered.

MARXAN OUTPUT MODIFICATIONS

Casey Knight reviewed the current Strategic Habitat Areas (SHAs) based on the changes the advisory committee made at the previous two meetings. She also reviewed the resulting percentages of each selected natural resource target post-corroboration. The goal is for the

selected amount of each natural resource target to meet or exceed the chosen representation levels. All targets were met except for marine soft bottom 0-3ft and 3-6ft, and riverine soft bottom 0-3ft, 3-6ft, and >6ft. However, both marine and riverine soft bottom with no depth exceeded target by 70% and 30%, respectively. The advisory committee felt the exceeded targets of soft bottom unknown depths accounted for the lack of meeting targets in the other depth categories.

The advisory committee then reviewed each of the 43 discrete SHA to assess if any additional modifications were needed based on corroborating information. Some hexagons were added to existing SHAs where a small piece of a contiguous habitat patch was not included (eg. upper Pages Creek around a park; Hewlett’s Creek where multiple stormwater improvement projects have been done; a portion of Rice Creek that wasn’t selected but where river herring occur and protected lands exist). Conversely, some hexagons were removed where they were overlapping or immediately adjacent to a degraded area (eg. Cape Fear River near Sutton Lake discharge; Bradley Creek above the bridge since no live oysters occur there, only shell). In ocean waters, some hard bottom was added (eg. Sheepshead Rock; hard bottom line and point data concentrated near already selected hardbottom polygons).

NEXT STEPS

Casey explained that she will make the final modifications to the discrete SHAs, recalculate acreages, and send the GIS project to the advisory committee through the ArcGIS Online website. DMF staff will complete the draft report and email it to the advisory committee. Once input is received by the committee, the report will be finalized as a draft for the MFC.

At the MFC November meeting, staff will ask to take the draft report out for public comment. At their February 2018 meeting, staff will report back to the MFC on any public input received, and ask the MFC for final approval.

The meeting adjourned at 1:00 pm.

Cc: Catherine Blum	Jess Hawkins	Gerry Smith
Mike Bulleri	Dee Lupton	District Managers
Scott Conklin	Nancy Marlette	Committee Staff Members
Dick Brame	Katie Mills	Marine Patrol Captains
Braxton Davis	Phillip Reynolds	Section Chiefs
Charlotte Dexter	Jerry Schill	

Strategic Habitat Area Nominations for Region 4:
The Cape Fear River Basin in North Carolina

DRAFT REPORT

October 2017

By

Casey Knight and Anne Deaton
North Carolina Division of Marine Fisheries
Wilmington, North Carolina



Region 4 Strategic Habitat Area Nominations Draft Report

TABLE OF CONTENTS

TABLE OF CONTENTS.....	II
LIST OF TABLES.....	IV
LIST OF FIGURES.....	V
LIST OF MAPS.....	VI
ACKNOWLEDGEMENTS.....	IX
REGIONAL ADVISORY COMMITTEE.....	X
GLOSSARY OF ACRONYMS.....	XI
EXECUTIVE SUMMARY.....	1
1 INTRODUCTION.....	2
1.1 GEOGRAPHIC SCOPE OF REGION 4.....	3
1.2 LAND USE.....	6
1.3 IDENTIFICATION OF PRIORITY SPECIES.....	7
2 METHODOLOGY.....	8
2.1 NATURAL RESOURCE TARGETS.....	8
2.1.1 Hard Bottom.....	11
2.1.2 Submerged Aquatic Vegetation.....	11
2.1.3 Shell Bottom.....	11
2.1.4 Submerged Aquatic Vegetation and Shell Bottom.....	12
2.1.5 Low-Elevation Uplands.....	12
2.1.6 Wetlands.....	12
2.1.7 Streams.....	13
2.1.8 Soft Bottom.....	13
2.1.9 Rare or Listed Species.....	14
2.2 ALTERATION FACTORS.....	14
2.2.1 Natural Resource Targets and Alteration Factors.....	16
2.2.2 Hydrological Alterations.....	17
2.2.3 Water Quality and Land Use Alterations.....	18
2.2.4 Physical Disturbance.....	20
2.2.5 Total Alteration/Cumulative Impacts.....	21
2.3 MARXAN ANALYSIS.....	23
2.3.1 Sensitivity Analysis.....	23
3 MARXAN RESULTS.....	25
4 CORROBORATION.....	28
4.1 POST-CORROBORATION RESULTS.....	29
5 FINAL STRATEGIC HABITAT AREA NOMINATIONS.....	53
5.1 BRUNSWICK COUNTY WATERS.....	54
5.2 NEW HANOVER AND PENDER COUNTY WATERS.....	57
5.3 CAPE FEAR RIVER.....	61
5.4 BRUNSWICK RIVER.....	63
5.5 NORTHEAST CAPE FEAR RIVER.....	64
5.6 BLACK RIVER.....	67
6 MAPS OF FINAL INDIVIDUAL STRATEGIC HABITAT AREAS.....	68
7 LITERATURE CITED.....	94
8 APPENDIX A: NATURAL RESOURCE TARGETS AND CALCULATING TOTAL ALTERATION.....	96
8.1 PROCESSING DETAILS.....	98
8.2 DATA PROCESSING.....	100

Region 4 Strategic Habitat Area Nominations Draft Report

8.2.1 Aggregate point features by HU..... 100

8.2.2 Aggregate marinas by HU..... 100

8.2.3 Calculate marinas per shoreline 100

8.3 EXTENT CALCULATIONS 100

8.3.1 Land-based Extent (Hydrologic Unit-based Alteration Assessment) 100

8.3.2 Water-based extent 102

8.3.3 R Tools for use in calculating alterations 104

9 APPENDIX B: PREPARING THE MARXAN FILES..... 109

9.1 SPECIES FILE (SPEC.DAT) 109

9.2 PLANNING UNITS FILE (PU.DAT) 109

9.3 BOUNDARY TILE (BOUND.DAT)..... 110

9.4 PLANNING UNITS VS. SPECIES FILE (PUVSPR.DAT) 110

9.5 THE INPUT FILE (INPUT.DAT) 111

9.6 MARXAN RESOURCES: 111

10 APPENDIX C: DATA/INFORMATION DIRECTORY 112

11 APPENDIX D: PUBLIC COMMENT 115

Region 4 Strategic Habitat Area Nominations Draft Report

LIST OF TABLES

Table 1. Commercial landings of priority fishery species in Region 4 (DMF, unpublished data).8

Table 2. Natural resource targets (NRTs) and representation levels used in the analysis and the importance of each NRT to priority species in Region 4. 10

Table 3. Alteration factor weightings used in the Marxan analysis. Scale: 0-3, with 0 being no impact, and 3 being the most severe impact. 15

Table 4. Daily mechanical hard clam harvest limits by water body (DMF 2017)..... 21

Table 5. Ecological designations and biological data used for corroboration of Strategic Habitat Areas (SHAs) in Region 4. 29

Table 6. Representation levels, target area (acres), and resulting amounts of natural resource targets (NRTs) post-corroboration. 30

Table 7. Amount of each natural resource target (NRTs) in acres present in each Strategic Habitat Area (SHA) nomination..... 31

Table 8. Descriptions and corroborating data for Region 4 Strategic Habitat Area (SHA) nominations in Brunswick county waters (SHA nominations #1-11)..... 54

Table 9. Descriptions and corroborating data for Region 4 Strategic Habitat Area (SHA) nominations in New Hanover and Pender county waters (SHA nominations #12-24). 57

Table 10. Descriptions and corroborating data for Region 4 Strategic Habitat Area (SHA) nominations on the main stem of the Cape Fear River (SHA nominations #25, 26, 29, 38, 40-43). 61

Table 11. Descriptions and corroborating data for Region 4 Strategic Habitat Area (SHA) nomination on the Brunswick River (SHA nomination #27)..... 63

Table 12. Descriptions and corroborating data for Region 4 Strategic Habitat Area (SHA) nomination on the Northeast Cape Fear River (SHA nominations #28, 30-37). 64

Table 13. Descriptions and corroborating data for Region 4 Strategic Habitat Area (SHA) nomination on the Black River (SHA nomination #39)..... 67

LIST OF FIGURES

Figure 1. Natural resource target (NRT) sensitivity analysis examining the effect of excluding NRTs from the model on total area (acres) and total alteration score. 24

Region 4 Strategic Habitat Area Nominations Draft Report

LIST OF MAPS

Map 1. Regional boundaries for Strategic Habitat Area (SHA) nominations.	3
Map 2. Major water bodies in Region 4.	5
Map 3. Total alteration scores for Region 4. Higher values equate to greater degradation.....	22
Map 4. Marxan best solution for Region 4.	26
Map 5. Marxan selection frequency for Region 4.	27
Map 6a. Region 4 Strategic Habitat Area (SHA) Nominations post-corroboration.	36
Map 6b. Region 4 Strategic Habitat Area (SHA) Nominations post-corroboration, #1-19 and 25-27.	37
Map 6c. Region 4 Strategic Habitat Area (SHA) Nominations post-corroboration, #16-34 and 38-39.	38
Map 6d. Region 4 Strategic Habitat Area (SHA) Nominations post-corroboration., #30-43.	39
Map 7a. Selection frequencies of Region 4 Strategic Habitat Area (SHA) nominations post-corroboration.	40
Map 7b. Selection frequencies of Region 4 Strategic Habitat Area (SHA) nominations post-corroboration, #1-18 and 25-27.	41
Map 7c. Selection frequencies of Region 4 Strategic Habitat Area (SHA) nominations post-corroboration, #16-28 and 30-34.	42
Map 7d. Selection frequencies of Region 4 Strategic Habitat Area (SHA) nominations post-corroboration, #30-43.	43
Map 8a. Alteration scores of Region 4 Strategic Habitat Area (SHA) nominations post-corroboration.	44
Map 8b. Total alteration scores for Region 4 with Strategic Habitat Area (SHA) nominations post-corroboration, #1-18 and 25-27. Higher values equate to greater degradation.	45
Map 8c. Total alteration scores for Region 4 with Strategic Habitat Area (SHA) nominations post-corroboration, #16-28 and 30-34. Higher values equate to greater degradation.	46
Map 8d. Total alteration scores for Region 4 with Strategic Habitat Area (SHA) nominations post-corroboration, #30-43. Higher values equate to greater degradation.	47
Map 9a. Region 4 Strategic Habitat Area (SHA) nominations post-corroboration, noting occurrence of Marine Fisheries Commission (MFC) designated nursery areas and state, federal, and private (land trust) conservation lands.....	49
Map 9b. Region 4 Strategic Habitat Area (SHA) nominations post-corroboration, #1-18 and 25-	

Region 4 Strategic Habitat Area Nominations Draft Report

27, noting occurrence of Marine Fisheries Commission (MFC) designated nursery areas and state, federal, and private (land trust) conservation lands. 50

Map 9c. Region 4 Strategic Habitat Area (SHA) nominations post-corroboration, #16-28 and 30-34, noting occurrence of Marine Fisheries Commission (MFC) designated nursery areas and state, federal, and private (land trust) conservation lands..... 51

Map 9d. Region 4 Strategic Habitat Area (SHA) nominations post-corroboration, #30-43, noting occurrence of Marine Fisheries Commission (MFC) designated nursery areas and state, federal, and private (land trust) conservation lands..... 52

Map 10. Draft Strategic Habitat Area (SHA) nomination #1, Sunset Beach – Bird Island to Tubbs Inlet..... 69

Map 11. Draft Strategic Habitat Area (SHA) nomination #2 – Shallotte Inlet, mouth of Shallotte River, and Shallotte Creek..... 70

Map 12. Draft Strategic Habitat Area (SHA) nominations #3 – Holden Beach and #4 – Lockwoods Folly Inlet, mouth of Lockwoods Folly River to Rourks Landing and Montgomery Slough..... 71

Map 13. Draft Strategic Habitat Area (SHA) nomination #5 – Lockwoods Folly River northeast of Supply..... 72

Map 14. Draft Strategic Habitat Area (SHA) nominations #6 – Artificial Reef 430, #7 – Yaupon Beach reef, Artificial Reef 425, and part of #8 – Caswell Beach..... 73

Map 15. Draft Strategic Habitat Area (SHA) nominations #8 – Caswell Beach and #9 – Cape Fear River Inlet and part of #11 – Bald Head Island..... 74

Map 16. Draft Strategic Habitat Area (SHA) nominations #10 – Frying Pan Shoal and parts of #9 – Cape Fear River Inlet and #11 – Bald Head Island. 75

Map 17. Draft Strategic Habitat Area (SHA) nominations #9 – Cape Fear River Inlet, #11 – Bald Head Island, #12 – hard bottom off Fort Fisher, and #13 – Sheepshead Rock..... 76

Map 18. Draft Strategic Habitat Area (SHA) nominations #14 – Cape Fear River at Sunny Point, #15 – Fort Fisher Cocquina Outcrop, #16 – Artificial Reef 378B, and #17 – Phillip Wolfe Reef, Artificial Reef 378. 77

Map 19. Draft Strategic Habitat Area (SHA) nominations #18 – Masonboro Island and Whiskey and Hewletts Creek, #19 – Masonboro Outcrop, #20 – Meares Harris, Artificial Reef 370. 78

Map 20. Draft Strategic Habitat Area (SHA) nominations #21 – Wrightsville Beach including Howe and Pages creeks, #23 – Billy Murrel Reef, Artificial Reef 364, and part of #22 – Topsail Beach. 79

Map 21. Draft Strategic Habitat Area (SHA) nominations #22 – Topsail Beach including Futch and Virginia creeks and Rich and New Topsail inlet and #24 – Topsail Reef, Artificial Reef 360. 80

Region 4 Strategic Habitat Area Nominations Draft Report

Map 22. Draft Strategic Habitat Area (SHA) nominations #25 – Cape Fear River, Lilliput Creek and #26 – Cape Fear River, Town Creek. 81

Map 23. Draft Strategic Habitat Area (SHA) nomination #27 – Brunswick River. 82

Map 24. Draft Strategic Habitat Area (SHA) nominations #28 – Northeast Cape Fear River, Ness Creek and #29 Cape Fear River, Indian Creek. 83

Map 25. Draft Strategic Habitat Area (SHA) nominations #30 – Northeast Cape Fear River, Cowpen Branch, #31 Northeast Cape Fear River, Long, Morgans, and Turkey creeks, and #32 – Northeast Cape Fear River – Prince George Creek. 84

Map 26. Draft Strategic Habitat Area (SHA) nominations #33 – Northeast Cape Fear River, near Castle Hayne including Island and Harrisons creeks and #34 – Northeast Cape Fear River, near Rocky Point. 85

Map 27. Draft Strategic Habitat Area (SHA) nominations #35 – Northeast Cape Fear River, Ashes Creeks and #36 – Northeast Cape Fear River, Watermelon Run. 86

Map 28. Draft Strategic Habitat Area (SHA) nominations #37 – Northeast Cape Fear River, Duplin/Pender County line and part of #36 – Northeast Cape Fear River, Watermelon Run. 87

Map 29. Draft Strategic Habitat Area (SHA) nominations #38 – Cape Fear River lowlands, Lyon and Crossway creeks and Lyon Thorofare and part of #39- Black River, Moores Creek. 88

Map 30. Draft Strategic Habitat Area (SHA) nomination #39 – Black River, Moores Creek. ... 89

Map 31. Draft Strategic Habitat Area (SHA) nomination #40 – Cape Fear River near Kelly. ... 90

Map 32. Draft Strategic Habitat Area (SHA) nomination #41 – Cape Fear River below Elizabethtown. 91

Map 33. Draft Strategic Habitat Area (SHA) nomination #42 – Cape Fear River at Tarheel. 92

Map 34. Draft Strategic Habitat Area (SHA) nomination #43 – Cape Fear River at Lillington. 93

ACKNOWLEDGEMENTS

TBD

Region 4 Strategic Habitat Area Nominations Draft Report

REGIONAL ADVISORY COMMITTEE

Name	Affiliation
Troy Alphin	University of North Carolina - Wilmington
Nora Deamer	North Carolina Division of Water Resources, Basin Planning Section
Jeremy Humphrey	North Carolina Division of Marine Fisheries, Shellfish Sanitation Section
Jessie Jarvis	University of North Carolina - Wilmington
Mike Mallin	University of North Carolina - Wilmington
Robb Mairs	North Carolina Division of Water Resources, Water Quality Section
Kyle Rachels	North Carolina Wildlife Resources Commission
Fritz Rohde	National Marine Fisheries Service
Fred Scharf	University of North Carolina - Wilmington
Hope Sutton	North Carolina Division of Coastal Management, Coastal Reserve Program
Dawn York	Cape Fear River Partnership

GLOSSARY OF ACRONYMS

AFSA	Anadromous Fish Spawning Areas
CHPP	North Carolina Coastal Habitat Protection Plan
DCM	North Carolina Division of Coastal Management
DEQ	North Carolina Department of Environmental Quality
DMF	North Carolina Division of Marine Fisheries
DOT	North Carolina Department of Transportation
DWQ	North Carolina Division of Water Quality
DWR	North Carolina Division of Water Resources
GIS	Geographic Information System
HWQ	High Quality Waters
HU	Hydrologic unit
MFC	North Carolina Marine Fisheries Commission
NERR	National Estuarine Research Reserve
NHD	National Hydrologic Dataset
NOAA	National Oceanographic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRT	Natural resource targets
NWI	National Wetlands Inventory
ORW	Outstanding Resource Waters
PNA	Primary Nursery Area
SAV	Submerged Aquatic Vegetation
SGA	Shellfish Growing Area
SHA	Strategic Habitat Area
SSNA	Special Secondary Nursery Area
SS&RWQ	North Carolina Division of Marine Fisheries – Shellfish Sanitation and Recreational Water Quality section
TNPA	Trawl Net Prohibited Area
USACE	United States Army Corps of Engineers
WRC	North Carolina Wildlife Resources Commission

EXECUTIVE SUMMARY

Strategic Habitat Areas (SHAs) represent priority locations for protection or restoration due to their exceptional ecological functions or areas that are particularly at risk due to imminent threats to their ability to support coastal fisheries. Identification and designation of SHAs is a main goal of the North Carolina Coastal Habitat Protection Plan (CHPP). The identification of SHAs was conducted in a two-step process: 1) using GIS-based habitat and alteration data in a computerized site-selection analysis and 2) verifying and modifying information based on input from a scientific advisory committee. North Carolina Division of Marine Fisheries (DMF) staff and the advisory committee determined representation levels for multiple unique habitat types. There are also several types of alteration factors that are represented geospatially (i.e., hydrologic alterations, water quality degradation, and physical disturbances). The site selection program Marxan was used to select areas that met representation levels while limiting the selection of highly altered sites. The scientific advisory committee modified the computer results based on their expert knowledge and experience. The resulting SHA nominations encompass 21.3% of the Region 4 focus area (i.e., riparian targets within 500 m of the shoreline, open waters and the Atlantic Ocean out to 3 nmi) (Maps 7a-d). There were 43 discrete SHAs selected within Region 4. Large areas of Masonboro and Topsail sounds and the Cape Fear River were selected due to its biodiversity and high quality of habitats and fishery species. Many of the SHAs overlap with lands that are already managed for conservation. The SHAs were corroborated with biological data, ecological designations, and specific knowledge of the area. The SHA nominations will be incorporated into future conservation and restoration planning efforts.



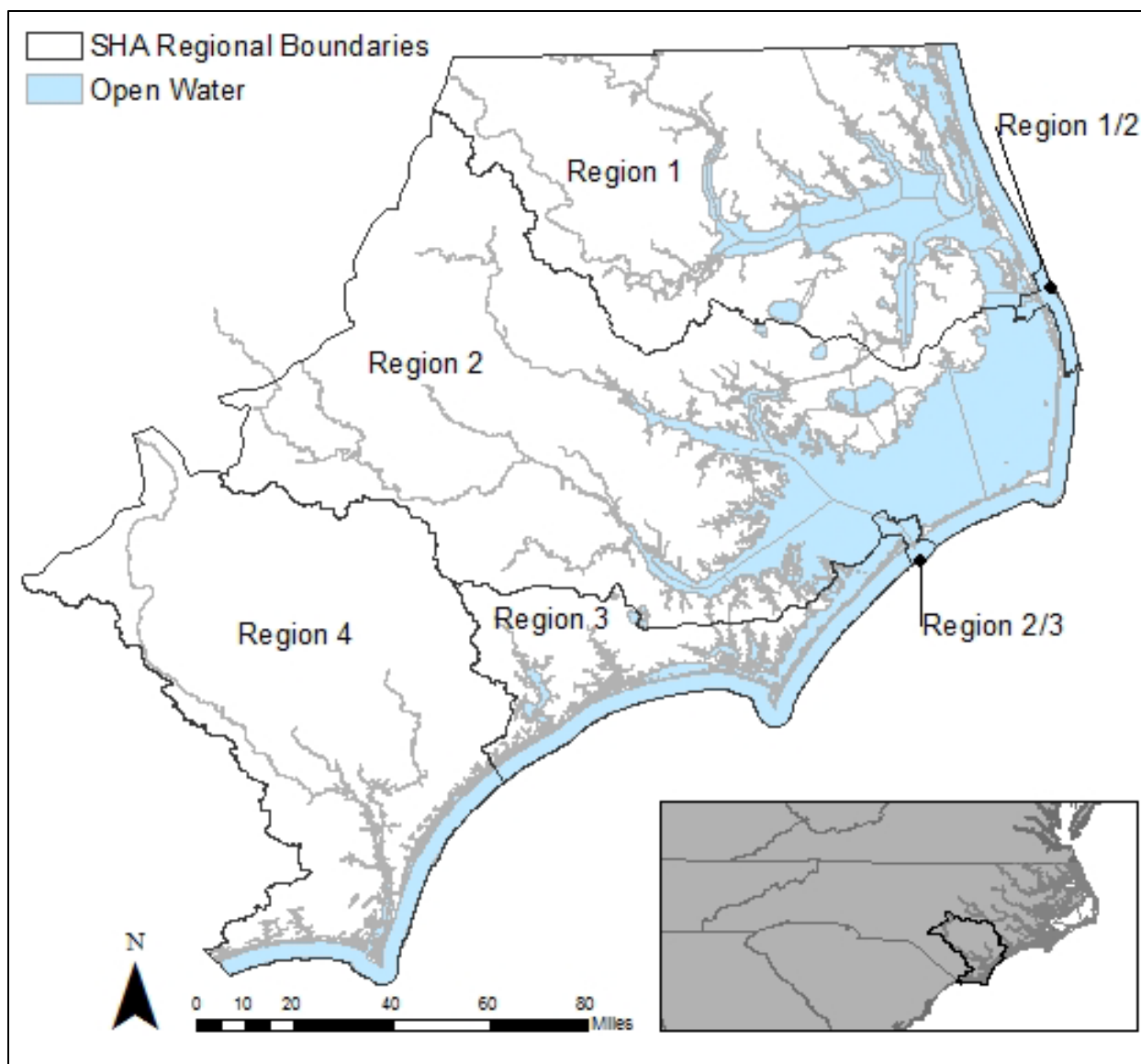
1 INTRODUCTION

The identification and designation of Strategic Habitat Areas (SHAs) for marine and coastal fishery species is a critical component in the implementation of North Carolina's approved Coastal Habitat Protection Plan (CHPP). Strategic Habitat Areas were defined in the CHPP as, "specific locations of individual fish habitat or systems of habitats that have been identified to provide exceptional habitat functions or that are particularly at risk due to imminent threats, vulnerability, or rarity" (DEQ 2016; Deaton et al. 2010; Street et al. 2005). Criteria for identifying SHAs were developed by North Carolina Division of Marine Fisheries (DMF) staff and a Marine Fisheries Commission (MFC) advisory committee established in the summer of 2005. The committee developed a scientifically based process for identifying candidate areas for designation using biological data and the consensus of a regional expert panel (regional advisory committee). Their generic process is described in the guidance document entitled, "Process for Identification of Strategic Habitat Areas" (Deaton et al. 2006) that was approved by the MFC.

Strategic Habitat Area designations are based on regional analyses that identify optimally placed habitat areas of various ecological condition (exceptional or at risk). Strategic Habitat Areas may include areas that have already been protected by other designations, as well as areas not currently recognized in any way. Thus, areas designated as SHAs will require various site-specific management actions that best address the threats affecting that site. A network of designated SHAs providing habitat connections throughout North Carolina's coastal waters will help ensure that the complex life history needs of all species are met. Once SHAs are designated, resource managers may address priority fish habitat issues and take steps to prevent further alteration of strategic areas. Thus, the necessary protections for some areas may go above and beyond current measures designed to protect habitat. The nomination of SHAs will provide guidance for other conservation projects focused on conservation/acquisition, enhancement, or restoration projects.

The identification of SHAs addresses the continuing degradation and loss of important habitats referenced in the CHPPs (DEQ 2016; Deaton et al. 2010; Street et al. 2005). Current rules and policies of the resource management agencies fail to adequately address the individually small but cumulatively large alterations of fish habitat for development and associated human activities. Eventually, resource management and conservation agencies must address the issue of cumulative impacts in terms of fisheries ecosystem integrity and threshold alteration levels (DMF 2016; Deaton et al. 2010). On a regional scale, the concept of managing ecosystems to avoid cumulative impacts is partially addressed by assessing the condition of natural resource targets based on the presence, extent, and influence of multiple alteration factors. Maintaining a healthy ecosystem through focus on SHAs is based on the interdependent relationship between 1) natural resource targets, 2) alteration factors, 3) the spatial landscape, and 4) fish distribution and movement. Averting threshold levels of cumulative alteration to SHAs could be accomplished with both regulatory and non-regulatory tools, although the focus will be on non-regulatory tools.

Four regional analyses are being done to identify SHAs in coastal waters. Region 1 (Albemarle Sound System), Region 2 (Pamlico Sound system), and Region 3 (White Oak River Basin) were completed in 2009, 2011, and 2014 respectively (Map 1). SHAs in these regions are already being used by conservation groups to a limited extent. Sampling will begin in 2018 to verify fish productivity in SHAs and determine if modifications are needed. Once complete, staff will focus on developing site-specific measures to protect and enhance SHAs.



Map 1. Regional boundaries for Strategic Habitat Area (SHA) nominations.

1.1 Geographic Scope of Region 4

Region 4 is the southernmost region and has a riverine and estuarine component. It includes the southern estuaries from Surf City to the South Carolina border, and the Cape Fear River system upstream to approximately Lillington (Map 1). This upstream limit encompasses the historical anadromous fish spawning grounds of Smiley Falls (approximate fall line). Region 4 does not include the entire Cape Fear river basin, which extends to the Greensboro area. The Advisory Committee recognized that anadromous fish utilize waters upstream of the Region 4 boundary and that these areas are equally important but beyond the scope of this process. The estuarine component includes the coastal U.S. Geological Survey hydrologic units (HUs) east (part of the White Oak river basin) and west (part of the Lumber river basin) of the Cape Fear River basin. Hydrologic units are a defined area of land and water within a drainage divide. The USGS categorizes these with a standardized classification system, from the largest (region) to the smallest catchment basin (subwatershed). These coastal waters drain to the ocean through the numerous inlets.

Region 4 Strategic Habitat Area Nominations Draft Report

The estuarine waters from Surf City through Sunset Beach include many mainland tidal creeks, small sounds, and inlets, as well as the Intracoastal Waterway. There are eight inlets in addition to the mouth of the Cape Fear, separating ten islands and the peninsula of Carolina Beach. These include New Topsail, Rich, Mason, Masonboro, Carolina Beach, Lockwood Folly, Shallotte, and Tubbs inlets. Mainland tidal creeks east of the Cape Fear in Pender, New Hanover, and Brunswick counties include Becky's, Virginia, Mallard, Topsail, Mill, Futch, Pages, Howe, Bradley, Hewletts, and Whiskey creeks. Tidal creeks west of the Cape Fear in Brunswick County include Dutchman Creek, Elizabeth, Lockwood Folly, Shallotte, and Calabash rivers occur (Map 2).

The riverine component of Region 4 includes the three lower subbasins of the Cape Fear River basin – Northeast Cape Fear, Black River, and Lower Cape Fear systems. Each subbasin includes other smaller waterbodies. Counties in riverine component of Region 4 include Brunswick, New Hanover, Pender, Duplin, Sampson, Bladen, and Cumberland, as well as a small amount of Hoke, Harnett, Wayne, and Onslow (Map 2).

Region 4 Strategic Habitat Area Nominations Draft Report



Map 2. Major water bodies in Region 4.

Region 4 Strategic Habitat Area Nominations Draft Report

All six habitat types described in the CHPP (DEQ 2016; Deaton et al. 2010; Street et al. 2005) are present within the region. The estuarine water column is characterized as having relatively small waterbodies a large portion of high salinity waters, and lunar tides with a large tidal range (3-5ft). Subsequently, shell bottom is primarily intertidal and salt marsh is extensive. Despite the small estuarine waterbodies in Region 4, there is a disproportionately large amount of shell bottom habitat, relative to other regions (DEQ 2016). Submerged Aquatic Vegetation (SAV) is less abundant and patchier than in the other regions but has been increasing over the past ten years. The Cape Fear system ranges from high salinity at the mouth, brackish in the vicinity of Wilmington, to non-tidally influenced fresh water in the upper portion of the region. The Cape Fear River is the only coastal river that drains directly to the ocean. Habitat is primarily forested wetlands, freshwater marsh, and riverine soft bottom. Most nearshore hard bottom in North Carolina predominantly occurs within Region 4. Concentrations of low to moderate profile hard bottom occur in state waters offshore of Topsail and Masonboro Islands (Onslow Bay) and Brunswick County (Long Bay). In federal waters, hard bottom is more extensive and is characterized as having greater topographic complexity.

Because of the large portion of shallow structured habitats in this region, designated Primary Nursery Areas are abundant in both the coastal and Cape Fear River components. Waters of the Cape Fear River, beginning downstream at Town Creek, and extending upstream through most of the region, are designated as Anadromous Fish Spawning Areas. A diversity of anadromous fish uses the Cape Fear, including striped bass, American shad, river herring, American eel, and Atlantic and shortnose sturgeon. In addition to supporting a diversity of aquatic habitat and fish, this region, referred to as the Cape Fear Arch, supports a unique geological landscape and high biodiversity in upland and wetland habitats and many endemic species (Cape Fear Arch Conservation Collaboration 2015).

1.2 Land Use

The counties of Brunswick, New Hanover, and Pender counties had the highest population increase in the 20 coastal counties between 1990 and 2015 (DEQ 2016). New Hanover and Brunswick counties are the first and third most populated counties. Most the increased population and associated development has occurred along the coast. Wilmington and Fayetteville are the two largest cities in the region. Development in, and urban sprawl adjacent to, these cities accounts for most of the increase in developed land use, and decrease in evergreen forest and forested wetlands. Land use is primarily residential along the coast and around Wilmington and Fayetteville. Land use in rural inland areas of Region 4 consists of crop and animal agriculture, as well as industrial use along the main stem of the Cape Fear River. Swine and poultry farms are highly concentrated in the Northeast Cape Fear watershed. Municipalities use the river for wastewater discharge and drinking water uptake. Many industries have been located along the Cape Fear River for decades due to the need to discharge industrial waste. Subsequently there are several EPA Superfund sites along the river. However, with these exceptions, many other areas between Wilmington and Fayetteville are fairly undeveloped and support productive habitat and fisheries.

The large population increase puts stress on the adjacent ecosystem. For example, of the coastal river basins, the Cape Fear, which includes the southern estuaries of Pender and New Hanover counties, had the second greatest acreage of impacted wetlands based on 401 permit records, from FY 2000- FY 2014. Increasing development stresses shell bottom habitat through point and nonpoint sources bringing sediment and other pollutants to shellfish waters. In 2014 48% of

Region 4 Strategic Habitat Area Nominations Draft Report

shellfish harvest waters in the southern counties (Onslow through Brunswick counties) were closed due to bacterial contamination. Despite multiple anthropogenic threats and large areas closed to harvest, 45% of the total landings in North Carolina came from the southern counties in 2013 (DEQ 2016), which further impacts the habitat. In the low salinity and fresh waters of the Cape Fear River, runoff from agriculture, concentrated animal feeding operations (CAFOs), and industrial discharges is the primary water quality threat. Since 2009, algal blooms of toxic *Microcystis* have been occurring in the Cape Fear River and been concentrated between Lock and Dam 1 and upstream of Lock and Dam 3. Obstructions to anadromous fish passage from dams are also a significant concern in the Cape Fear River.

There are several conservation lands that provide habitat protection as well as recreation opportunities. Among the conservation lands are two undeveloped islands (Masonboro Island National Estuarine Research Reserve and Lea Island), Fort Fisher State Recreation Area, Carolina Beach State Park, Holly Shelter and Angola Bay Game Lands, and Singletary Lake State Park and Raven Rock State Park. Additionally, over 24,000 acres have been purchased for conservation along the Black River, Northeast Cape Fear River, and Town Creek.

The DMF Management Review Team noted increasing shellfish harvest closures as a priority threat throughout the estuarine region. Degraded nursery conditions due to toxin and nutrient contamination, sedimentation, and altered flow and salinity was also considered a concern overall. Algal blooms, low dissolved oxygen, and stream obstructions to fish passage were the primary concerns in the Cape Fear system.

1.3 Identification of Priority Species

The priority fisheries species of the Cape Fear River Basin encompasses many shellfish and finfish including eastern oyster (*Crassostrea virginica*), clam (*Mercenaria mercenaria*), blue crab (*Callinectes sapidus*), shrimp (*Penaeus* spp.), bay scallop (*Argopecten irradians*), southern flounder (*Paralichthys lethostigma*), red drum (*Sciaenops ocellatus*), spotted seatrout (*Cynoscion nebulosus*), kingfishes (*Menticirrhus* spp.), and spot (*Leiostomus xanthurus*). The Cape Fear River system is vital to anadromous species, including striped bass (*Morone saxatilis*), shad and river herring (*Alosa* spp.), and sturgeon (*Acipenser* spp.), that migrate up river for spawning; while the nearshore provides important habitat for gag (*Mycteroperca microlepis*), black sea bass (*Centropristis striata*), sheepshead (*Archosargus probatocephalus*), and mackerels (*Scomberomorus* spp.). Commercial and recreational landings support the value of these fisheries to the region. Commercially blue crab, shrimp, spot, oysters, king mackerel and gag grouper had the highest average landings (2005-2015) in Pender, New Hanover, and Brunswick counties (Table 1). Recreationally, flounder, red drum, spotted seatrout, king and Spanish mackerel, and spot were the most targeted species. These were all considered priority species for Region 4 by the DMF Management Review Team.

The CHPP states that “The areas that contribute most to the integrity of the system are a category of habitat termed Strategic Habitat Area” (DEQ 2016; Deaton et al. 2010). In a general sense, the abundance and diversity of habitat such as shallow nursery areas, SAV, and oyster beds is what sustains productivity in Region 4. The Region 4 SHA assessment focused on identifying habitat areas that provide critical functions to various life stages of priority species and are minimally degraded.

Region 4 Strategic Habitat Area Nominations Draft Report

Table 1. Commercial landings of priority fishery species in Region 4 (DMF, unpublished data).

	Species	Commercial Landings (lbs)			
		2005	2010	2015	2005-2015 Avg.
Shellfish/ crustacean	Blue Crab	1,057,677	1,004,967	843,108	1,055,345
	Shrimp	680,384	806,235	588,632	585,211
	Oysters	87,933	159,419	153,741	149,931
	Clams	69,277	52,139	33,575	56,462
	Bay Scallop*	-	-	-	34
Estuarine finfish	Spot	261,357	57,982	119,858	165,403
	Kingfishes	99,450	133,107	118,682	102,408
	Southern Flounder	66,384	66,702	93,337	78,546
	Spotted Seatrout	8,921	9,224	15,156	12,464
	Red Drum	7,088	6,189	12,454	7,402
Anadromous fish	Striped Bass**	2,721	-	-	611
	Sturgeon	-	-	-	-
Reef Fish and coastal pelagics	Grouper, Gag	160,443	151,385	67,984	126,449
	Black Sea Bass	146,538	65,009	100,425	103,470
	Sheepshead	2,183	2,526	10,893	6,731
	King mackerel	266,007	158,996	128,748	210,080
	Spanish mackerel	2,183	2,526	10,893	6,731

*Landings in 2013 only

**Landings from 2005-2008 only

2 METHODOLOGY

A guidance document was developed to direct the methods for identifying SHAs (Deaton et al. 2006). The SHA identification process consists of three main phases, each of which requires input from a regional expert panel. The first phase in the SHA process is to identify priority species and habitats, and build a GIS database of existing biological and anthropogenic use data for Region 4. The DMF Management Review Team selected priority species for the region based on their importance to both the recreational and commercial fishing industries in the region. Once data was assembled by DMF staff, the regional advisory committee for Region 4 reviewed the data to ensure that they have sufficient spatial coverage and are current enough to be included in the SHA selection process. Then the committee examined the priority fish species for the region and suggested the amounts, or representation levels, of each habitat, or natural resource target (NRT), that should be included in the final SHA network. The second phase of the process was to run the site selection software Marxan (Ball et al. 2009) to determine an initial configuration of SHAs. Once the Marxan modeling was complete, the third phase consisted of an expert committee reviewing the Marxan selections and using corroborating information and their own ecological knowledge to modify the boundaries of the SHAs and derive a final network of SHA nominations.

2.1 Natural Resource Targets

In this analysis, natural resource targets (NRTs) are defined as the habitats that represent essential or unique components of the fisheries ecosystem. Natural resource targets vary by

Region 4 Strategic Habitat Area Nominations Draft Report

region and representation levels (the amount of a habitat to be included in the SHA nominations) should be chosen to differentiate between habitats that are used differently by fish species. To do this, priority species were grouped into shellfish/crustaceans, estuarine finfish, anadromous fish, and reef fish and coastal pelagics based on common life history strategies (Table 2). Each NRT was evaluated based on its value to these species' groups. Once identified, the use of NRT by each group of priority species was used to set representation levels. In addition to the importance to priority species, the ability of the NRT to improve water quality was also considered when setting representation levels. After an initial value was set, representation levels were adjusted by the advisory committee based on the regional importance of a habitat type, quality of habitat data, and overall amount of habitat in a region. Additional adjustments were made to the NRT representation levels by the advisory committee after reviewing the sensitivity analysis (See Sensitivity Analysis Section). A comprehensive list of NRTs and the chosen representation levels are listed in Table 2.

Region 4 Strategic Habitat Area Nominations Draft Report

Table 2. Natural resource targets (NRTs) and representation levels used in the analysis and the importance of each NRT to priority species in Region 4.

Habitat type	Natural resource target	Total acres within focus area	Rep level (%)	Importance to priority species				
				Shellfish	Anadromous fish	Estuarine finfish	Reef fish & coastal pelagics	Water quality
				oysters, blue crabs, hard clams, bay scallops, shrimp	striped bass, American Shad, river herring, sturgeon	southern flounder, spot, spotted seatrout, red drum, weakfish	gag, black seabass, sheepshead, kingfishes, mackerels	-
Hard bottom	Hard Bottom	3,689	0				X	
SAV	High salinity SAV	653	60	X		X	X	X
Shell bottom	Intertidal shell bottom	3,708	60	X		X	X	X
	Subtidal shell bottom	2,395	60	X		X	X	X
SAV & shell bottom	SAV & shell bottom	130	80	X		X	X	X
Creeks & Rivers	Riverine soft bottom (0-3ft)	1,902	30	X		X		
	Riverine soft bottom (3-6ft)	292	20	X		X		
	Riverine soft bottom (>6ft)	1,174	20			X		
	Riverine soft bottom (ND)	6,764	10			X		
Shallow soft bottom	Palustrine soft bottom (0-3ft)	18	0			X		
	Palustrine soft bottom (ND)	195	0			X		
	Estuarine soft bottom (0-3ft)	18,430	20	X		X		
	Estuarine soft bottom (3-6ft)	3,507	20	X		X		
	Estuarine soft bottom (ND)	6,965	0	X		X		
	Marine soft bottom (0-3ft)	4,226	30			X	X	
	Marine soft bottom (3-6ft)	3,576	20			X	X	
Deep soft bottom	Marine soft bottom (ND)	54	0			X	X	
	Estuarine soft bottom (>6ft)	6,911	10	X		X	X	
	Marine soft bottom (>6ft)	176,471	0			X	X	
	Wetland	Emergent wetland	34,629	10			X	
Forested wetland		58,637	30			X		X
Shrub & scrub wetland		3,792	0					X
Wetland edge		9,067	40			X		X
Low-elevation upland	Low-elevation upland	2,110	0					X
Water column	Streams (low elevation)	624	20			X		
TOTAL AREA		349,918						

2.1.1 Hard Bottom

Locations of hard bottom in the ocean are not well documented, and only a few datasets exist that give specific locations and information about hard bottom habitats. For the Region 4 analysis data was combined from several different data sets to create a mosaic of hard bottom habitat. The most extensive survey was based on the Southeast Area Monitoring and Assessment Program's reef-dependent fish collections from the 1990s (SEAMAP 2001). In addition, the list of wrecks and obstructions was obtained from the National Oceanic and Atmospheric Administration (NOAA) Office of Coast Survey Automated Wrecks and Obstructions Information System database (https://www.nauticalcharts.noaa.gov/hsd/wrecks_and_obstructions.html). Natural Heritage Areas of hard bottom outcrops near Fort Fisher, Masonboro, and Topsail were included (<https://ncnhde.natureserve.org/content/data-download>).

Due to geographic and spatial relationship constraints between NRTs (See Sensitivity Analysis section), the advisory committee decided to remove hard bottom from the model, setting a representation level of zero, and hand select during the corroboration stage (Table 2). Because of its importance to priority species such as gag, black sea bass, and sheepshead, as well as the lack of mapping data documenting hard bottom habitat, more than 77.4% of all known locations of hard bottom material were selected in the proposed SHA network for Region 4. Unlike previous regions DMF artificial reefs were not excluded from these selections since they are an important and large part of the offshore hard bottom habitat.

2.1.2 Submerged Aquatic Vegetation

Submerged aquatic vegetation beds were mapped using aerial photography interpretation and transect data interpolation. Source data for Region 4 were acquired in 2007 and 2015 (Benthic Habitat Mapping Program 1988-March 2016, unpublished data). Mapped SAV was further differentiated into low (0-15ppt) and high salinity (>15ppt) beds, based on NOAA salinity classifications. All SAV within Region 4 is classified as high salinity.

The presence of SAV indicates an area with good water quality that is sufficient to support a wide variety of essential ecological functions within coastal habitats, providing an implicit way to differentiate between qualities of areas in soft bottom habitats. In the context of other Marxan inputs, a sensitive habitat such as SAV can help distinguish between otherwise similar habitats such as shallow estuarine soft bottom. Because of its regional importance and uniqueness, high salinity SAV targets were set relatively high (60%; Table 2).

2.1.3 Shell Bottom

Shell bottom habitat in Region 4 was based on interpolated transect data collected by the DMF Estuarine Benthic Habitat Mapping Program (<http://data.nconemap.com/geoportal/catalog/search/resource/details.page?uuid=%7BECC895DB-5A1C-4F13-98C3-1AB080F4B4B5%7D>). The source data ranges from 1988 to 2016, depending on the geographic area. The shell bottom target is defined as areas with at least 30% coverage of shell material (typically oysters) in water generally less than 12 feet deep. Shell bottom is subdivided into intertidal and subtidal by the Estuarine Benthic Habitat Program.

Other sources of data were incorporated into the shell bottom target, including cultch planting

Region 4 Strategic Habitat Area Nominations Draft Report

sites (DMF unpublished data, 1981-2016) and an oyster reef mapping assessment of Masonboro Island conducted by the National Estuarine Research Reserve (NERR) (Manley 2016). Cultch planting data was classified as either intertidal or subtidal based on depth recorded at the time of deployment. All the Masonboro Island NERRs data was considered to be intertidal. Representation levels were set at 60% for both intertidal and subtidal shell bottom because they are regionally important as a fishery resource, serve as fish habitat, and are important for maintaining water quality (Table 2).

2.1.4 Submerged Aquatic Vegetation and Shell Bottom

The SAV and shell bottom data was derived from clipping the overlaid SAV and shell bottom layers. Areas where both occurred were then selected. Submerged Aquatic Vegetation and shell bottom are both indicators of good water quality and a high productivity. Therefore, the representation level for areas where both SAV and shell bottom occur was set very high at 80% (Table 2).

2.1.5 Low-Elevation Uplands

Low elevation uplands were included because they are potential sites for marsh migration as inundation occurs (DEQ 2016; Deaton et al. 2010). A 2008 3m digital elevation model with a vertical accuracy of 25cm was used to select areas less than two feet above mean sea level and having a patch size greater than 25m². Non-wetland shorelines were also included in this category of uplands. The non-wetland shoreline was derived from the North Carolina Division of Coastal Management (DCM) estuarine shoreline data. A 15m landward buffer was applied to the shoreline and the resulting data was combined with the uplands derived from the digital elevation model. Only low elevation uplands adjacent to other NRTs were retained; all others were eliminated from the dataset. Due to this connectivity, the model will inherently select any upland associated with the other NRTs. Therefore, the representation level was set to 0% (Table 2).

2.1.6 Wetlands

Wetland targets were extracted from the U.S. Fish and Wildlife's National Wetlands Inventory (NWI) (<https://www.fws.gov/wetlands/data/data-download.html>) where wetlands are classified according to Cowardin et al. (1979). Wetlands of the following types are included in the Region 4 analysis: estuarine intertidal emergent, shrub/scrub, and forested wetlands and palustrine emergent, shrub/scrub, and forested wetlands. Only contiguous wetlands within 90m of a stream or shoreline of the National Hydrography Dataset (NHD) high resolution data (1:24,000-scale) were included as a target for assessment (https://nhd.usgs.gov/NHD_High_Resolution.html). Representation levels were set at 10%, 30%, and 0% for emergent, forested, and shrub/scrub wetlands, respectively, based on their importance to the estuarine system (Table 2).

2.1.6.1 Wetland Edge

This target consists of the linear wetland edge as designated in the DCM estuarine shoreline data layer with a 15m landward buffer applied. The wetland edge target does not differentiate between the marsh and forested edges. The inclusion of wetland edge, in addition to riparian/interior wetlands, was intended to capture the important linear ecotone within aquatic systems. Wetland shorelines are important habitat for juveniles of some priority species and the Wetland edge representation level was set relatively high at 40% to reflect such (Table 2).

Region 4 Strategic Habitat Area Nominations Draft Report

In Region 2, the linear wetland edge features were buffered and converted to polygon features while in the Region 3 analysis the wetland edge feature was kept linear. In Region 3, the linear features were retained with the intention of maintaining the integrity of the linear dataset and avoiding potential false inflation of alterations many of the alterations affecting these features were also linear. For Region 4, most alteration are polygon features and it was determined that buffering the wetland edge would not falsely inflate alteration factors.

2.1.7 Streams

Small creeks and streams were represented using the NHD high resolution data (1:24,000-scale). This dataset represents a connected network of stream channels. The streams were clipped out of the open water features to leave a continuum from linear to polygon water features. The artificial connectors, an artifact needed to maintain the datasets continuous linear network between features, were removed from the dataset because they did not represent stream habitat. A representation level of 20% was set for streams (Table 2).

2.1.8 Soft Bottom

Soft bottom or water column habitat was designated as any area without submerged aquatic vegetation, shell bottom, or other structured habitat. This soft bottom habitat was derived using the DCM estuarine shoreline layer, the NOAA bathymetry contour dataset (<https://data.noaa.gov/dataset/bathymetric-contours>), and the NWI dataset. The DCM estuarine shoreline data was used as the base or boundary for the soft bottom natural resource target because it was recently digitized using high quality aerial imagery. All other structured features were removed from this base layer; this includes submerged aquatic vegetation, shell bottom, and hard bottom. The remaining features were considered soft bottom features.

The soft bottom features were further classified by depth and system. The depth categories included 0-3ft, 3-6ft, and no depth (ND). These distinctions are important because they correspond to major differences in ecological function (i.e., shallow water nurseries). Depth was derived from the NOAA bathymetric dataset. The no depth category was assigned to channel-like hydrographic features adjoining more open waters, or where the bathymetric charts indicated no data.

The soft bottom habitats are also classified into system type using the NWI wetland polygon dataset and classification system (Cowardin et al. 1979). Any soft bottom habitat that did not have a hydrological connection to riverine or estuarine systems by linear water features was removed from the dataset by applying a 30m buffer to determine connectedness of water bodies (i.e., lakes and ponds) to adjacent water features. Soft bottom habitats are classified into riverine, estuarine, palustrine, and marine systems.

- Riverine systems were separated from low salinity estuarine systems based on a linear or meandering morphology and a substantial (non-ditched) drainage network upstream.
- Palustrine systems included all non-tidal wetlands dominated by trees, shrubs, persistent emergent, and all such tidal wetlands where ocean-derived salinities are below 0.5ppt. Palustrine systems were only included if they were directly adjacent to connected lacustrine, riverine, or estuarine systems.

Region 4 Strategic Habitat Area Nominations Draft Report

- Estuarine systems included all open waters and intertidal flats between riverine and marine systems. The estuarine system also includes pond-like features surrounded by estuarine wetlands.
- Marine systems included the subtidal and intertidal waters of the coastal ocean and inlets.

Due to the abundance of soft bottom in the region most representation levels were set below 30% (Table 2).

2.1.9 Rare or Listed Species

Rare or listed species are not included in the Marxan analysis as targets, but are taken into account indirectly through targeting of associated habitats, and during the second phase of the analysis using expert modification. Rare, listed, or species of special concern in this region include Atlantic sturgeon (*Acipenser oxyrinchus*), bottlenose dolphins (*Tursiops truncatus*), diamond back terrapins (*Malaclemys terrapin*), and sea turtles (Chelonioidea). Sturgeon habitat will be indirectly targeted through selection of riverine wetlands, streams, and soft and hard bottom. Green (*Chelonia mydas*), Kemp's ridley (*Lepidochelys kempii*) and loggerhead sea turtles (*Caretta caretta*) are the most common of the five listed sea turtle species in Region 4. They tend to enter the estuarine waters in the spring as they migrate north for the summer, and leave the estuary in the fall to migrate south for winter. Sea turtles are highly mobile, moving around as they feed opportunistically. Within Region 4, sea turtles are can be found throughout the sounds and lower rivers. Their habitat will be targeted indirectly through deep soft bottom.

2.2 Alteration Factors

Alteration factors are human activities that impact the marine environment. The alteration factors used in the analysis are listed in Table 3 and described in the sections below. Each factor was evaluated for duplication or overlap with other factors.

Region 4 Strategic Habitat Area Nominations Draft Report

Table 3. Alteration factor weightings used in the Marxan analysis. Scale: 0-3, with 0 being no impact, and 3 being the most severe impact.

Habitat Categories	Water based Alterations (impact hydrology)*								Land based Alterations (impact water quality)								Physical	
	Culvert-obstructions	Impoundments	Bridge Constrictions	Bulkheads	Rip rap	Dredged channels	Ditched/Drained	Canals and boat basins	Major NPDES**	Minor NPDES**	Marinas	Animal operations**	Developed land use***	Agricultural land use***	Prohibited shellfish harvest	Docks and piers	Trawling and dredging allowed	Mechanical clam harvest
Hard bottom	1	1	0	1	1	2	0	2	2	1	1	0	1	1	2	1	3	3
Creeks & rivers	2	3	2	1	1	1	1	1	2	1	2	3	2	2	1	0	1	1
SAV	1	1	1	2	1	3	0	3	2	1	2	2	3	2	1	2	3	3
Shell bottom	1	0	1	0	0	3	0	1	1	1	2	1	2	1	1	0	2	3
SAV & shell bottom	1	1	1	2	1	3	0	2	2	1	2	2	3	2	1	2	3	3
Deep soft bottom	0	1	0	0	0	1	0	1	1	1	1	1	1	1	1	0	1	1
Shallow soft bottom	0	1	0	2	1	2	0	1	1	1	2	2	1	1	1	0	2	1
Upland	1	1	0	2	1	0	0	1	0	0	0	0	1	1	0	0	0	0
Wetland	1	2	1	1	0	2	3	1	1	1	1	1	1	1	0	1	0	0
Streams	2	2	2	1	1	1	2	0	3	2	0	3	3	2	0	0	0	0
Wetland edge	1	2	1	3	2	2	2	2	1	1	1	1	1	1	0	1	0	0

*Based on existing GIS layers and factored as presence/absence

**Calculated as the # of a facility per HU

***National Pollutant Discharge Elimination System – Relativized proportion of development/agricultural land use per HU

2.2.1 Natural Resource Targets and Alteration Factors

The NRTs for Region 4 were grouped into general habitat categories for the purpose of applying alteration factor ratings. For example, wetland types are affected similarly by ditching and drainage; therefore, they form one habitat type for alteration calculations. However, there were linear and polygon wetland and shoreline features. To apply the equations to calculate the total alteration score presented in Appendix A, the linear features were converted into narrow polygon features. Like Regions 2 and 3, this conversion was also done for linear water features including linear stream features. The NRT groupings are listed in Table 3 and described below:

- Hard Bottom – All categories of hard bottom.
- Creeks/rivers – Polygon water column features for riverine hard and soft bottom NRTs. This category represents soft bottom under flowing water conditions.
- SAV – All categories of SAV, only high salinity present in Region 4.
- Shell bottom – All categories of shell bottom.
- Soft bottom, deep – All categories of estuarine and marine soft bottom >6ft deep. This category represents soft bottom under standing water conditions.
- Soft bottom, shallow – All categories of estuarine and marine soft bottom <6ft deep. This category represents soft bottom under standing water conditions.
- Uplands – Line features that were converted to polygons using a buffer 15m landward from non-wetland shorelines. The polygon target for low-elevation uplands was included in this basic habitat type for alteration.
- Wetland – Wetland edge was converted to polygons using a buffer 15m landward from wetland shorelines. Interior wetlands are polygon features >15m from wetland edge.
- Streams – Linear water column features converted to polygons using a 2m buffer. The size was based on the thinnest polygon water features, usually upper end of creeks or rivers.

Many other factors were considered, but were not included for various reasons. Among them were 2014 DWQ use support ratings, stormwater outfalls, surface water intakes, silviculture operations, and beach nourishment. Some of these may have been used during the corroboration phase. Their use was excluded for the following reasons:

- DWQ use support ratings were not used because we primarily needed aquatic life use support, which wasn't available in all locations.
- Stormwater outfall maps from DWQ and SS&RWQ were incomplete for the region and overlap with the Shellfish Growing Areas was observed.
- The GIS data for water intakes was extremely outdated, excludes certain areas and intakes under large minimum thresholds, and the National Pollutant Discharge Elimination System (NPDES) sites covered major surface water intakes.
- Silviculture/forestry discharge not included because literature review in the CHPP indicated minor effect on habitat and water quality, previous advisory committees felt the alterations to aquatic habitat were minor relative to other threats, and the activity was difficult to represent spatially (Deaton et al. 2010; Uphoff 2008).
- Dredge material disposal on beaches has occurred in the region (Deaton et al. 2010), but was not included in the alteration factors, since it was episodic and less frequent than

beaches with long term storm protection projects.

Alteration factors are loosely categorized as affecting hydrology (water based alterations), water quality (land based alterations), or physical structure of habitat (physical). The effect of alteration factors on natural resource targets is represented in various ways:

1. *Overlap of habitat area and alteration footprint* – This was done for alteration features whose effect could be accurately represented by a discrete area. Altered areas for these features were represented as the area of the intersection between the habitats present and alteration. This was done for culverts-obstructed areas, impoundments, bridge constrictions, bulkheads, rip rap, dredged channels, ditched/draind wetlands, canals and boat basins, prohibited shellfish harvest, marinas, piers and docks, trawling, and mechanical clam harvest.
2. *Relative impact of the alteration factor to a hydrologic unit* – This was done for alteration factors that were theorized to have watershed-level impacts or if the data collection prevented a discrete area of impact from being delineated. To calculate this, the extent of an alteration factor (whether it be total area or the sum of point counts) is summed across HUs and amount is scaled to the maximum value occurring in any HU in the region. This includes major and minor NPDES, animal operations, developed land use, and agricultural land use.

2.2.2 Hydrological Alterations

2.2.2.1 Culvert-Obstructed Areas

This factor identifies the stream segments with possible obstructions by small barriers including culverts and fords. The source of the culvert data was the North Carolina Barrier Prioritization tool which was funded by American Rivers and supported by the Southeastern Aquatic Resource Partnership (SARP). This tool uses state specific natural heritage and anadromous fish data to prioritize dams for fish passage within the state boundaries (Hoenke 2014). The Small Barriers layer from the prioritization tool was used to identify culvert obstructed areas.

2.2.2.2 Impoundments

Impounded waters include the watershed upstream from documented dam locations and waterfowl impoundments. The data sources for dam locations were the North Carolina Barrier Prioritization tool which was funded by American Rivers and supported by the SARP. This tool uses state specific natural heritage and anadromous fish data to prioritize dams for fish passage within the state boundaries (Hoenke 2014). The Dam Inventory Version 2 layer from the prioritization tool was used to identify dam obstructed areas.

2.2.2.3 Bridge Constrictions

The bridge constriction data set was selected from the North Carolina Division of Transportation structure location shapefile (<https://connect.ncdot.gov/resources/gis/pages/gis-data-layers.aspx>). From this shapefile, all bridges, including railways and ferry ramps, were extracted.

2.2.2.4 Bulkheads and Riprap

Shoreline type was extracted from the DCM 2012 estuarine shoreline data (McVerry 2012).

Alteration was rated as the ratio of the linear distance of stabilized structures to the linear distance of shoreline within an assessment hexagon. Stabilized structures were defined as bulkheads and riprap. Alteration weight was higher for bulkheads than for riprap because bulkheads have a greater negative impact on the shorelines than riprap.

The DCM survey was based on 2006-2010 county level digital orthophotos from 6 in and 2ft resolution. Structure polyline features were generated from the imagery through heads up digitizing, and were digitized at a scale between 1:300 and 1:500 feet. Structure type is based on the presence of commercial, recreational, and erosion control structures and attributed using guidance provided in a DCM-generated methodology entitled "Charting the Estuarine Environment: A methodology spatially delineating a contiguous, estuarine shoreline of North Carolina" (Geis and Bendell 2008).

2.2.2.5 Dredged Channels

This alteration factor includes areas dredged by the U.S. Army Corp of Engineers (USACE) on a regular basis. The source data originated from 2003. This layer does not include channels dredged by the DWR or private channels dredged for deep-water access, though these areas may be included in the canals and boat basins layer.

2.2.2.6 Ditched/Drained

For the drained alteration factor, wetland polygons with partially drained wetland areas were derived using the "drained" attribute in the NWI dataset. For the ditched alteration factor, linear stream features with the classification in the high resolution NHD was used to select all ditched stream linear features.

2.2.2.7 Canals and Boat Basins

This alteration factor included very long and straight polygon features (obvious canals for navigation) or relatively short and straight elongate polygons with no upstream hydrology (short, water access canals or boat basins). Some of the delineated boat basins could also overlap with marinas. This file was created by clipping out portions of the DMF jurisdictional waters that appeared to be excavated canals or boat basins. Some modifications were made by hand to remove areas that were for obviously for drainage instead of navigation when compared with 2012 imagery data. Additional areas were added based on obvious canals and boat basins observed through various aerial imagery sources.

2.2.3 Water Quality and Land Use Alterations

2.2.3.1 Major and Minor NPDES

The major and minor NPDES alteration factor was derived from NPDES sites locations provided by DWR (2014 data). Major NPDES sites in the region included municipal wastewater discharges such as those for the cities of Carolina Beach, Wilmington, Elizabethtown, Fayetteville, and Dunn, and the counties of Brunswick and Harnett, and industrial process and commercial wastewater discharges such as those for the Brunswick and Sutton power plants, Riegelwood papermill, and other manufacturers. Minor NPDES sites were more numerous and variable in type including water plants and water conditioning, municipal, industrial process and commercial, groundwater remediation. It is difficult to determine the area of influence for a point source without a detailed hydrologic model. Therefore, major and minor NPDES sites

were summarized by HU to approximate the measure of alteration. The number of major and minor NPDES within HUs was then scaled by the maximum number occurring in the region, and the relative amount was used to calculate the relative severity of alteration. Major NPDES were given high alteration scores than minor NPDES to account for the scale of impact.

2.2.3.2 Marinas

Wildlife Resources Commission and DMF Shellfish Sanitation data on marina locations and numbers of slips were combined to make one dataset of all facilities with > 10 slips. The DMF Shellfish Sanitation Section has determined the area of influence for marinas or groups of marinas on a creek that subject to buffer rules for shellfish sanitation reasons. Areas within these buffers are closed to shellfish harvest. These closure areas were used to define the area of impact for marinas in this analysis. The total number of slips at marina facilities were aggregated by closure area and divided by the amount of area in the closed area to get a slips/acre metric. This metric was scaled to the maximum value occurring in Region 4.

2.2.3.3 Animal Operations

Locations and size of animal operations were obtained for poultry, swine, and cattle operations. The swine and cattle operation information was compiled by the Environmental Working Group (EWG) and Waterkeeper Alliance from the Department of Environmental Quality's (DEQ) animal operations permits as of January 2015 (DWR, Animal Feeding Operations Unit) and the 2015 USDA Cropland data layer. The poultry data was compiled by EWG and Waterkeeper Alliance from the Poultry - Inventory and Sales USDA AG Census 2007 and 2012 and the 2015 USDA Cropland data layer. It is difficult to determine the area of influence for a point source without a detailed hydrologic model. Therefore, animal operations were summarized by HU to approximate the measure of alteration. The number of animal operations within each HU was then scaled by the maximum number occurring in the region, and the relative amount was used to calculate the relative severity of alteration.

2.2.3.4 Developed Land Use

This alteration factor was derived from the NOAA 2006-2010 C-CAP Southeast Region Land Cover dataset using the open space, low-, medium-, and high-intensity development classifications (<https://coast.noaa.gov/digitalcoast/tools/lca>). The total area of developed land-use within each HU was calculated and scaled to the maximum proportion of developed land use found within a HU in the study region. A greater proportion of developed land within a HU suggests greater nutrient and chemical loadings from non-point development sources.

2.2.3.5 Agricultural Land Use

This alteration factor was derived from the NOAA 2006-2010 C-CAP Southeast Region Land Cover dataset using the cultivated crops and pasture/hay classifications. The total area of agricultural land-use within each HU was calculated and scaled to the maximum proportion of developed land use found within a HU in the study region. A greater proportion of agricultural land within a HU suggests high nutrient and chemical loadings from non-point agricultural sources.

2.2.3.6 Prohibited Shellfish Harvest

Prohibited shellfish harvest area information was obtained from DMF's Shellfish Sanitation and

Recreational Water Quality section. Areas prohibited to shellfish harvest due to high pathogenic microbe counts or automatic closures around wastewater treatment outfalls and marinas were included to represent non-point source alterations at spatial scales smaller than hydrologic units. The benefit of representing localized impacts was considered more important than minimizing the redundancy of similar alterations (i.e., NPDES, marinas, and developed land-use). In addition, the prohibited areas are documented alterations and not reliant upon inferred data. Only waters that fall under the categories of prohibited and conditionally approved, closed harvest are included; conditionally approved, open harvesting waters were not included because they are considered restorable by DMF. Areas that are closed due to marina buffer rules were removed from this layer to avoid duplication with the marina alteration layer.

2.2.3.7 Piers and Docks

Shoreline structures were obtained from the DCM 2012 estuarine shoreline structures survey data (McVerry 2012). These areas were considered an impact due to shading open water areas, disturbing the adjacent shoreline, and increased activity in the surrounding areas.

2.2.4 Physical Disturbance

2.2.4.1 Trawling

Trawling area information was obtained from DMF's Fisheries Management section. This GIS layer depicts areas that are open to both permanently and temporarily open to trawling. Both permanently and temporarily open areas were given the same alteration score because data on trawling effort and frequency of opening in specific areas and is not available at this time.

2.2.4.2 Mechanical Clam Harvest Areas

Mechanical Clam Harvest Area information was obtained from DMF's Fisheries Management section. Two types of mechanical harvest gear are currently used in North Carolina: the hydraulic escalator dredge and the clam trawl or "clam kicking" vessel. The hydraulic escalator dredge penetrates the bottom to a depth of about four inches and collects clams as they are forced from the bottom by water pressure and conveyed up the escalator aboard the vessel. In clam trawling or "kicking", clams are dislodged from the bottom with prop wash, and a heavily chained trawl with a cage behind the boat collects the clams (DMF 2017). It is accepted that these mechanical harvest methods can negatively impact submerged aquatic vegetation (SAV) and oyster rocks (Peterson et al. 1987), thus, mechanical harvest of clams is allowed only in certain areas. In addition, some of these areas are open and closed on a rotational basis of either one or two years (Table 4).

Region 4 Strategic Habitat Area Nominations Draft Report

Table 4. Daily mechanical hard clam harvest limits by water body (DMF 2017).

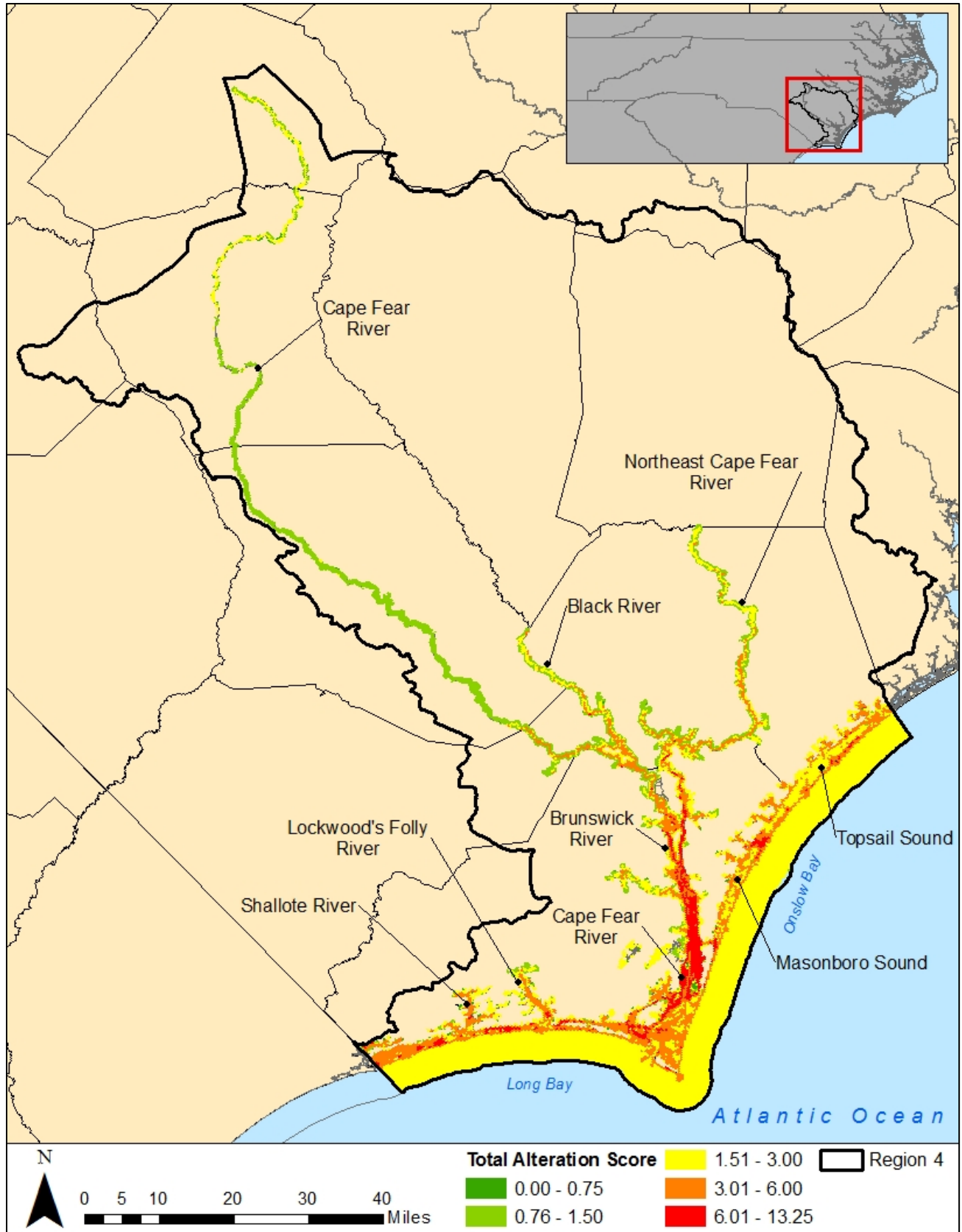
Waterbody	Daily harvest limit (number of clams)	Additional information
Northern Core Sound	5,000	Rotates one year open and one year closed opposite the open/close rotation of the New River
Southern Core Sound	5,000	Limit reduced from 6,250 in 2001. Open annually.
North River	3,750	Open annually
Newport River	3,750	Open annually
Bogue Sound	3,750	Open annually
White Oak River	6,250	Rotates one year open and one year closed opposite the open/close rotation of the New River
New River	6,250	Rotates one year open and one year closed opposite the open/close rotation of the White Oak River and the ICW in the Onslow/Pender
New River Inlet	6,250	Open annually from Marker 72A to the New River Inlet
ICW Onslow/Pender counties area	6,250	Intracoastal Waterway (maintained marked channel only) from Marker #65, south of Sallier's Bay, to Marker #49 at Morris Landing. All public bottoms within and 100 feet on either side of the Intracoastal Waterway from Marker #49 at Morris Landing to the "BC" Marker at Banks Channel. Open every other year when the New River is closed.

2.2.5 Total Alteration/Cumulative Impacts

Each alteration factor was assigned a rating ranging from 0 (no impact) to 3 (high impact) for each habitat type it coincides with (Table 3). Habitat types were condensed to match the major CHPP habitat types. The factor ratings were guided by a modified version of a similar table in the CHPP (Street et al. 2005), which is based on literature reviews and expert opinion. Because multiple factors can contribute to the alteration within a region, we combined the alteration factors into a total alteration rating which quantitatively measure the amount of alteration to each hexagon in the region. Briefly, the alteration score weights the alteration severity by the amount of habitat impacted and combines the severity and impact scores into a total score by weighting the proportion of each habitat present in the hexagon. The alteration score for Region 4 was created using a combination of ArcGIS models and R scripts and is described in detail in Appendix A.

The Cape Fear and Black rivers above the Pender county line, the Northeast Cape Fear River above Burgaw, and from the north of Wrightsville Beach to Topsail sound were the least altered. The most altered areas were in near developed areas such as the city of Wilmington, Sunny Point Military Terminal, Ocean Isle Beach, and Wrightsville Beach and other industrial areas long the Cape Fear River main stem (Map 3).

Region 4 Strategic Habitat Area Nominations Draft Report



Map 3. Total alteration scores for Region 4. Higher values equate to greater degradation.

2.3 Marxan Analysis

The site selection software Marxan (Ball and Possingham 2000) was used to identify an initial network of areas to be considered for SHA nomination. The use of Marxan was recommended by Smith (2005) and adopted as SHA methodology. The site-selection tool makes it possible to systematically consider multiple NRTs and various socio-economic factors represented as alterations. The program provides a way to select a network of areas (classified by hexagon units) with the least amount of alteration, which is helpful because specific information is not available on maximum tolerable alteration levels and specific minimum habitat sizes needed to maintain functional ecosystems (Stewart et al. 2003). Often, the results of site selection tools are used as a starting point from which to determine boundaries and are not considered a final output (Geselbracht et al. 2009). Final SHA nominations incorporate expert scientific knowledge to consider additional biological information and socio-economic factors that may not have been included in the Marxan inputs.

The selection algorithm considers several sources of data and uses an iterative approach to consider multiple network configurations until it finds one that minimizes the area and cost of the network. Marxan allows the user to input data on the distribution of conservation features (NRTs in the SHA process) and to define the desired amount of each conservation feature desired in the final reserve configuration (representation level in the SHA process). In addition, Marxan allows the user to input a cost for each planning unit, which can vary based on the process objectives. The SHA process uses the alteration score of a hexagon as the cost under the assumption that alteration is equal to habitat degradation. This framework was designed so that Marxan would select a network of habitat areas that have the least amount of habitat degradation. In addition to the habitat and alteration inputs, Marxan allows the user to input a boundary length modifier (BLM), which controls the length of border allowed by the solution. Raising the BLM increases the cost of spatially disparate solutions, forcing the program to select hexagons that are closer together.

A Marxan analysis consists of a series of runs, each of which represents a solution found by the computer program. A grid of hexagons is laid over GIS habitat and alteration layers. The hexagons in this analysis were 30 acres in area, 432 m in diameter, and 216 m in side length. Each run consists of a specified number of iterations. Each iteration considers a new reserve configuration of hexagons by calculating a cost that is based on the success of the program at meeting its targets, the reserve boundary length and the cost of the area considered. Iterations proceed until the change between iterations is minimal or the maximum number of iterations is reached. The number of runs, iterations, and BLM can all be specified in the Marxan settings and should be adjusted to attain an appropriate solution for each analysis.

2.3.1 Sensitivity Analysis

A sensitivity analysis was conducted for Region 4, similar to those conducted for other regions, to determine the optimal scenario (DMF 2014; DMF 2011). By examining the scores of the best solution, the distribution of the scores that resulted from an analysis with 500 runs and 100,000 iterations was more robust among lower score, indicating that Marxan is finding similar solution across runs. The BLM was adjusted to 0.005 to produce the most efficient solution in terms of cost (minimizing the total alteration score) and area selected between runs. Lower BLM values produced solutions that were smaller, spatially isolated clusters with less than three hexagons.

Region 4 Strategic Habitat Area Nominations Draft Report

Higher BLM values produced SHAs that were too large for management and consumed too much area.

As recommended by the advisory committee, an additional sensitivity analysis was conducted to examine the representation levels of the NRTs to determine which, if any, NRT make the largest difference in the solution generated by the model. That is, in some cases particular targets may have little impact on solutions while other targets are largely driving the solution. Therefore, when the most influential targets that are driving the model are set to zero the total area and alteration score or cost of the model will decrease (Ardron et al. 2010). Most NRTs generated small differences in total cost and total alteration score when set to zero. Forested wetlands, hard bottom, and wetland edge were determined to be the NRTs with the most influence on the model (Figure 1).

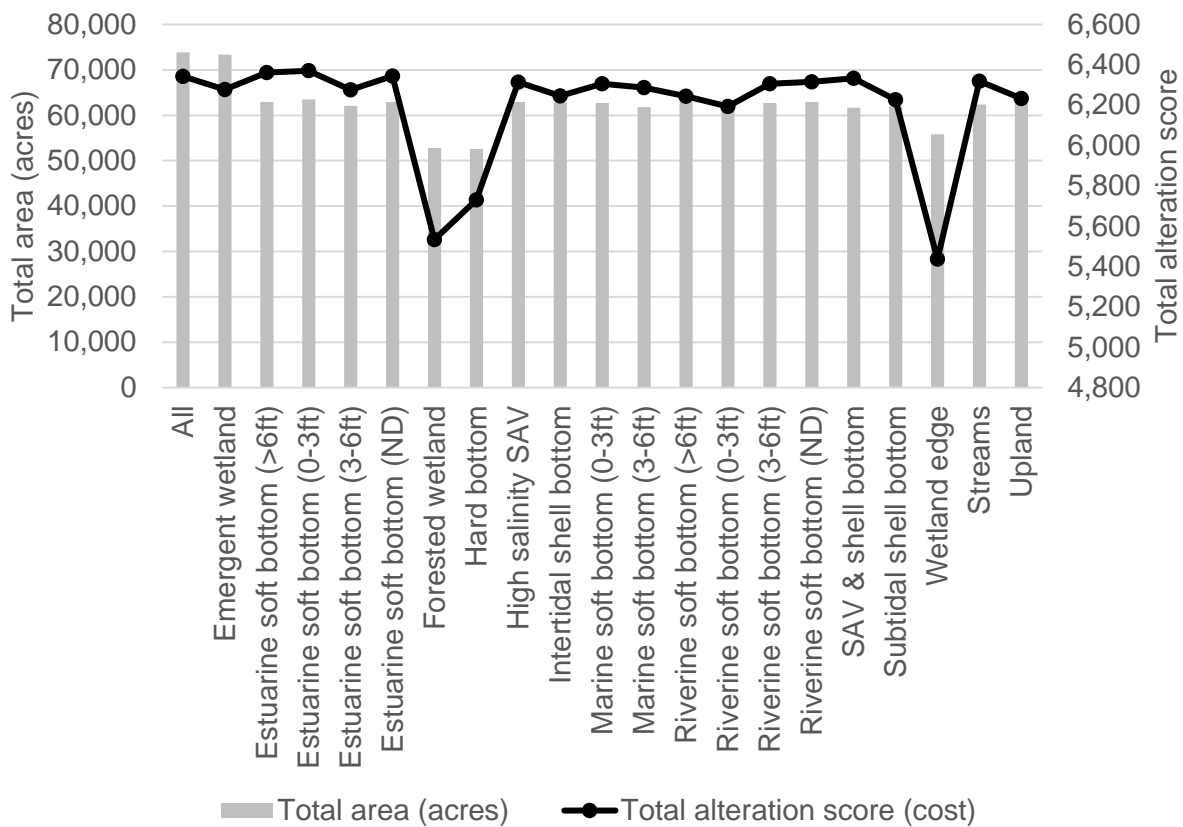


Figure 1. Natural resource target (NRT) sensitivity analysis examining the effect of excluding NRTs from the model on total area (acres) and total alteration score.

After discussing the results of the NRT sensitivity analysis and the resulting Marxan solutions, the advisory committee felt the targets influence on the model was due to geographic distribution and the spatial relationship between these NRTs. To account for this, forested wetlands and wetland edge representation levels were decreased to 30% and 40%, respectively. Hard bottom was excluded setting the representation level to 0% to keep the model from selecting large areas of the ocean with marine soft bottom. The advisory committee felt that the only areas of the ocean that should be included as a SHA would be known hard bottom locations and areas near

inlets. Thus, these areas were added in during the corroboration phase.

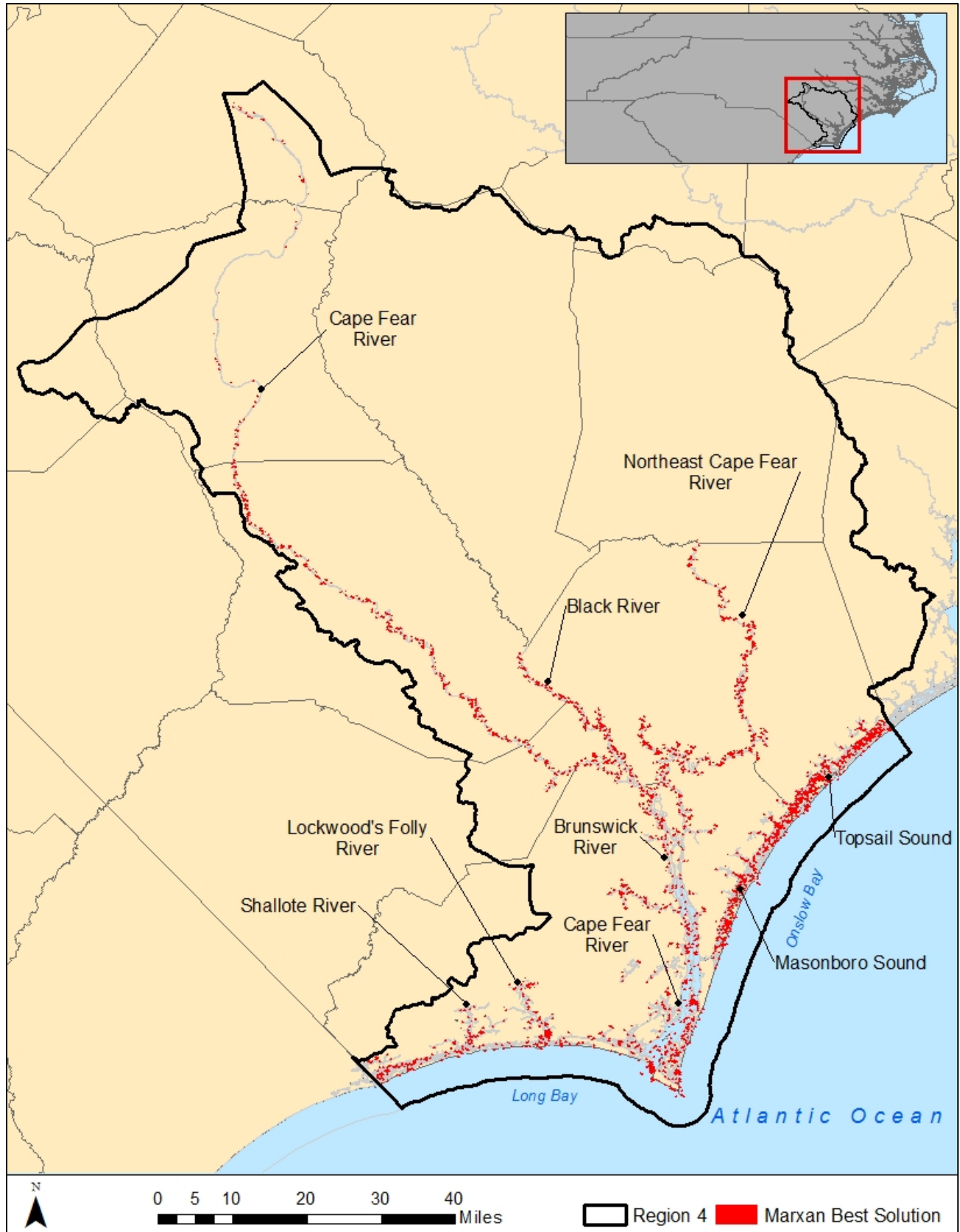
Once preliminary areas were identified by the Marxan solution, SHA selections were modified and refined by the advisory committee of regional experts using other known sources of quantitative or qualitative ecological or fishery information and professional knowledge (referred to as corroborating data). Public input is required to finalize identification and nomination of areas for eventual SHA designation.

3 MARXAN RESULTS

After the natural resource targets and total alteration layer were assembled, Marxan was run at the specified representation levels for the NRTs representing priority fisheries habitats (Table 2). Map 4 depicts the Marxan selections from the best solution with the most efficient BLM. This resulted in a large number of small SHAs that the advisory committee thought would be difficult to manage. Thus, the advisory committee decided to examine the selection frequencies, since high selection frequencies are an indication that an area was not erroneously chosen (Map 5). During the corroboration phase, the committee kept the high selection frequency areas in mind.

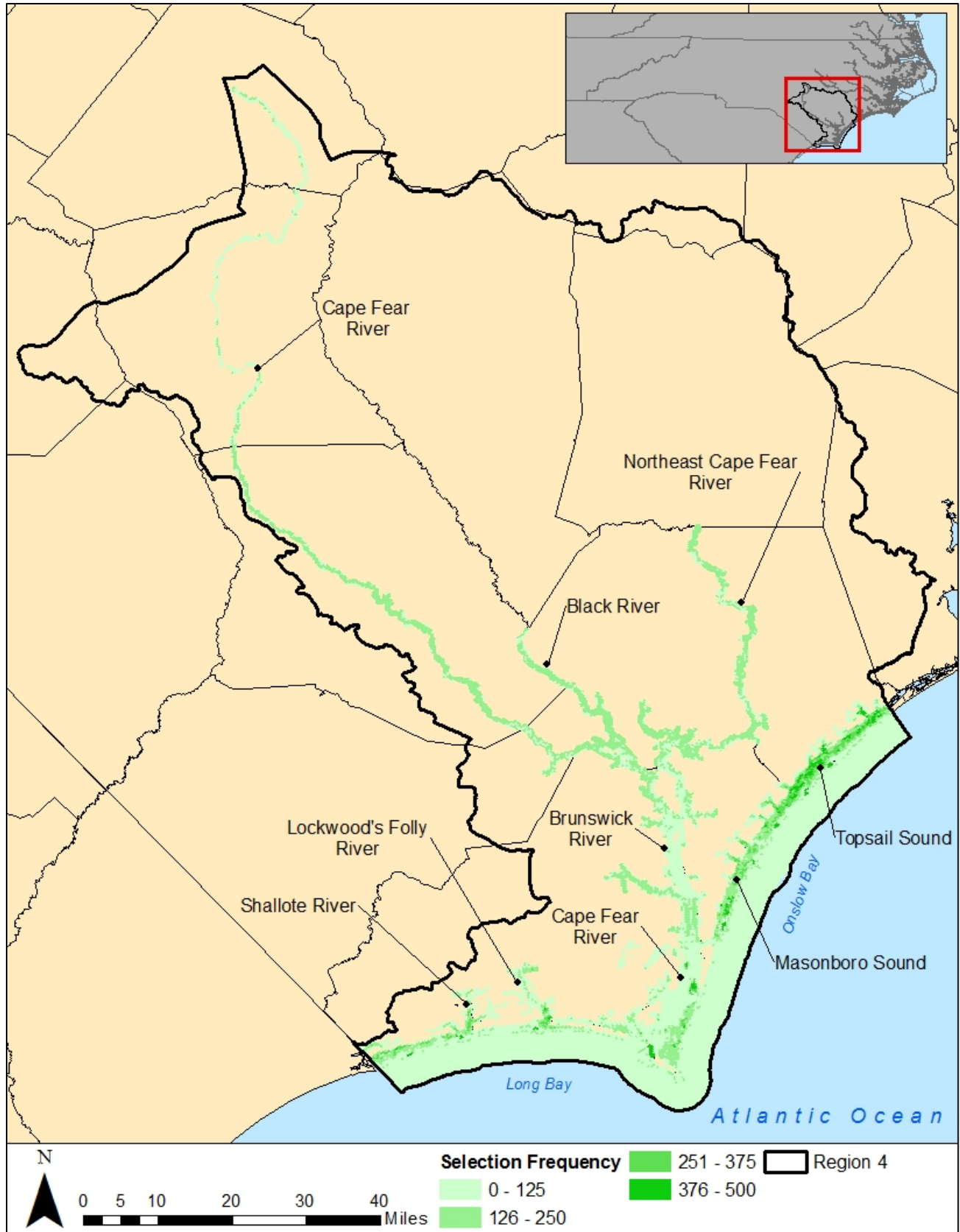
Large areas of Masonboro and Topsail sounds and associated tidal creeks were selected by Marxan and are known to be ecologically important for both fish and shellfish in Region 4. Other sizeable areas that were selected included parts of Shallotte and Lockwoods Folly rivers and Bald Head Island. Very little was selected around the city of Wilmington due to high alteration scores. The Cape Fear, Black, and Northeast Cape Fear rivers and their tributaries had some clustering but were less connected most likely due to the width of the focus area (Maps 4 and 5).

Region 4 Strategic Habitat Area Nominations Draft Report



Map 4. Marxan best solution for Region 4.

Region 4 Strategic Habitat Area Nominations Draft Report



Map 5. Marxan selection frequency for Region 4.

4 CORROBORATION

The advisory committee reviewed the initial Marxan selections and made expert modifications as needed. The SHA committee grouped individually selected hexagons into manageable polygons for the corroboration and identification process. Modifications to the Marxan selected SHAs were made using an overlay of selected hexagon polygons on digital imagery. The SHA committee examined maps of both the selection frequency and alteration ratings for guidance during the manual selection phase. For each polygon or group of contiguous hexagons selected by Marxan, the SHA committee reviewed data included within each polygon cluster to confirm inclusion/exclusion as a SHA in a consistent and data based manner. This included examination of the alteration scores, selection frequencies, amount and type of targets present, habitat diversity and rarity, supporting biological data, existing ecological designations that were not included as NRTs (i.e., Anadromous Fish Spawning Areas, Significant Natural Heritage Areas, and water quality ratings) and connectivity with adjacent selections and protected areas. Known studies or information from committee members regarding habitat condition and fish utilization of specific areas were also included.

Criteria to base modifications on included:

- Habitats present – rare, vulnerable, diverse
- Occurrence of ecological designations
- Alteration factors, ratings, and other known alterations not included in the model
- Selection frequency
- Fish and shellfish data/information available from DMF sampling or other research
- Water quality impairment status (5 categories)
- Regional importance of a functional area
- Size/isolation/connectivity/shape

The designations and biological data used in this phase of the analysis are listed in Table 5. These data are meant to support computer-selected areas and identify important areas omitted by the Marxan analysis. Examples of omitted areas would be a tidal creek that was rated as altered but still supports fish or shellfish production that consistently produces high catches relative to other areas. Ideally, the regional expert panel would have local qualitative knowledge that further supported the area as having high fishery or habitat value. Areas with existing habitat designations that were not selected by Marxan could also indicate areas that should be considered for manual addition to the list of proposed SHAs.

Region 4 Strategic Habitat Area Nominations Draft Report

Table 5. Ecological designations and biological data used for corroboration of Strategic Habitat Areas (SHAs) in Region 4.

Type	Description	Source
Ecological designations	Anadromous Fish Spawning Areas	MFC designation
	Blue crab spawning sanctuaries	MFC designation
	Estuarine Primary Nursery Areas (PNAs)	MFC designation
	Permanent Secondary Nursery Areas (PSNAs)	MFC designation
	Special Secondary Nursery Areas (SSNA)	MFC designation
	Trawl Net Prohibited Areas (TNPA)	MFC designation
	Inland PNAs	WRC designation
	Open shellfish harvesting waters	DMF - SGA classification
	Significant Natural Heritage Areas (aquatic and terrestrial)	Natural Heritage Program designation
	Lands managed for conservation	DEQ One NC Naturally
Species/productivity data	Use support and biotic indices for fish and invertebrates (freshwater streams only) – index values	DWR
	Fish and shellfish data	DMF programs 120, 915, 510 and WRC data

The committee used the criteria listed above to cut, extend, and/or consolidate Marxan clusters within the focus area. Selected hexagons with fewer than three contiguous hexagons were excluded. Consolidations were based on avoiding what the group considered over-represented habitats (e.g., soft bottom >6ft) and connecting similar contiguous areas or under-represented habitats. The advisory committee also expanded polygons into some unselected areas that were known to be highly productive for priority species or habitats. The visual assessment was conducted systematically around the region, starting from the South Carolina line and working north to Topsail Sound and then up the Cape Fear River. Inlet areas were added in by default because of their importance to migratory fishes moving in and out of those areas.

4.1 Post-Corroboration Results

Following the corroboration phase, there were a total of 43 discrete areas selected for nomination totaling 74,451 of the 349,918 acres of focus area. This comprises 21.3% the total focus area. All targets were met except for marine soft bottom 0-3ft and 3-6ft, and riverine soft bottom 0-3ft, 3-6ft, and >6ft. However, both marine and riverine soft bottom with no depth exceeded target by 70% and 30%, respectively. The advisory committee felt the exceeded targets of soft bottom unknown depths accounted for the lack of meeting targets in the other depth categories (Table 6). The acreage of NRTs within each individual SHA is included in Table 7. The habitat targets that were most exceeded were soft bottom (riverine, estuarine, and marine, no depth), emergent wetlands, wetland edge, and low elevation uplands. Following ground truthing, developed portions of low elevation uplands should be omitted.

Maps 7a-d and 8a-d show the selection frequency and alteration scores of the post-corroboration

Region 4 Strategic Habitat Area Nominations Draft Report

SHA nominations. Most of the areas that were not initially selected by Marxan, but were added by the advisory committee for connectivity reasons, had low selection frequency but low to medium alteration scores.

Table 6. Representation levels, target area (acres), and resulting amounts of natural resource targets (NRTs) post-corroboration.

Habitat type	Natural resource target	Focus area (acres)	Rep. level (%)	Target area (acres)	Percent of target (%)
Hard bottom	Hard Bottom	3,689	0	2,856	77.4
SAV	High salinity SAV	653	60	521	79.8
Shell bottom	Intertidal shell bottom	3,708	60	2,517	67.9
	Subtidal shell bottom	2,395	60	1,570	65.5
SAV & shell bottom	SAV & shell bottom	130	80	113	86.8
Creeks & Rivers	Riverine soft bottom (0-3ft)	1,902	30	386	20.3
	Riverine soft bottom (3-6ft)	292	20	43	14.8
	Riverine soft bottom (>6ft)	1,174	20	103	8.8
	Riverine soft bottom (ND)	6,764	10	2,660	39.3
Shallow soft bottom	Palustrine soft bottom (0-3ft)	18	0	0	0.0
	Palustrine soft bottom (ND)	195	0	13	6.6
	Estuarine soft bottom (0-3ft)	18,430	20	5,768	31.3
	Estuarine soft bottom (3-6ft)	3,507	20	701	20.0
	Estuarine soft bottom (ND)	6,965	0	4,243	60.9
	Marine soft bottom (0-3ft)	4,226	30	846	20.0
	Marine soft bottom (3-6ft)	3,576	20	432	12.1
Deep soft bottom	Marine soft bottom (ND)	54	0	38	71.1
	Estuarine soft bottom (>6ft)	6,911	10	699	10.1
Wetland	Marine soft bottom (>6ft)	176,471	0	4,953	2.8
	Emergent wetland	34,629	10	15,733	45.4
	Forested wetland	58,637	30	23,136	39.5
	Shrub & scrub wetland	3,792	0	916	24.2
Low-elevation upland	Wetland edge	9,067	40	5,507	60.7
	Low-elevation upland	2,110	0	470	22.3
Water column	Streams (low elevation)	624	20	226	36.2
TOTAL AREA		349,918		74,451	21.3

Region 4 Strategic Habitat Area Nominations Draft Report

Table 7. Amount of each natural resource target (NRTs) in acres present in each Strategic Habitat Area (SHA) nomination.

Habitat Type	Natural Resource Target	Strategic Habitat Area ID										
		1	2	3	4	5	6	7	8	9	10	11
Hard bottom	Hard bottom	0	1	0	0	0	582	105	0	0	0	0
SAV	High salinity SAV	0	0	0	1	0	0	0	1	0	0	258
Shell bottom	Intertidal shell bottom	155	141	2	196	0	0	0	45	0	0	0
	Subtidal shell bottom	142	74	0	127	0	0	0	1	0	0	0
SAV & shell bottom	SAV & shell bottom	0	1	0	4	0	0	0	0	0	0	0
Creeks & Rivers	Riverine soft bottom (0-3ft)	0	0	0	0	0	0	0	0	0	0	0
	Riverine soft bottom (3-6ft)	0	0	0	0	0	0	0	0	0	0	0
	Riverine soft bottom (>6ft)	0	0	0	0	0	0	0	0	0	0	0
	Riverine soft bottom (ND)	0	0	0	0	8	0	0	0	0	0	0
Shallow soft bottom	Palustrine soft bottom (0-3ft)	0	0	0	0	0	0	0	0	0	0	0
	Palustrine soft bottom (ND)	0	0	0	0	0	0	0	0	0	0	0
	Estuarine soft bottom (0-3ft)	227	314	18	467	0	0	0	201	18	0	1,681
	Estuarine soft bottom (3-6ft)	15	11	4	2	0	0	0	20	118	0	176
	Estuarine soft bottom (ND)	96	51	4	63	0	0	0	32	0	0	662
	Marine soft bottom (0-3ft)	73	107	0	61	0	0	0	0	76	218	17
	Marine soft bottom (3-6ft)	7	0	0	39	0	0	0	0	67	213	7
Marine soft bottom (ND)	0	14	0	0	0	0	0	0	0	0	0	
Deep soft bottom	Estuarine soft bottom (>6ft)	18	26	5	16	0	0	0	9	172	0	13
	Marine soft bottom (>6ft)	12	0	0	17	0	193	187	0	97	2,618	10
Wetland	Emergent wetland	1,521	378	72	465	0	0	0	718	0	0	3,339
	Forested wetland	1	0	0	5	289	0	0	0	0	0	41
	Shrub & scrub wetland	59	5	0	2	0	0	0	1	0	0	57
Wetland shoreline	Wetland edge	230	99	6	94	25	0	0	103	0	0	541
Low-elevation upland	Low-elevation upland	16	27	0	25	1	0	0	4	2	1	54
Water column	Streams (low elevation)	7	1	0	2	6	0	0	4	0	0	7
Total Area		2,579	1,253	111	1,586	329	775	292	1,139	550	3,050	6,863

Region 4 Strategic Habitat Area Nominations Draft Report

Table 7. Continued.

Habitat Type	Natural Resource Target	Strategic Habitat Area ID										
		12	13	14	15	16	17	18	19	20	21	22
Hard bottom	Hard bottom	39	0	0	46	72	383	0	65	1,203	0	2
SAV	High salinity SAV	0	0	0	0	0	0	37	0	0	3	221
Shell bottom	Intertidal shell bottom	0	0	4	0	0	0	413	0	0	291	1,269
	Subtidal shell bottom	0	0	479	0	0	0	211	0	0	34	501
SAV & shell bottom	SAV & shell bottom	0	0	0	0	0	0	14	0	0	1	93
Creeks & Rivers	Riverine soft bottom (0-3ft)	0	0	0	0	0	0	0	0	0	0	0
	Riverine soft bottom (3-6ft)	0	0	0	0	0	0	0	0	0	0	0
	Riverine soft bottom (>6ft)	0	0	0	0	0	0	0	0	0	0	0
	Riverine soft bottom (ND)	0	0	0	0	0	0	0	0	0	0	0
Shallow soft bottom	Palustrine soft bottom (0-3ft)	0	0	0	0	0	0	0	0	0	0	0
	Palustrine soft bottom (ND)	0	0	0	0	0	0	0	0	0	0	0
	Estuarine soft bottom (0-3ft)	0	0	191	0	0	0	610	0	0	337	1,671
	Estuarine soft bottom (3-6ft)	0	0	0	0	0	0	109	0	0	23	170
	Estuarine soft bottom (ND)	0	0	4	0	0	0	1,237	0	0	335	1,575
	Marine soft bottom (0-3ft)	0	0	0	21	0	0	46	0	0	2	224
	Marine soft bottom (3-6ft)	0	0	0	19	0	0	1	0	0	2	78
Marine soft bottom (ND)	0	0	0	0	0	0	4	0	0	3	17	
Deep soft bottom	Estuarine soft bottom (>6ft)	0	0	0	0	0	0	150	0	0	23	112
	Marine soft bottom (>6ft)	156	98	0	208	91	234	0	32	492	13	71
Wetland	Emergent wetland	0	0	66	0	0	0	2,004	0	0	911	3,849
	Forested wetland	0	0	0	0	0	0	55	0	0	12	70
	Shrub & scrub wetland	0	0	1	0	0	0	47	0	0	21	58
Wetland shoreline	Wetland edge	0	0	10	0	0	0	652	0	0	397	1,676
Low-elevation upland	Low-elevation upland	0	0	0	11	0	0	74	0	0	31	52
Water column	Streams (low elevation)	0	0	0	0	0	0	4	0	0	2	2
Total Area		195	98	755	305	163	617	5,668	97	1,695	2,441	11,711

Region 4 Strategic Habitat Area Nominations Draft Report

Table 7. Continued.

Habitat Type	Natural Resource Target	Strategic Habitat Area ID										
		12	13	14	15	16	17	18	19	20	21	22
Hard bottom	Hard bottom	39	0	0	46	72	383	0	65	1,203	0	2
SAV	High salinity SAV	0	0	0	0	0	0	37	0	0	3	221
Shell bottom	Intertidal shell bottom	0	0	4	0	0	0	413	0	0	291	1,269
	Subtidal shell bottom	0	0	479	0	0	0	211	0	0	34	501
SAV & shell bottom	SAV & shell bottom	0	0	0	0	0	0	14	0	0	1	93
Creeks & Rivers	Riverine soft bottom (0-3ft)	0	0	0	0	0	0	0	0	0	0	0
	Riverine soft bottom (3-6ft)	0	0	0	0	0	0	0	0	0	0	0
	Riverine soft bottom (>6ft)	0	0	0	0	0	0	0	0	0	0	0
	Riverine soft bottom (ND)	0	0	0	0	0	0	0	0	0	0	0
Shallow soft bottom	Palustrine soft bottom (0-3ft)	0	0	0	0	0	0	0	0	0	0	0
	Palustrine soft bottom (ND)	0	0	0	0	0	0	0	0	0	0	0
	Estuarine soft bottom (0-3ft)	0	0	191	0	0	0	610	0	0	337	1,671
	Estuarine soft bottom (3-6ft)	0	0	0	0	0	0	109	0	0	23	170
	Estuarine soft bottom (ND)	0	0	4	0	0	0	1,237	0	0	335	1,575
	Marine soft bottom (0-3ft)	0	0	0	21	0	0	46	0	0	2	224
	Marine soft bottom (3-6ft)	0	0	0	19	0	0	1	0	0	2	78
Deep soft bottom	Marine soft bottom (ND)	0	0	0	0	0	0	4	0	0	3	17
	Estuarine soft bottom (>6ft)	0	0	0	0	0	0	150	0	0	23	112
Wetland	Marine soft bottom (>6ft)	156	98	0	208	91	234	0	32	492	13	71
	Emergent wetland	0	0	66	0	0	0	2,004	0	0	911	3,849
	Forested wetland	0	0	0	0	0	0	55	0	0	12	70
Wetland shoreline	Shrub & scrub wetland	0	0	1	0	0	0	47	0	0	21	58
	Wetland edge	0	0	10	0	0	0	652	0	0	397	1,676
Low-elevation upland	Low-elevation upland	0	0	0	11	0	0	74	0	0	31	52
Water column	Streams (low elevation)	0	0	0	0	0	0	4	0	0	2	2
Total Area		195	98	755	305	163	617	5,668	97	1,695	2,441	11,711

Region 4 Strategic Habitat Area Nominations Draft Report

Table 7. Continued.

Habitat Type	Natural Resource Target	Strategic Habitat Area ID										
		23	24	25	26	27	28	29	30	31	32	33
Hard bottom	Hard bottom	105	250	0	0	0	0	0	0	0	0	0
SAV	High salinity SAV	0	0	0	0	0	0	0	0	0	0	0
Shell bottom	Intertidal shell bottom	0	0	0	0	0	0	0	0	0	0	0
	Subtidal shell bottom	0	0	0	0	0	0	0	0	0	0	0
SAV & shell bottom	SAV & shell bottom	0	0	0	0	0	0	0	0	0	0	0
Creeks & Rivers	Riverine soft bottom (0-3ft)	0	0	121	265	0	0	0	0	0	0	0
	Riverine soft bottom (3-6ft)	0	0	14	29	0	0	0	0	0	0	0
	Riverine soft bottom (>6ft)	0	0	30	73	0	0	0	0	0	0	0
	Riverine soft bottom (ND)	0	0	23	207	1	15	40	58	274	69	372
Shallow soft bottom	Palustrine soft bottom (0-3ft)	0	0	0	0	0	0	0	0	0	0	0
	Palustrine soft bottom (ND)	0	0	0	0	0	0	0	0	0	0	0
	Estuarine soft bottom (0-3ft)	0	0	0	3	30	0	0	0	0	0	0
	Estuarine soft bottom (3-6ft)	0	0	0	0	51	0	0	0	0	0	0
	Estuarine soft bottom (ND)	0	0	0	50	115	18	0	0	0	0	0
	Marine soft bottom (0-3ft)	0	0	0	0	0	0	0	0	0	0	0
	Marine soft bottom (3-6ft)	0	0	0	0	0	0	0	0	0	0	0
Deep soft bottom	Marine soft bottom (ND)	0	0	0	0	0	0	0	0	0	0	0
	Estuarine soft bottom (>6ft)	0	0	0	0	154	0	0	0	0	0	0
Wetland	Marine soft bottom (>6ft)	0	302	0	0	0	0	0	0	0	0	0
	Emergent wetland	122	0	330	753	648	377	2	9	19	0	186
	Forested wetland	0	0	65	1,469	19	8	276	581	2,422	341	1,627
Wetland shoreline	Shrub & scrub wetland	0	0	74	268	32	0	11	0	5	0	19
	Wetland edge	0	0	56	268	63	63	29	27	168	27	129
Low-elevation upland	Low-elevation upland	0	0	2	27	9	3	0	1	2	0	6
Water column	Streams (low elevation)	0	0	6	39	2	4	5	2	14	2	6
Total Area		227	552	721	3,451	1,124	488	363	678	2,904	439	2,345

Region 4 Strategic Habitat Area Nominations Draft Report

Table 7. Continued.

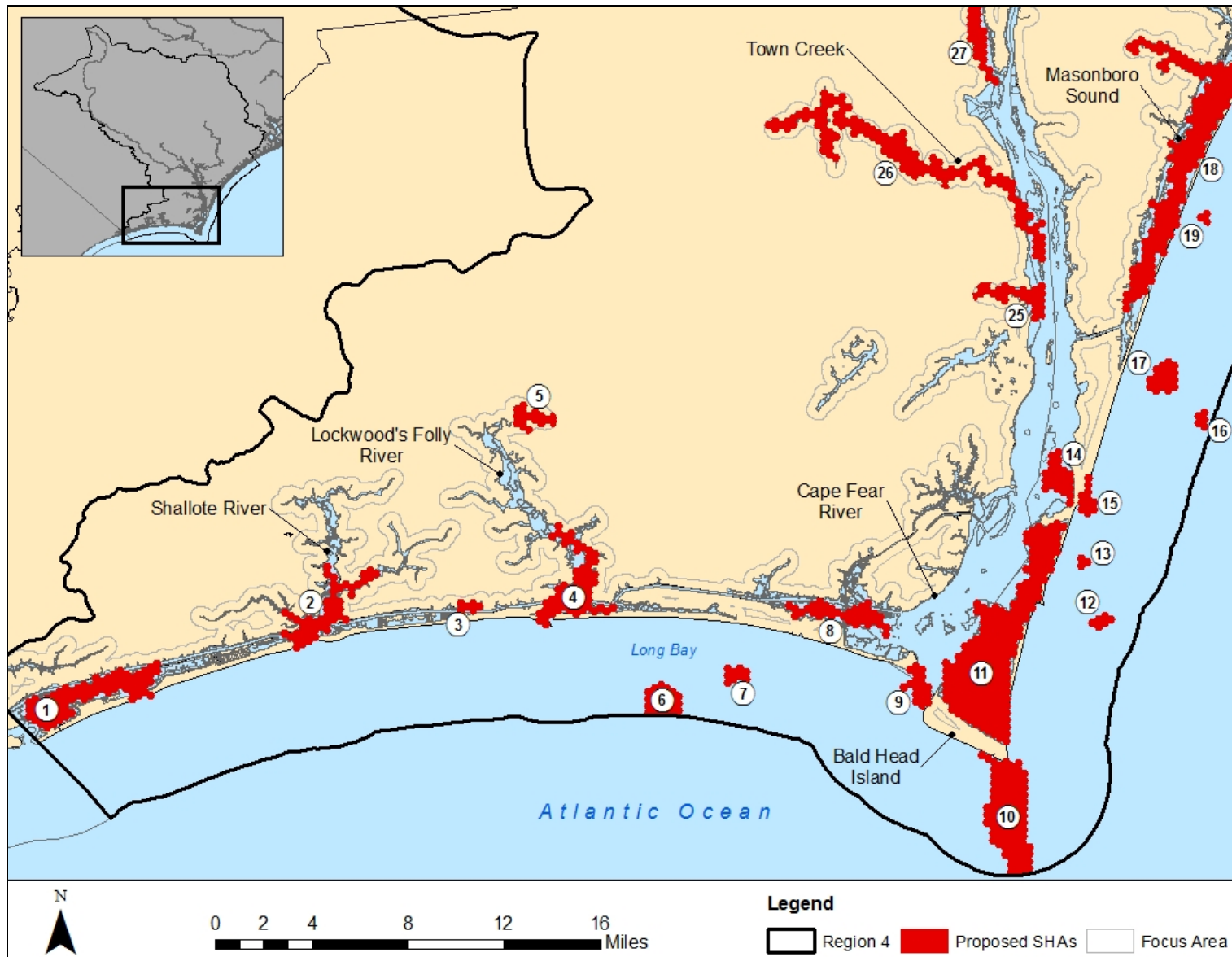
Habitat Type	Natural Resource Target	Strategic Habitat Area ID									
		34	35	36	37	38	39	40	41	42	43
Hard bottom	Hard bottom	0	0	0	0	0	0	0	0	0	0
SAV	High salinity SAV	0	0	0	0	0	0	0	0	0	0
Shell bottom	Intertidal shell bottom	0	0	0	0	0	0	0	0	0	0
	Subtidal shell bottom	0	0	0	0	0	0	0	0	0	0
SAV & shell bottom	SAV & shell bottom	0	0	0	0	0	0	0	0	0	0
Creeks & Rivers	Riverine soft bottom (0-3ft)	0	0	0	0	0	0	0	0	0	0
	Riverine soft bottom (3-6ft)	0	0	0	0	0	0	0	0	0	0
	Riverine soft bottom (>6ft)	0	0	0	0	0	0	0	0	0	0
	Riverine soft bottom (ND)	234	68	88	36	173	0	20	0	0	519
Shallow soft bottom	Palustrine soft bottom (0-3ft)	0	0	0	0	0	455	0	0	0	0
	Palustrine soft bottom (ND)	0	0	0	0	0	13	0	0	0	0
	Estuarine soft bottom (0-3ft)	0	0	0	0	0	0	0	0	0	0
	Estuarine soft bottom (3-6ft)	0	0	0	0	0	0	0	0	0	0
	Estuarine soft bottom (ND)	0	0	0	0	0	0	0	0	0	0
	Marine soft bottom (0-3ft)	0	0	0	0	0	0	0	0	0	0
	Marine soft bottom (ND)	0	0	0	0	0	0	0	0	0	0
Deep soft bottom	Estuarine soft bottom (>6ft)	0	0	0	0	0	0	0	0	0	0
	Marine soft bottom (>6ft)	0	0	0	0	0	0	0	0	0	0
Wetland	Emergent wetland	0	0	13	0	0	11	7	17	36	3
	Forested wetland	1,340	787	515	493	2,026	3,853	2,621	2,206	1,533	472
	Shrub & scrub wetland	1	2	0	0	0	0	25	132	104	0
Wetland shoreline	Wetland edge	147	88	57	59	119	370	0	0	0	0
Low-elevation upland	Low-elevation upland	16	4	53	11	2	37	0	0	0	0
Water column	Streams (low elevation)	2	11	13	9	6	43	7	6	6	8
Total Area		1,740	960	739	608	2,326	4,782	2,680	2,361	1,679	1,002

Region 4 Strategic Habitat Area Nominations Draft Report



Map 6a. Region 4 Strategic Habitat Area (SHA) Nominations post-corroboration.

Region 4 Strategic Habitat Area Nominations Draft Report



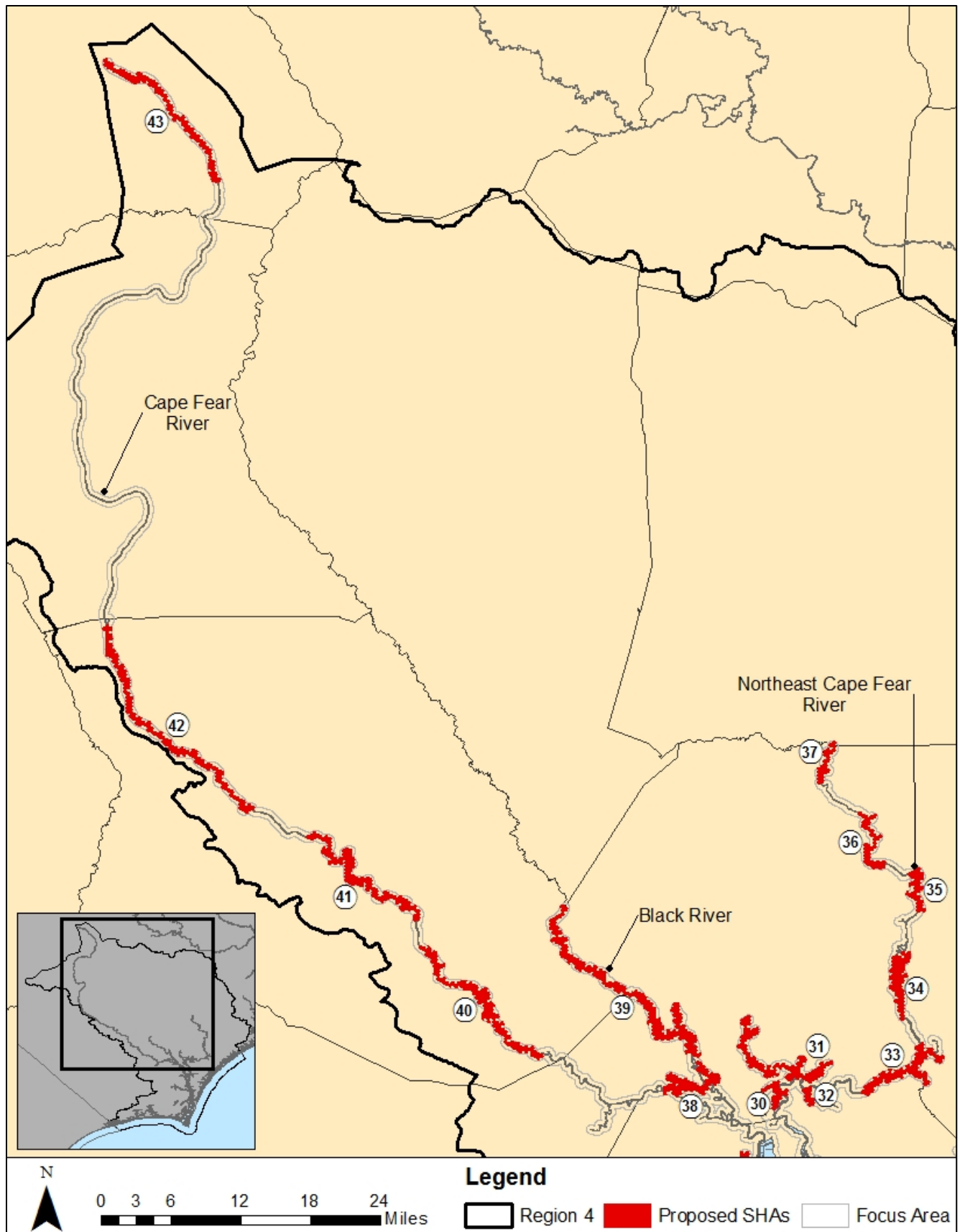
Map 6b. Region 4 Strategic Habitat Area (SHA) Nominations post-corroboration, #1-19 and 25-27.

Region 4 Strategic Habitat Area Nominations Draft Report



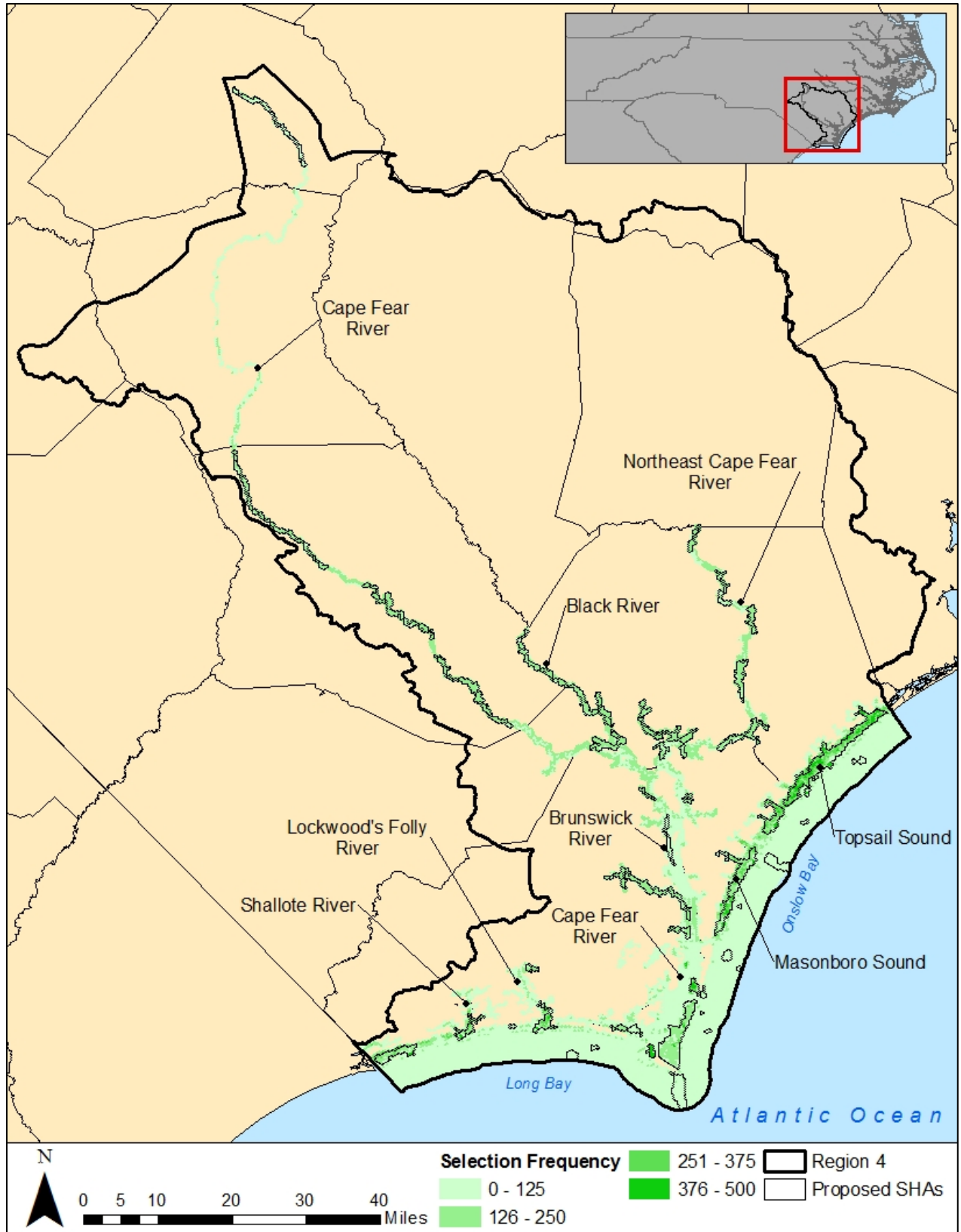
Map 6c. Region 4 Strategic Habitat Area (SHA) Nominations post-corroboration, #16-34 and 38-39.

Region 4 Strategic Habitat Area Nominations Draft Report



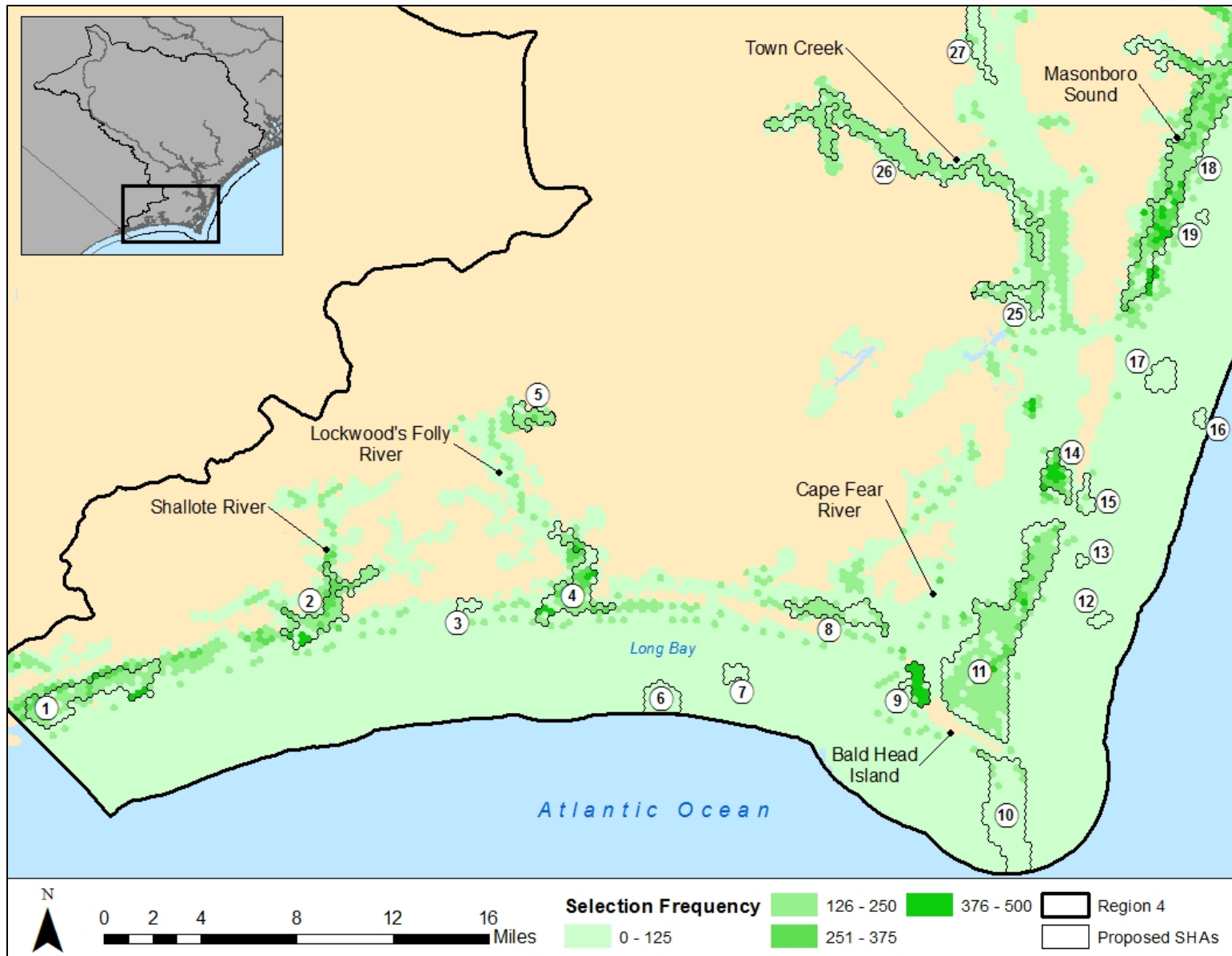
Map 6d. Region 4 Strategic Habitat Area (SHA) Nominations post-corroboration., #30-43.

Region 4 Strategic Habitat Area Nominations Draft Report



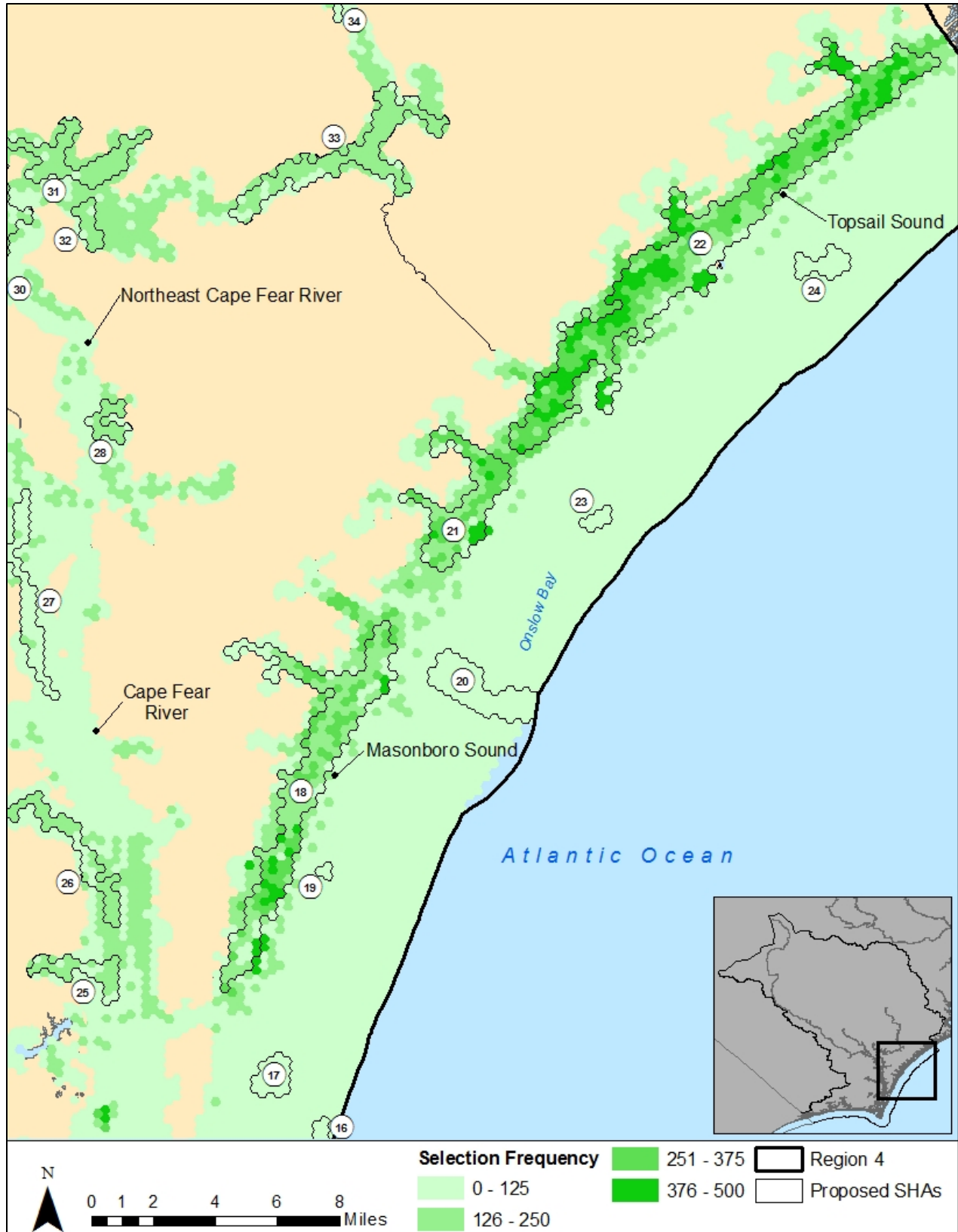
Map 7a. Selection frequencies of Region 4 Strategic Habitat Area (SHA) nominations post-corroboration.

Region 4 Strategic Habitat Area Nominations Draft Report



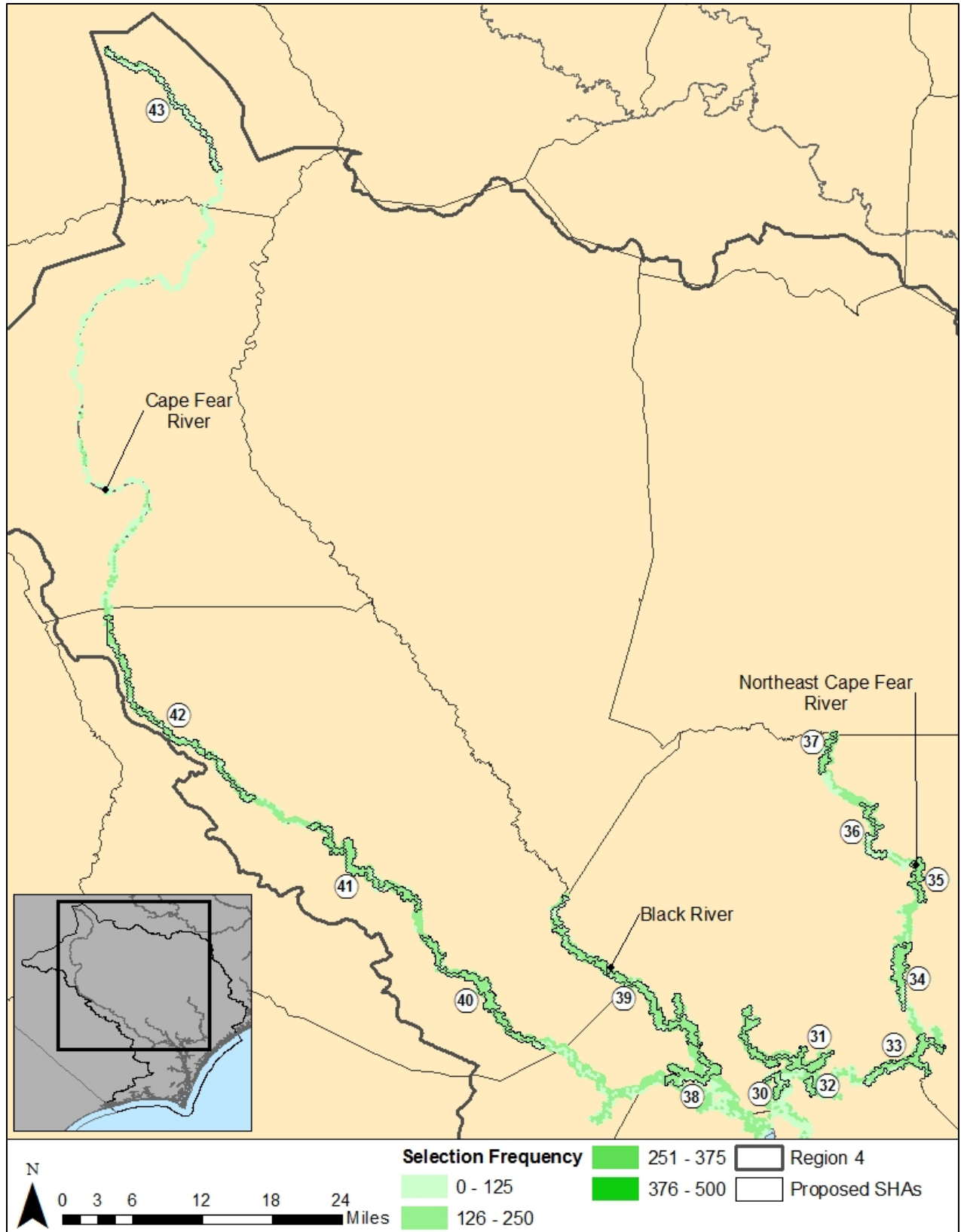
Map 7b. Selection frequencies of Region 4 Strategic Habitat Area (SHA) nominations post-corroboration, #1-18 and 25-27.

Region 4 Strategic Habitat Area Nominations Draft Report



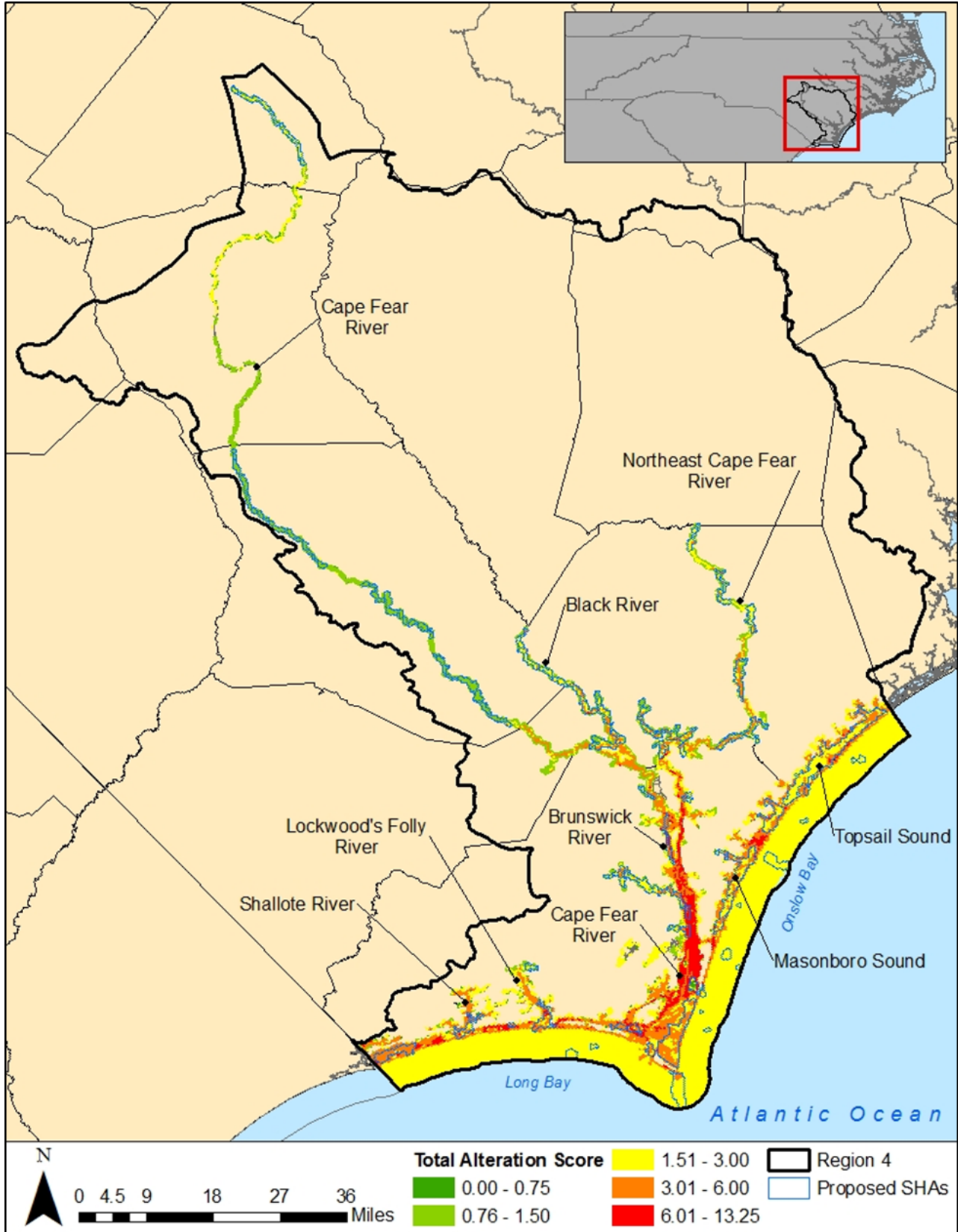
Map 7c. Selection frequencies of Region 4 Strategic Habitat Area (SHA) nominations post-corroboration, #16-28 and 30-34.

Region 4 Strategic Habitat Area Nominations Draft Report



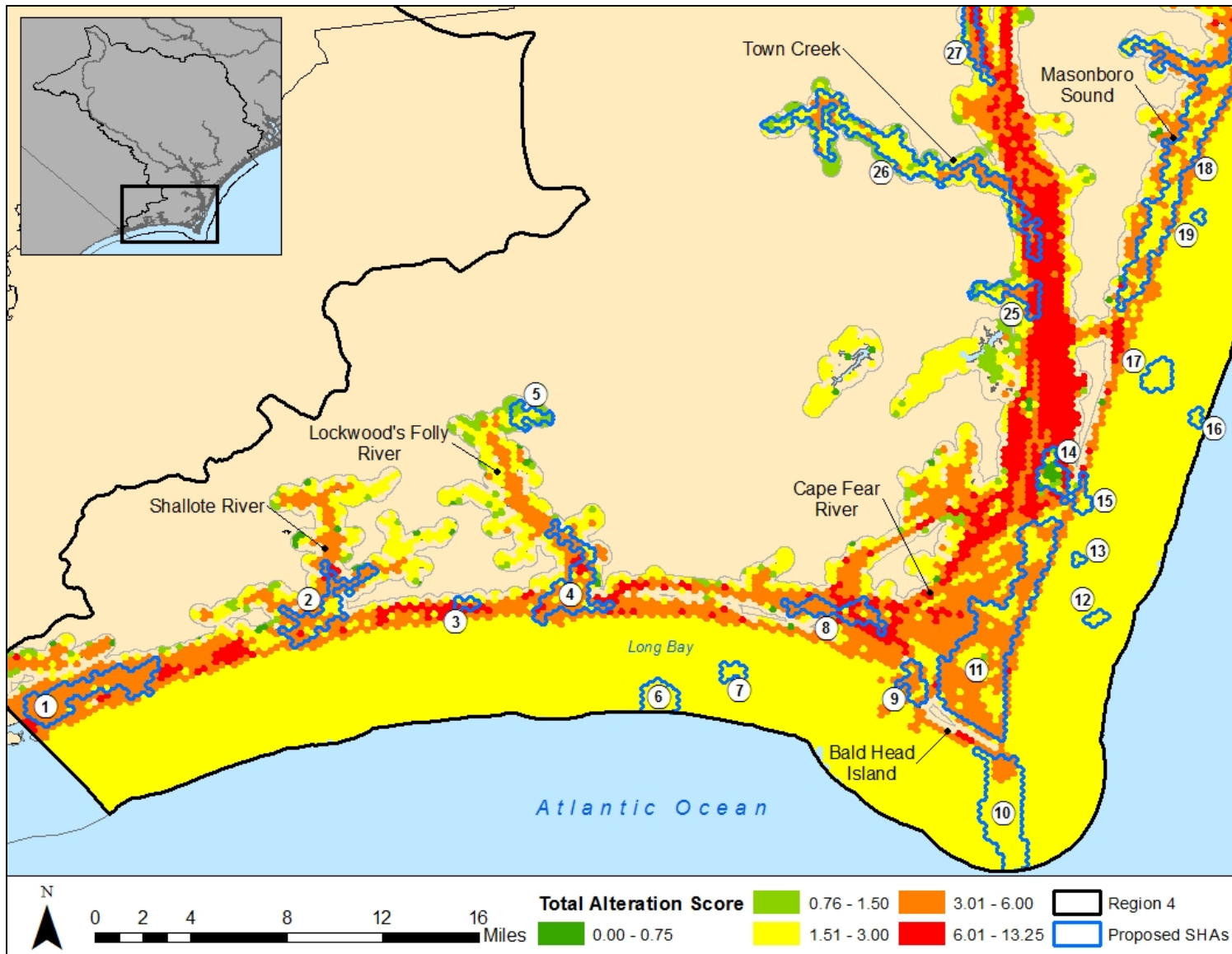
Map 7d. Selection frequencies of Region 4 Strategic Habitat Area (SHA) nominations post-corroboration, #30-43.

Region 4 Strategic Habitat Area Nominations Draft Report



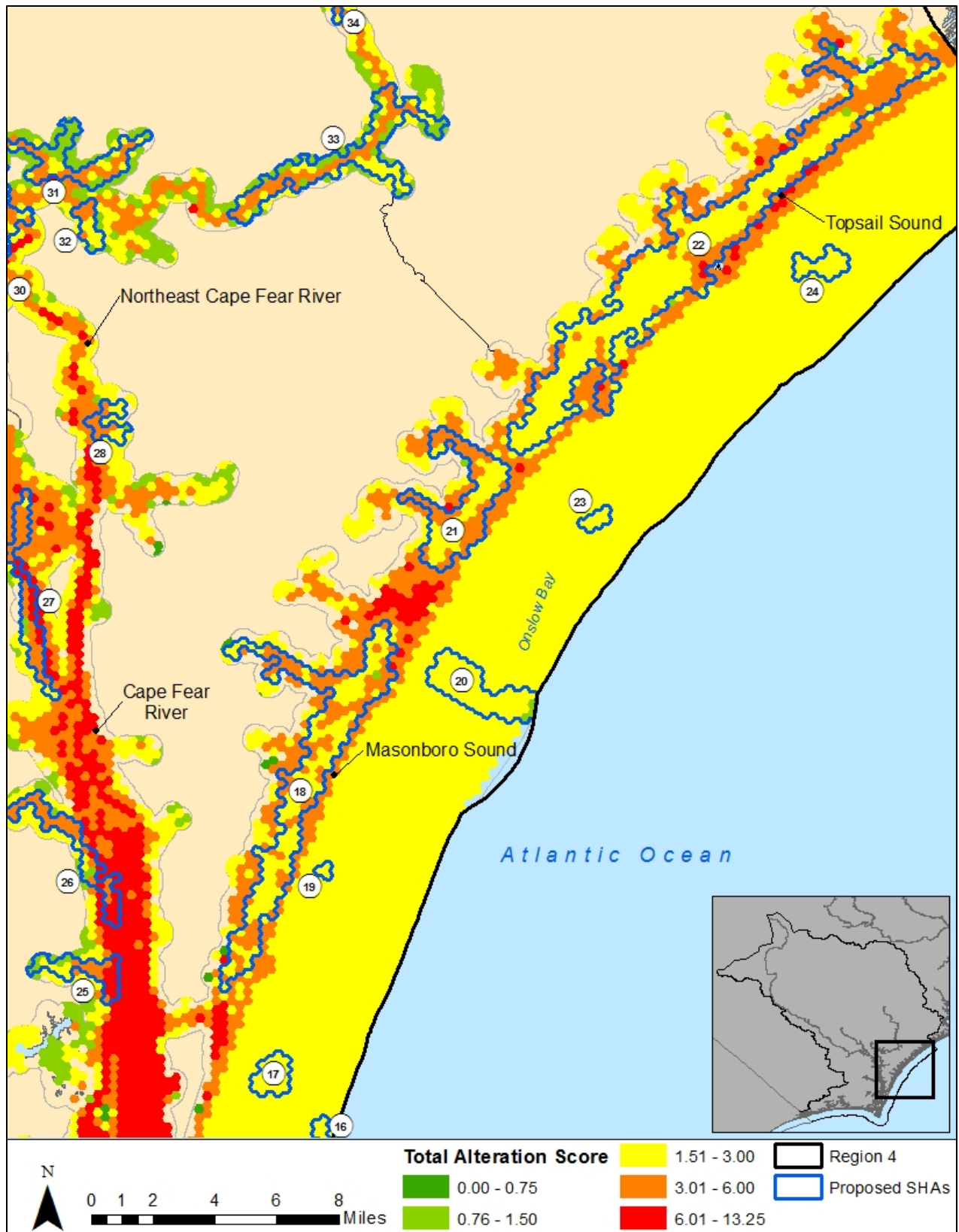
Map 8a. Alteration scores of Region 4 Strategic Habitat Area (SHA) nominations post-corroboration.

Region 4 Strategic Habitat Area Nominations Draft Report



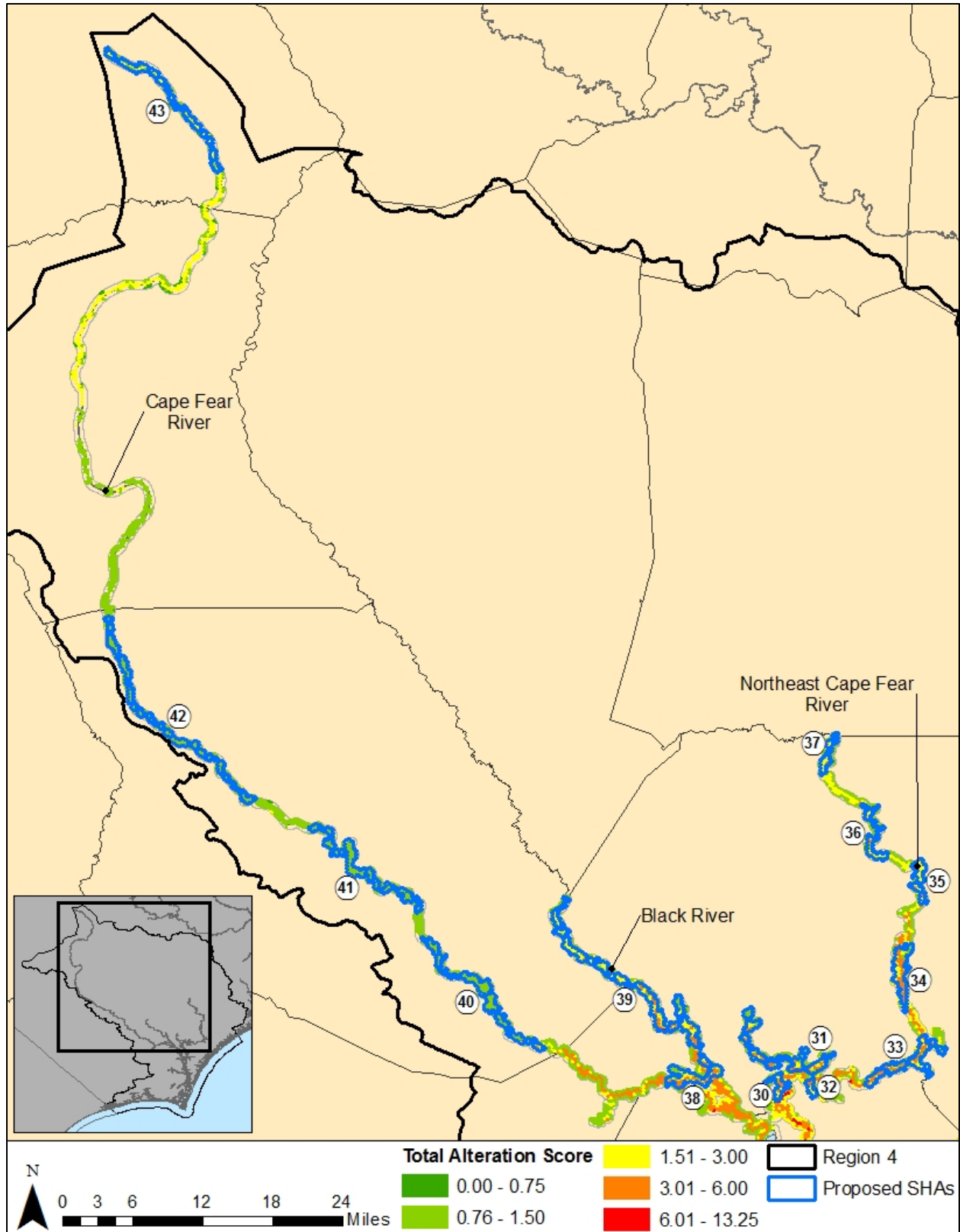
Map 8b. Total alteration scores for Region 4 with Strategic Habitat Area (SHA) nominations post-corroboration, #1-18 and 25-27. Higher values equate to greater degradation.

Region 4 Strategic Habitat Area Nominations Draft Report



Map 8c. Total alteration scores for Region 4 with Strategic Habitat Area (SHA) nominations post-corroboration, #16-28 and 30-34. Higher values equate to greater degradation.

Region 4 Strategic Habitat Area Nominations Draft Report



Map 8d. Total alteration scores for Region 4 with Strategic Habitat Area (SHA) nominations post-corroboration, #30-43. Higher values equate to greater degradation.

Region 4 Strategic Habitat Area Nominations Draft Report

The final SHA selections form a network of priority areas for protection and enhancement ranging from the headwaters of the Cape Fear River to the grass beds and marsh lands of the sounds and inlets. Selections were scattered throughout the area and concentrated in the sounds, tidal creeks, and river headwaters. The advisory committee considered these selections to be appropriate since it is a critical habitat for the majority of the priority species, is a unique habitat feature of North Carolina that is known to contribute significantly to the diversity of fish life in the region, and is a habitat easily lost from physical disturbance (dredging) or water quality degradation. Shell bottom was also set with high representation levels due to their ecological and fishery importance in the area. A large amount of subtidal shell bottom (74%) and intertidal oysters (67.5%) were selected.

Maintaining open shellfish harvest waters is a priority for this region. There are only a few mainland tidal creeks that remain partially open to shellfish harvest including Virginia, Topsail, and Pages creeks and Lockwoods Folly and Shallotte rivers. These areas were selected in the SHA nomination process and should be prioritized for water quality and habitat protections, restoration, and enhancement.

Region 4 has an abundance of state and federally protected lands bordering coastal waters (Maps 9a-d). Of the 74,451 acres selected as SHAs, 74.8% (55,717 acres) already have some level of protection. Of these protections, 42.5% (31,623 acres) of SHAs occur on lands managed for conservation (state, federal, local), 25.8% (19,220 acres) are in MFC designated Primary Nursery Areas (PNAs), 0.4% (272 acres) are in Permanent Secondary Nursery Areas (PSNAs), and 6.2% (4,602 acres) are designated Anadromous Fish Spawning Areas (AFSAs). Some of the larger conservation lands along the coast include Lea Island, Zeke Island, and Masonboro NERRs, and along the rivers, Black River Preserve, Bladen Lake State Forest, and Holly Shelter. Strategic Habitat Areas within protected conservation lands are basically already protected from degradation associated with development, but can be impacted from water-based activities or water quality degradation. The remaining 25.2% (18,734 acres) represent SHA nominations of various conditions that are currently vulnerable to land and/or water based threats.

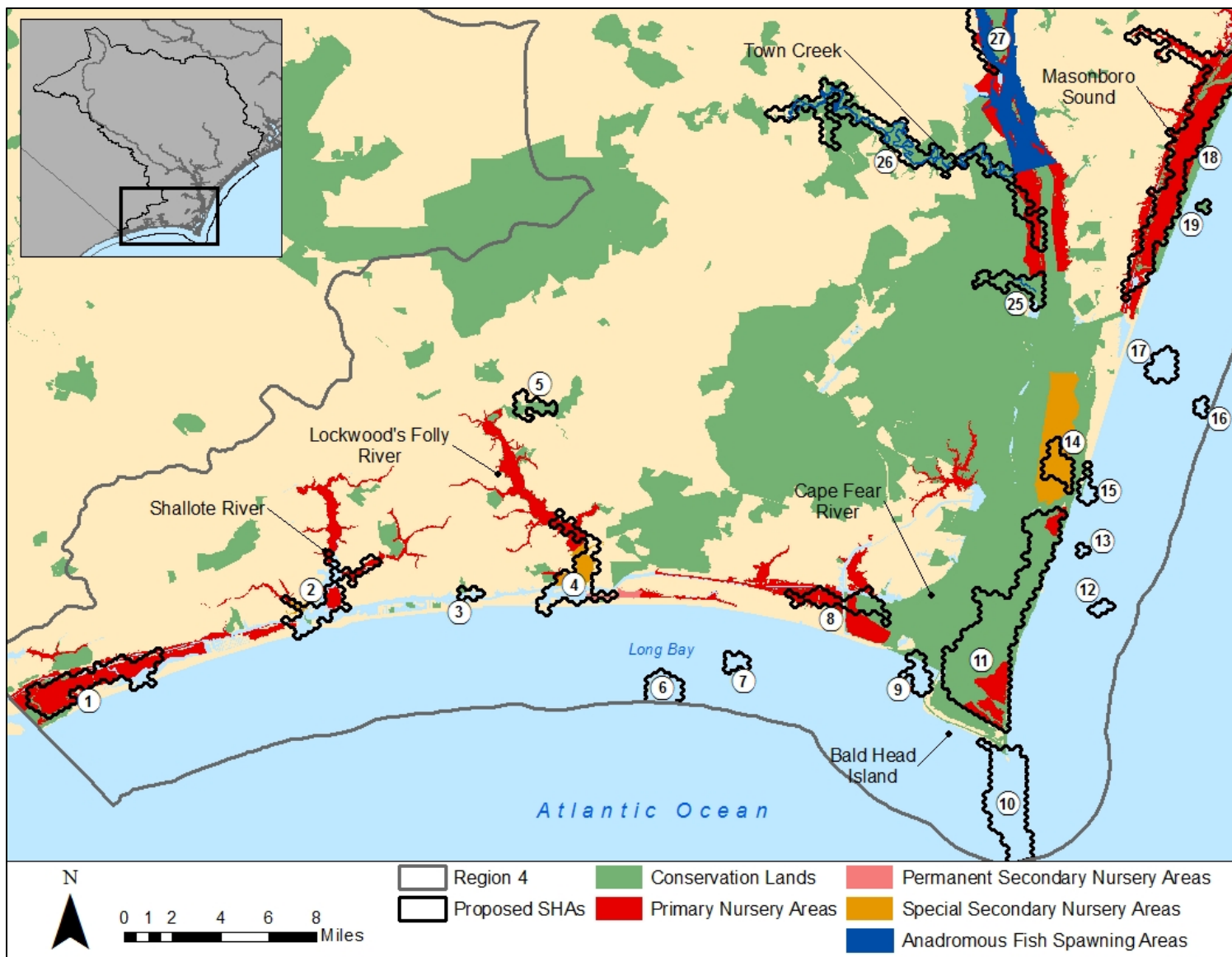
Region 4 has been the focus of many anadromous fish studies and restoration activities. Efforts are underway to create anadromous fish passage around the three lock and dams on the Cape Fear River mainstem. Protection, restoration, and enhancement of riparian wetlands and water quality in the SHAs along the river will further enhance conditions needed to sustain all life stages of anadromous fish in Region 4.

Region 4 Strategic Habitat Area Nominations Draft Report



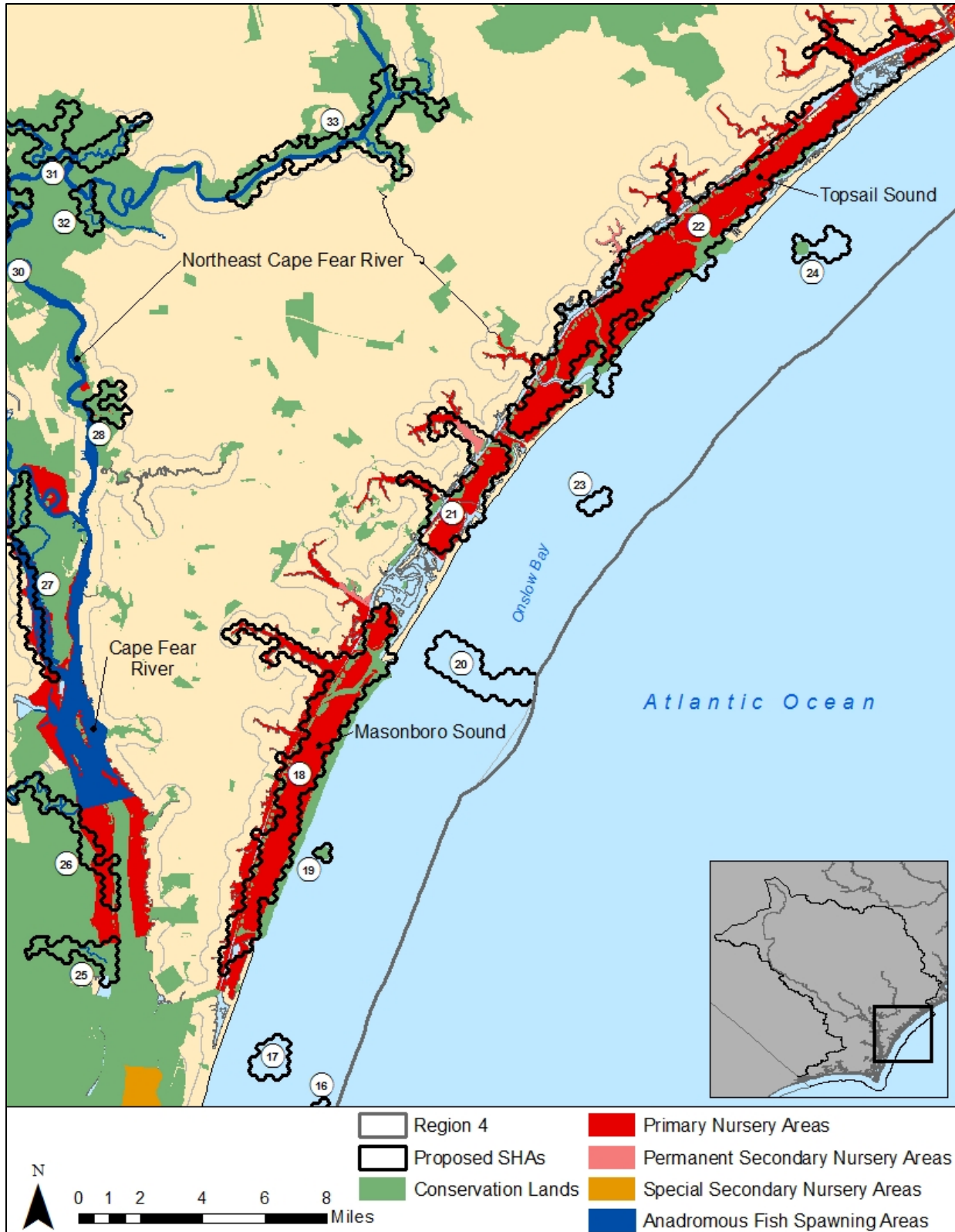
Map 9a. Region 4 Strategic Habitat Area (SHA) nominations post-corroboration, noting occurrence of Marine Fisheries Commission (MFC) designated nursery areas and state, federal, and private (land trust) conservation lands.

Region 4 Strategic Habitat Area Nominations Draft Report



Map 9b. Region 4 Strategic Habitat Area (SHA) nominations post-corroboration, #1-18 and 25-27, noting occurrence of Marine Fisheries Commission (MFC) designated nursery areas and state, federal, and private (land trust) conservation lands.

Region 4 Strategic Habitat Area Nominations Draft Report



Map 9c. Region 4 Strategic Habitat Area (SHA) nominations post-corroboration, #16-28 and 30-34, noting occurrence of Marine Fisheries Commission (MFC) designated nursery areas and state, federal, and private (land trust) conservation lands.

Region 4 Strategic Habitat Area Nominations Draft Report



Map 9d. Region 4 Strategic Habitat Area (SHA) nominations post-corroboration, #30-43, noting occurrence of Marine Fisheries Commission (MFC) designated nursery areas and state, federal, and private (land trust) conservation lands.

5 FINAL STRATEGIC HABITAT AREA NOMINATIONS

Strategic Habitat Areas are described below beginning in at the South Carolina line and moving up to Topsail Sound and the Surf City bridge and then up the Cape Fear River system. Strategic Habitat Areas with average alteration scores less than 2.00 and selection frequencies greater than 200 (on a scale of 0-500) represent sites with the least extent of alteration and high ecosystem value. In some cases, areas without these criteria were still selected as SHAs due to other outstanding features.

The final SHA nominations are listed below grouped by area and are not in sequential order (Tables 8-13). Acreage, prominent habitat, and corroborating data are noted. Impaired waters rated as Category 5 require a total maximum daily load (TMDL), while those rated as Category 4 do not. Impairment can be due to loss of one or more water quality uses including shellfish harvest, aquatic life, fish consumption, recreation, or water supply.

Water quality classifications include:

- High Quality Waters (HQWs) – waters which are rated excellent based on biological and physical/chemical characteristics through DWR monitoring or special studies, primary nursery areas designated by the MFC, and other functional nursery areas designated by the MFC).
- Outstanding Resource Waters (ORWs) – a subset of HQWs, intended to protect unique and special waters having excellent water quality and being of exceptional state or national ecological or recreational significance. ORWs must be rated excellent by DWR and have one of the following; outstanding fish habitat and fisheries, unusually high level of water-based recreation or potential for such kind of recreation, some special designation such as North Carolina Natural and Scenic River or National Wildlife Refuge, important component of state or national park or forest or special ecological or scientific significance).
- Class SA Waters – a subset of HQW, waters that are used for commercial shellfish harvest or marketing purposes.
- Class SB Waters (SB) - tidal salt waters protected for primary recreation, including swimming, skin diving, water skiing, and similar uses involving human body contact.
- Class SC Waters – waters protected for secondary recreation such as fishing, boating, and other activities involving minimal skin contact; fish and noncommercial shellfish consumption; aquatic life propagation and survival; and wildlife.

Following the SHA nomination descriptions, maps 10-34 show the location, NRTS, and corroborating data for each SHA.

Region 4 Strategic Habitat Area Nominations Draft Report

5.1 Brunswick County Waters

Table 8. Descriptions and corroborating data for Region 4 Strategic Habitat Area (SHA) nominations in Brunswick county waters (SHA nominations #1-11).

SHA #1 (Map 10)	Sunset Beach
Description	Sunset Beach, Bird Island, Bull, Cooter, and parts of Jinks creeks, and Tubbs Inlet
Acres	2,579
Prominent Habitats	Emergent wetlands, riparian wetland, and estuarine soft bottom (0-3ft)
Ecological Designations	PNA
Conservation Lands	Bird Island Coastal Reserve
Water Quality Ratings	Mostly impaired (Cat 5) and some supporting
Water Quality Classifications	SA and HQW
Fish Data	DMF Programs 120 and 510
Prominent Alterations	Major NPDES, marinas, trawling, and development
Average Total Alteration Score	4.09
Average Selection Frequency	200
SHA #2 (Map 11)	Shalotte Inlet
Description	Shalotte Inlet, mouth of Shalotte River, and Saucepan and Shalotte creeks
Acres	1,253
Prominent Habitats	Emergent wetland, estuarine soft bottom (0-3ft), and intertidal shell bottom
Ecological Designations	PNA and SSNA
Conservation Lands	North Carolina Agricultural Foundation Preserve
Water Quality Ratings	Mostly impaired (Cat 4&5) and some supporting
Water Quality Classifications	SA and HQW
Fish Data	DMF Programs 120 and 510
Prominent Alterations	Major NPDES, marinas, trawling, and drained
Average Total Alteration Score	3.49
Average Selection Frequency	216
SHA #3 (Map 12)	Holden Beach
Description	West of bridge at Holden Beach
Acres	114
Prominent Habitats	Emergent wetlands
Ecological Designations	None
Conservation Lands	Secession maritime forest
Water Quality Ratings	Impaired (Cat 5)
Water Quality Classifications	SA and HQW
Fish Data	DMF Programs 120 and 510
Prominent Alterations	Major NPDES and marinas
Average Total Alteration Score	4.99
Average Selection Frequency	69

Region 4 Strategic Habitat Area Nominations Draft Report

SHA #4 (Map 12)	Lockwoods Folly Inlet and River
Description	Lockwoods Folly Inlet, mouth of Lockwoods Folly River to Rourks Landing and Montgomery Slough
Acres	1,588
Prominent Habitats	Emergent wetlands and estuarine soft bottom (0-3ft)
Ecological Designations	PSNA, SSNA, and PNA
Conservation Lands	Stanly Road Coastal Fringe Forest and Lockwoods Folly River Tidal Wetlands
Water Quality Ratings	Mostly impaired (Cat 4 & 5) and some supporting
Water Quality Classifications	SA and HQW
Fish Data	DMF Programs 120 and 510
Prominent Alterations	Major NPDES, marina, trawling, and drained
Average Total Alteration Score	4.05
Average Selection Frequency	206
SHA #5 (Map 13)	Lockwoods Folly River
Description	Lockwoods Folly River northeast of Supply
Acres	328
Prominent Habitats	Forested wetland
Ecological Designations	PSNA and SSNA
Conservation Lands	Lockwoods Folly River Tidal Wetlands
Water Quality Ratings	Some supporting
Water Quality Classifications	SA and HQW
Fish Data	None
Prominent Alterations	Major NPDES
Average Total Alteration Score	1.56
Average Selection Frequency	170
SHA #6 (Map 14)	Artificial Reef 430
Description	8.3 nm from Cape Fear River sea buoy, 6.7 nm from Oak Island Light, 3.8 nm from Lockwood's Folly Inlet sea buoy
Acres	776
Prominent Habitats	Hard bottom and marine soft bottom (>6ft)
Ecological Designations	None
Conservation Lands	None
Water Quality Ratings	None
Water Quality Classifications	None
Fish Data	None
Prominent Alterations	Trawling and major NPDES
Average Total Alteration Score	1.97
Average Selection Frequency	None

Region 4 Strategic Habitat Area Nominations Draft Report

SHA #7 (Map 14)	Yaupon Beach Reef – Artificial Reef 425
Description	6.3 nm from Lockwoods Folly Inlet, 3.8 nm from Oak Island Light, and 7.4 nm from Cape Fear River sea buoy
Acres	293
Prominent Habitats	Hard bottom and marine soft bottom (>6ft)
Ecological Designations	None
Conservation Lands	None
Water Quality Ratings	None
Water Quality Classifications	None
Fish Data	None
Prominent Alterations	Trawling and major NPDES
Average Total Alteration Score	2.00
Average Selection Frequency	None
SHA #8 (Map 15)	Caswell Beach
Description	East of Hickory Point, parts of Elizabeth River, and Denis and Dutchman creeks
Acres	1,139
Prominent Habitats	Emergent wetlands and estuarine soft bottom (0-3ft)
Ecological Designations	PNA
Conservation Lands	Lower Cape Fear River Aquatic Habitat, North Carolina Submerged Lands, and North Carolina Coastal Land Trust Preserve
Water Quality Ratings	Impaired (Cat 5)
Water Quality Classifications	SA and HQW
Fish Data	DMF Programs 120, 510, and 915
Prominent Alterations	Major NPDES, marinas, trawling, and drained
Average Total Alteration Score	5.17
Average Selection Frequency	139
SHA #9 (Maps 15 and 17)	Cape Fear River Inlet
Description	Cape Fear River Inlet
Acres	550
Prominent Habitats	Estuarine and marine soft bottom (>6ft)
Ecological Designations	PNA
Conservation Lands	Portions of Bald Head Island, Fort Caswell Dunes and Marshes, and Lower Cape Fear River Aquatic Habitat
Water Quality Ratings	Some supporting
Water Quality Classifications	SA and HQW
Fish Data	None
Prominent Alterations	Major NPDES and trawling
Average Total Alteration Score	3.59
Average Selection Frequency	411

Region 4 Strategic Habitat Area Nominations Draft Report

SHA #10 (Map 16)	Frying Pan Shoal
Description	Frying Pan shoal off Bald Head Island
Acres	1,050
Prominent Habitats	Marine soft bottom (>6ft)
Ecological Designations	Essential Fish Habitat and Habitat of Particular Concern
Conservation Lands	Bald Head Island
Water Quality Ratings	Some supporting
Water Quality Classifications	SA and HQW
Fish Data	None
Prominent Alterations	Major NPDES and trawling
Average Total Alteration Score	2.33
Average Selection Frequency	None

SHA #11 (Maps 16 and 17)	Bald Head Island
Description	Bald Head Island to Fort Fisher State Recreation Area
Acres	6,864
Prominent Habitats	Emergent wetland and estuarine soft bottom (0-3ft)
Ecological Designations	TNPA and PNA
Conservation Lands	Bald Head Island State Natural Area, Zeke's Island Estuarine Sanctuary, Fort Fisher State Recreation Area, and Military Ocean Terminal Sunny Point
Water Quality Ratings	Mostly supporting and some impaired (Cat 5)
Water Quality Classifications	SA and HQW
Fish Data	DMF Programs 120, 510, and 915
Prominent Alterations	Major NPDES, drainage, trawling, and minor NPDES
Average Total Alteration Score	3.19
Average Selection Frequency	163

5.2 New Hanover and Pender County Waters

Table 9. Descriptions and corroborating data for Region 4 Strategic Habitat Area (SHA) nominations in New Hanover and Pender county waters (SHA nominations #12-24).

SHA #12 (Map 17)	Hard bottom off Fort Fisher Beach State Park
Description	Hard bottom off Fort Fisher Beach State Park
Acres	195
Prominent Habitats	Hard bottom and marine soft bottom (>6ft)
Ecological Designations	None
Conservation Lands	None
Water Quality Ratings	None
Water Quality Classifications	None
Fish Data	None
Prominent Alterations	Major NPDES and trawling
Average Total Alteration Score	2.00
Average Selection Frequency	None

Region 4 Strategic Habitat Area Nominations Draft Report

SHA #13 (Map 17)	Sheepshead Rock
Description	8.7 nm from Carolina Beach Inlet buoy
Acres	98
Prominent Habitats	Soft bottom (>6ft)
Ecological Designations	None
Conservation Lands	None
Water Quality Ratings	None
Water Quality Classifications	None
Fish Data	None
Prominent Alterations	Major NPDES and trawling
Average Total Alteration Score	2.04
Average Selection Frequency	None
SHA #14 (Map 18)	Cape Fear River at Sunny Point
Description	Cape Fear river behind Fort Fisher, adjacent to Sunny point ocean terminal
Acres	755
Prominent Habitats	Subtidal shell bottom and estuarine soft bottom (0-3ft)
Ecological Designations	SSNA
Conservation Lands	Lower Cape Fear River aquatic habitat, MOTSU Buffer zone natural area, and Military Ocean Terminal Sunny Point
Water Quality Ratings	Some impaired (Cat 5)
Water Quality Classifications	SC
Fish Data	DMF Programs 120, 510, and 915
Prominent Alterations	Major NPDES, marinas, trawling, and minor NPDES
Average Total Alteration Score	2.62
Average Selection Frequency	303
SHA #15 (Map 18)	Fort Fisher Cocquina Outcrop
Description	Fort Fisher Cocquina outcrop
Acres	304
Prominent Habitats	Marine soft bottom (>6ft) and hard bottom
Ecological Designations	None
Conservation Lands	MOTSU buffer zone natural area, Fort Fisher Cocquina outcrop, and Fort Fisher State Historic Site
Water Quality Ratings	Some Supporting
Water Quality Classifications	None
Fish Data	None
Prominent Alterations	Major NPDES and trawling
Average Total Alteration Score	3.12
Average Selection Frequency	None
SHA #16 (Map 18)	AR – 378B
Description	4.3 nm from Carolina Beach Inlet sea buoy
Acres	163
Prominent Habitats	Hard bottom and marine soft bottom (>6ft)
Ecological Designations	None
Conservation Lands	None
Water Quality Ratings	None
Water Quality Classifications	None
Fish Data	None
Prominent Alterations	Major NPDES and trawling
Average Total Alteration Score	2.00
Average Selection Frequency	None

Region 4 Strategic Habitat Area Nominations Draft Report

SHA #17 (Map 18)	Phillip Wolfe Reef – AR-378
Description	3.2 nm from Carolina Beach Inlet buoy
Acres	618
Prominent Habitats	Hard bottom and marine soft bottom (>6ft)
Ecological Designations	None
Conservation Lands	None
Water Quality Ratings	None
Water Quality Classifications	None
Fish Data	None
Prominent Alterations	Major NPDES and trawling
Average Total Alteration Score	2.00
Average Selection Frequency	None
SHA #18 (Map 19)	Masonboro Island
Description	Masonboro Island including Hewletts Creek
Acres	5,667
Prominent Habitats	Emergent wetland and estuarine soft bottom (0-3ft) and (ND)
Ecological Designations	PNA
Conservation Lands	Masonboro Island National Estuarine Research Reserve, Masonboro Island State Natural Area, and New Hanover Conservation Lands
Water Quality Ratings	Some supporting and some impaired (Cat 5)
Water Quality Classifications	SA, HQW, and ORW
Fish Data	DMF Programs 120 and 510
Prominent Alterations	Marinas and major NPDES
Average Total Alteration Score	3.11
Average Selection Frequency	221
SHA #19 (Map 19)	Masonboro Outcrop
Description	3.6 nm from the Carolina Beach Inlet buoy
Acres	97
Prominent Habitats	Hard bottom and marine soft bottom (>6ft)
Ecological Designations	None
Conservation Lands	Masonboro outcrop
Water Quality Ratings	None
Water Quality Classifications	None
Fish Data	None
Prominent Alterations	Major NPDES and trawling
Average Total Alteration Score	2.02
Average Selection Frequency	None
SHA #20 (Map 19)	Meares Harris – AR-370
Description	2.3 nm from Masonboro Inlet sea buoy
Acres	1,696
Prominent Habitats	Hard bottom and marine soft bottom (>6ft)
Ecological Designations	None
Conservation Lands	None
Water Quality Ratings	None
Water Quality Classifications	None
Fish Data	None
Prominent Alterations	Major NPDES and trawling
Average Total Alteration Score	1.93
Average Selection Frequency	None

Region 4 Strategic Habitat Area Nominations Draft Report

SHA #21 (Map 20)	North Wrightsville Beach
Description	Howe and Pages creeks, and connecting ICW
Acres	2,442
Prominent Habitats	Emergent wetlands, wetland edge, and estuarine soft bottom(0-3ft and ND)
Ecological Designations	PNA, PSNA, and TNPA
Conservation Lands	Howe and Pages creeks natural areas and Figure Eight Island marsh
Water Quality Ratings	Some supporting and some impaired (Cat 5)
Water Quality Classifications	SA, ORW, and HQW
Fish Data	DMF Programs 120 and 510
Prominent Alterations	Major NPDES, marina, trawling, drained, and development
Average Total Alteration Score	3.28
Average Selection Frequency	251
SHA #22 (Map 21)	Topsail Beach
Description	Topsail Beach including Futch Creek, Virginia Creek, Rich Inlet, and New Topsail Inlet
Acres	11,711
Prominent Habitats	Emergent wetlands, wetland edge, and estuarine soft bottom
Ecological Designations	PNA, PSNA, and TNPA
Conservation Lands	Figure Eight Island marsh, Futch and Foy creeks natural areas, Lea-Hutaff Island natural areas, Topsail Sound Maritime Forests
Water Quality Ratings	Mostly supporting and some impaired (Cat 5)
Water Quality Classifications	SA, ORW, and HQW
Fish Data	DMF Programs 120 and 510
Prominent Alterations	Major NPDES, marinas, and trawling
Average Total Alteration Score	2.81
Average Selection Frequency	302
SHA #23 (Map 20)	Billy Murrel Reef – AR-364
Description	6.1 nm from Masonboro Inlet sea buoy and 6.5 nm from New Topsail Inlet sea buoy
Acres	228
Prominent Habitats	Hard bottom and marine soft bottom (>6ft)
Ecological Designations	None
Conservation Lands	None
Water Quality Ratings	None
Water Quality Classifications	None
Fish Data	None
Prominent Alterations	Major NPDES and trawling
Average Total Alteration Score	2.00
Average Selection Frequency	None
SHA #24 (Map 21)	Topsail Reef – AR-360
Description	2 nm from New Topsail Inlet sea buoy
Acres	553
Prominent Habitats	Hard bottom and marine soft bottom (>6ft)
Ecological Designations	None
Conservation Lands	Topsail outcrop
Water Quality Ratings	None
Water Quality Classifications	None
Fish Data	None
Prominent Alterations	Major NPDES and trawling
Average Total Alteration Score	2.00
Average Selection Frequency	None

Region 4 Strategic Habitat Area Nominations Draft Report

5.3 Cape Fear River

Table 10. Descriptions and corroborating data for Region 4 Strategic Habitat Area (SHA) nominations on the main stem of the Cape Fear River (SHA nominations #25, 26, 29, 38, 40-43).

SHA #25 (Map 22)	Cape Fear River – Lilliput Creek
Description	Lilliput Creek just north of Sunny point military terminal
Acres	272
Prominent Habitats	Emergent wetlands and riverine soft bottom (0-3ft)
Ecological Designations	PNA and AFSA
Conservation Lands	Blue Pond/Allen Creek, Orton Sandhills and Limesinks, and Lower Cape Fear River Aquatic Habitat
Water Quality Ratings	Mostly no data and some impaired (Cat 5)
Water Quality Classifications	SC
Fish Data	DMF Programs 510 and 915
Prominent Alterations	Major NPDES and drained
Average Total Alteration Score	4.41
Average Selection Frequency	149
SHA #26 (Map 22)	Cape Fear River – Town Creek
Description	Town Creek including western portion of Cape Fear River to Sand Hill Creek
Acres	3,451
Prominent Habitats	Forested wetland and emergent wetland
Ecological Designations	PNA and AFSA
Conservation Lands	Lower Cape Fear River aquatic habitat, Pleasant Oaks/ Goose Landing Plantations, Town Creek marshes and swamp, North Carolina Coastal Land Trust Easement, Brunswick County Open Space, and North Carolina Clean Water Management Trust Fund Easement
Water Quality Ratings	Mostly no data and some impaired (Cat 5)
Water Quality Classifications	SC
Fish Data	DMF Programs 120, 510, and 915 and WRC annual spawning stock survey
Prominent Alterations	Major NPDES and drained
Average Total Alteration Score	3.05
Average Selection Frequency	155
SHA #29 (Map 24)	Cape Fear River – Indian Creek
Description	Cape Fear River at mouth of Indian Creek to convergence of Otter Branch and Mulberry Branch
Acres	364
Prominent Habitats	Forested wetlands
Ecological Designations	PNA and AFSA
Conservation Lands	None
Water Quality Ratings	Mostly no data and some supporting
Water Quality Classifications	None
Fish Data	DMF Program 120 and WRC IBI sampling
Prominent Alterations	Major NPDES
Average Total Alteration Score	2.37
Average Selection Frequency	182

Region 4 Strategic Habitat Area Nominations Draft Report

SHA #38 (Map 29)	Cape Fear River Lowlands
Description	Cape Fear River including Lyon creek, Crossway Creek and Lyon Thorofare
Acres	2,327
Prominent Habitats	Forested wetland
Ecological Designations	PNA and AFSA
Conservation Lands	Lower Black River Swamp and Cape Fear River Wetlands Game Land
Water Quality Ratings	Mostly no data and some supporting
Water Quality Classifications	None
Fish Data	DMF Program 120 and WRC IBI sampling
Prominent Alterations	Major NPDES and marinas
Average Total Alteration Score	2.40
Average Selection Frequency	160
SHA #40 (Map 31)	Cape Fear River – Kelly
Description	Cape Fear River near Beaverdam Creek and Kelly
Acres	2,680
Prominent Habitats	Forested wetlands
Ecological Designations	PNA and AFSA
Conservation Lands	Cape Fear River Lowlands, Steep Run Swamp, Cape Fear River Kelly Bottomlands, Cape Fear River/ Whitehall Floodplain Forest, North Carolina Coastal Land Trust Easement, Whitehall Plantation Game Land, and Bladen Lakes State Forest
Water Quality Ratings	Mostly supporting and some no data
Water Quality Classifications	None
Fish Data	WRC IBI sampling and annual spawning stock survey
Prominent Alterations	Major NPDES
Average Total Alteration Score	1.04
Average Selection Frequency	165
SHA #41 (Map 32)	Cape Fear River – Elizabethtown
Description	Cape Fear River including Pemberton Creek and mouth of Mulford Creek
Acres	2,360
Prominent Habitats	Forested wetlands
Ecological Designations	AFSA
Conservation Lands	Cape Fear Sloughs, Walkers Bluff, and Sugar Loaf Springs
Water Quality Ratings	Mostly supporting and some no data
Water Quality Classifications	None
Fish Data	WRC IBI sampling
Prominent Alterations	Major NPDES
Average Total Alteration Score	0.98
Average Selection Frequency	153

Region 4 Strategic Habitat Area Nominations Draft Report

SHA #42 (Map 33)	Cape Fear River – Tarheel
Description	South of Fayetteville on the Cape Fear River
Acres	1,678
Prominent Habitats	Forested wetlands
Ecological Designations	AFSA,
Conservation Lands	Cape Fear River Terraces and North Carolina Coastal Land Trust Preserve
Water Quality Ratings	Mostly supporting
Water Quality Classifications	None
Fish Data	WRC IBI sampling and annual spawning stock survey
Prominent Alterations	Major NPDES
Average Total Alteration Score	1.00
Average Selection Frequency	144

SHA #43 (Map 34)	Cape Fear River – Lillington
Description	North of Fayetteville on the Cape Fear River
Acres	1,002
Prominent Habitats	Riverine soft bottom and forested wetlands
Ecological Designations	AFSA
Conservation Lands	Cape Fear River Canebrakes, Byrd Farm Industrial Park Natural Area, Upper Cape Fear River Aquatic Habitat, and Cape Fear River Park
Water Quality Ratings	Mostly impaired (Cat 5) and some supporting
Water Quality Classifications	None
Fish Data	WRC IBI sampling and annual spawning stock survey
Prominent Alterations	Major NPDES and minor NPDES
Average Total Alteration Score	1.84
Average Selection Frequency	71

5.4 Brunswick River

Table 11. Descriptions and corroborating data for Region 4 Strategic Habitat Area (SHA) nomination on the Brunswick River (SHA nomination #27).

SHA #27 (Map 23)	Brunswick River
Description	Begins south of Eagle Island along western shoreline of Belville and Leland to parts of Alligator Creek and adjacent wetlands
Acres	1,123
Prominent Habitats	Emergent wetlands
Ecological Designations	PNA and AFSA
Conservation Lands	Lower Cape Fear River Aquatic Habitat, Brunswick River/Cape Fear River Marshes, Brunswick County Open Space, and Eagles Island Natural Area
Water Quality Ratings	Mostly impaired (Cat 5) and some no data
Water Quality Classifications	SC
Fish Data	DMF Programs 120 and 510
Prominent Alterations	Major NPDES, minor NPDES, and drained
Average Total Alteration Score	4.92
Average Selection Frequency	84

Region 4 Strategic Habitat Area Nominations Draft Report

5.5 Northeast Cape Fear River

Table 12. Descriptions and corroborating data for Region 4 Strategic Habitat Area (SHA) nomination on the Northeast Cape Fear River (SHA nominations #28, 30-37).

SHA #28 (Map 24)	Northeast Cape Fear River – Ness Creek
Description	North of Wilmington near Wrightsboro and Ness creek
Acres	488
Prominent Habitats	Emergent wetlands
Ecological Designations	PNA and AFSA
Conservation Lands	Northeast Cape Fear River Floodplain
Water Quality Ratings	Some no data and some impaired (Cat 5)
Water Quality Classifications	SC
Fish Data	None
Prominent Alterations	Major NPDES and drained
Average Total Alteration Score	3.03
Average Selection Frequency	162

SHA #30 (Map 25)	Northeast Cape Fear River – Cowpen Branch
Description	Northeast Cape Fear River including Cowpen Branch
Acres	678
Prominent Habitats	Forested wetland
Ecological Designations	PNA and AFSA
Conservation Lands	Northeast Cape Fear River Floodplain
Water Quality Ratings	Some no data and some supporting
Water Quality Classifications	None
Fish Data	DMF Program 120
Prominent Alterations	Major NPDES
Average Total Alteration Score	2.31
Average Selection Frequency	150

SHA #31 (Map 25)	Northeast Cape Fear River – Long Creek
Description	Northeast Cape Fear River including Long, Morgans, and Turkey creeks
Acres	2,904
Prominent Habitats	Forested wetland
Ecological Designations	PNA and AFSA
Conservation Lands	Northeast Cape Fear River floodplain and Cape Fear River Wetlands Game Land
Water Quality Ratings	Mostly supporting and some no data
Water Quality Classifications	None
Fish Data	DMF Program 120
Prominent Alterations	Major NPDES, marinas, and shellfish closure
Average Total Alteration Score	2.31
Average Selection Frequency	161

Region 4 Strategic Habitat Area Nominations Draft Report

SHA #32 (Map 25)	Northeast Cape Fear River – Prince George Creek
Description	Northeast Cape Fear River and mouth of Prince George Creek
Acres	439
Prominent Habitats	Forested wetland
Ecological Designations	PNA and AFSA
Conservation Lands	Northeast Cape Fear River Floodplain and Cape Fear River Wetlands Game Land
Water Quality Ratings	Some supporting and some no data
Water Quality Classifications	None
Fish Data	None
Prominent Alterations	Major NPDES and marinas
Average Total Alteration Score	3.15
Average Selection Frequency	153
SHA #33 (Map 26)	Northeast Cape Fear River – Castle Hayne
Description	Northeast Cape Fear River with portions of Island Creek and Merricks Creek
Acres	2,344
Prominent Habitats	Forested wetland and riverine soft bottom (ND)
Ecological Designations	PNA and AFSA
Conservation Lands	Northeast Cape Fear River Floodplain, Rocky Point Sandhills, North Carolina Coastal Land Trust Preserve and Easement
Water Quality Ratings	Mostly supporting and some no data
Water Quality Classifications	None
Fish Data	DMF Program 120
Prominent Alterations	Major NPDES, marinas, shellfish closure, and drained
Average Total Alteration Score	2.67
Average Selection Frequency	150
SHA #34 (Map 26)	Northeast Cape Fear River – Rocky Point
Description	Northeast Cape Fear River with portions of Pike, McIntire and Lillington creeks
Acres	1,741
Prominent Habitats	Forested wetland
Ecological Designations	PNA and AFSA
Conservation Lands	Northeast Cape Fear River Floodplain and Cape Fear River Wetlands Game Land
Water Quality Ratings	Mostly supporting, some no data, and some impaired (Cat 5)
Water Quality Classifications	None
Fish Data	None
Prominent Alterations	Major NPDES, marinas, and shellfish closure
Average Total Alteration Score	2.86
Average Selection Frequency	149

Region 4 Strategic Habitat Area Nominations Draft Report

SHA #35 (Map 27)	Northeast Cape Fear River – Ashes Creek
Description	Northeast Cape Fear River with Ashes Creek
Acres	461
Prominent Habitats	Forested wetland
Ecological Designations	AFSA
Conservation Lands	Northeast Cape Fear River Floodplain, Holly Shelter Game Land, and North Carolina Coastal Land Trust Easement
Water Quality Ratings	Mostly supporting and some no data
Water Quality Classifications	None
Fish Data	None
Prominent Alterations	Major NPDES and marinas
Average Total Alteration Score	2.20
Average Selection Frequency	178

SHA #36 (Map 27 and 28)	Northeast Cape Fear River – Watermelon Run
Description	Northeast Cape Fear River at Watermelon Run
Acres	741
Prominent Habitats	Forested wetland
Ecological Designations	AFSA
Conservation Lands	None
Water Quality Ratings	Mostly supporting and some no data
Water Quality Classifications	None
Fish Data	None
Prominent Alterations	Major NPDES and marina
Average Total Alteration Score	2.30
Average Selection Frequency	129

SHA #37 (Map 28)	Northeast Cape Fear River – Duplin/Pender County Line
Description	Northeast Cape Fear River at the Duplin/Pender county line
Acres	607
Prominent Habitats	Forested wetland
Ecological Designations	None
Conservation Lands	None
Water Quality Ratings	Mostly supporting and some no data
Water Quality Classifications	None
Fish Data	None
Prominent Alterations	Major NPDES and marinas
Average Total Alteration Score	2.14
Average Selection Frequency	184

Region 4 Strategic Habitat Area Nominations Draft Report

5.6 Black River

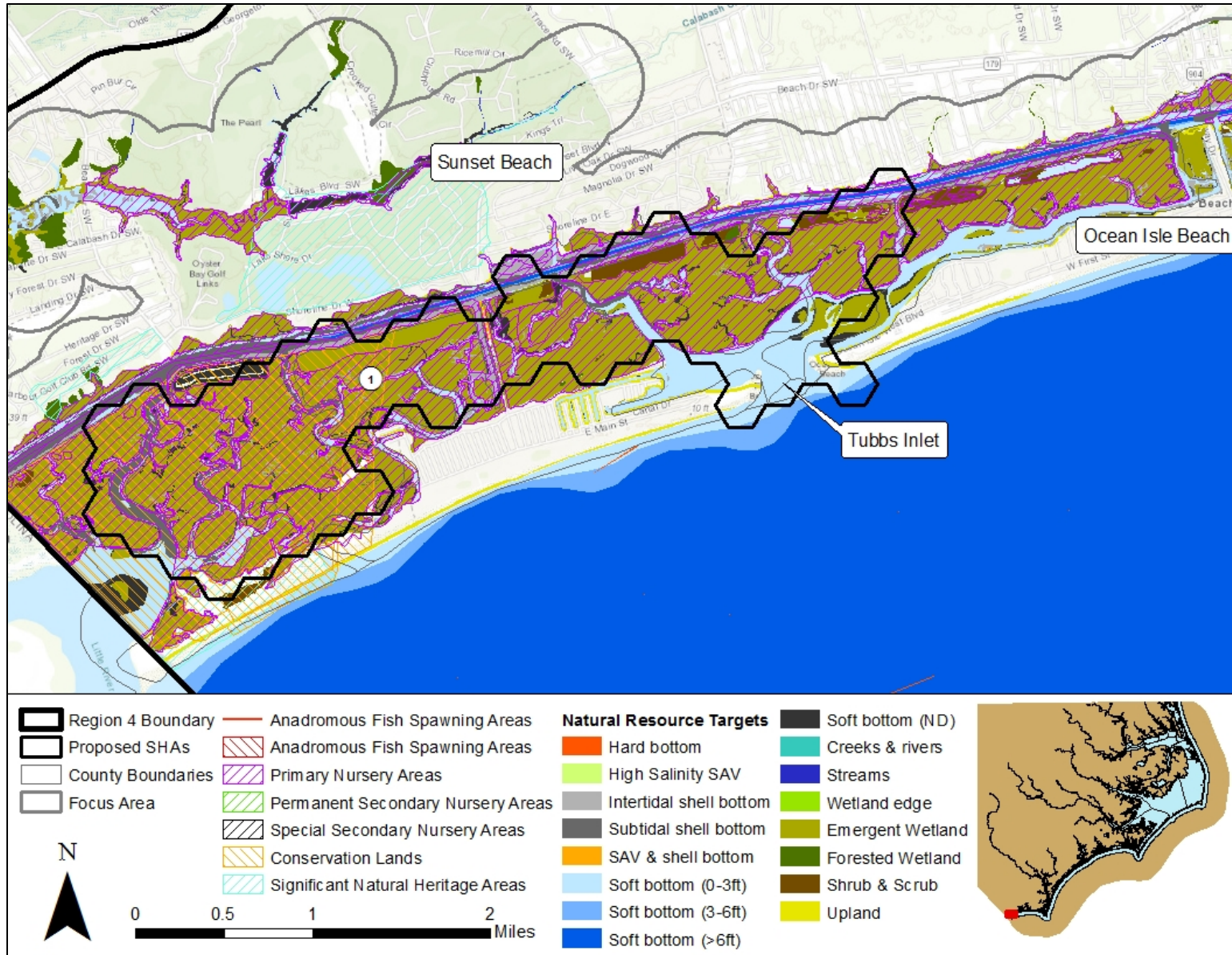
Table 13. Descriptions and corroborating data for Region 4 Strategic Habitat Area (SHA) nomination on the Black River (SHA nomination #39).

SHA #39 (Map 30)	Black River
Description	Black River including mouth of Moores Creek
Acres	4,783
Prominent Habitats	Forested wetland
Ecological Designations	AFSA
Conservation Lands	Lower Black River Swamp, Black River Cypress Swamp, Upper Black River Bottomlands, Cape Fear River Wetlands Game Land, and Black River Preserve
Water Quality Ratings	Mostly supporting and some no data
Water Quality Classifications	None
Fish Data	WRC IBI sampling
Prominent Alterations	Major NPDES, marinas, and shellfish closure
Average Total Alteration Score	2.33
Average Selection Frequency	158

6 MAPS OF FINAL INDIVIDUAL STRATEGIC HABITAT AREAS

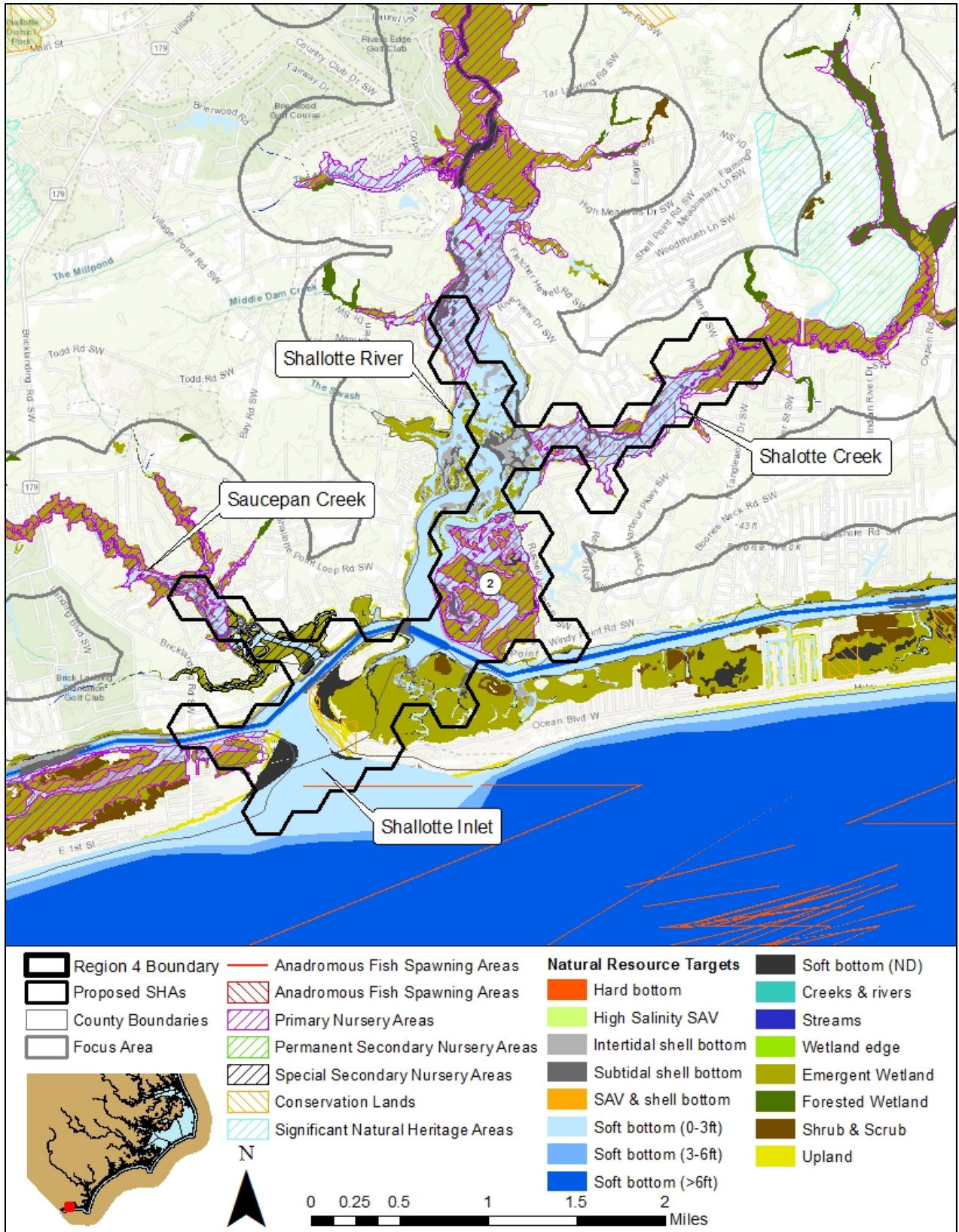
Intentionally left blank

Region 4 Strategic Habitat Area Nominations Draft Report



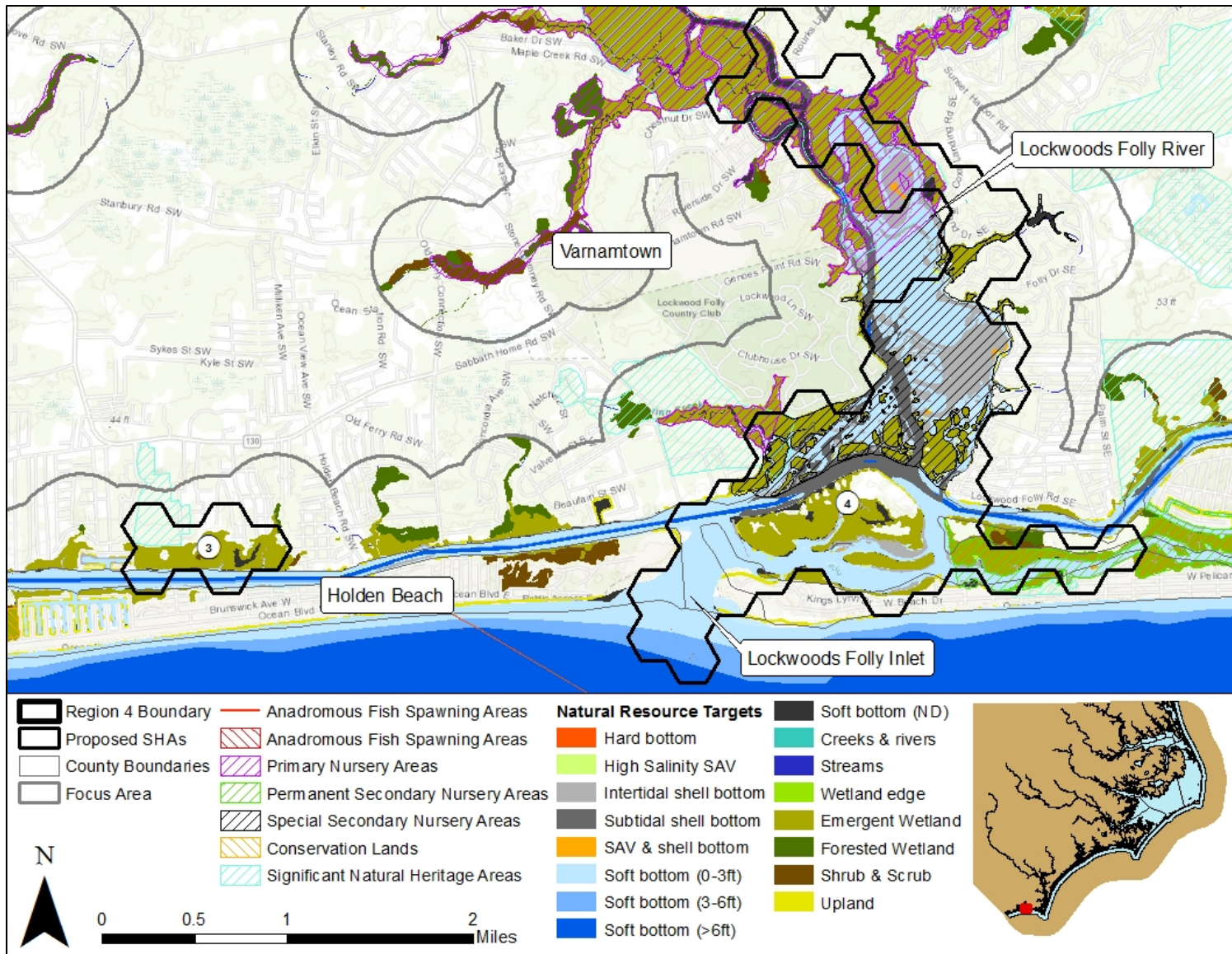
Map 10. Draft Strategic Habitat Area (SHA) nomination #1, Sunset Beach – Bird Island to Tubbs Inlet.

Region 4 Strategic Habitat Area Nominations Draft Report

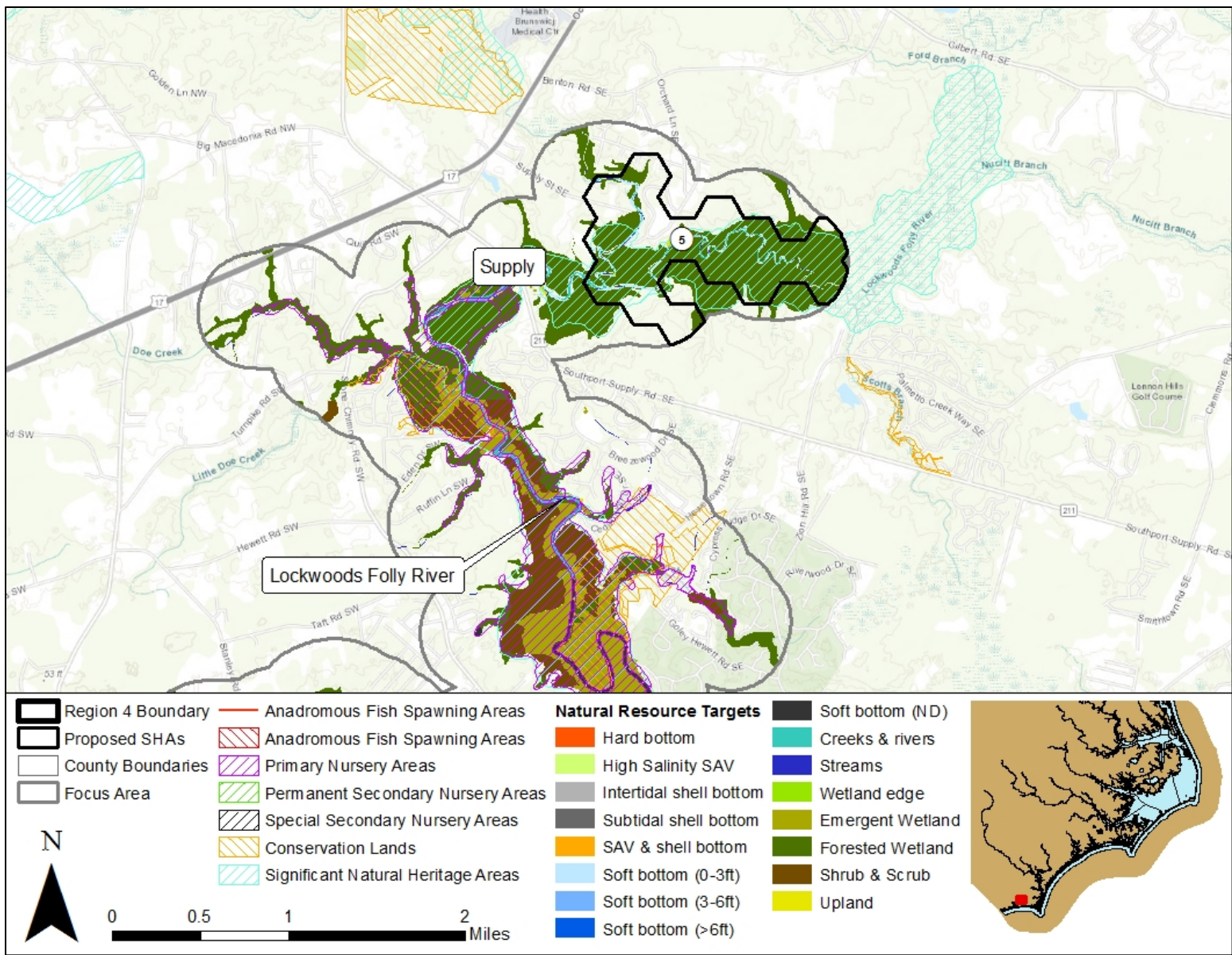


Map 11. Draft Strategic Habitat Area (SHA) nomination #2 – Shallotte Inlet, mouth of Shallotte River, and Shallotte Creek.

Region 4 Strategic Habitat Area Nominations Draft Report

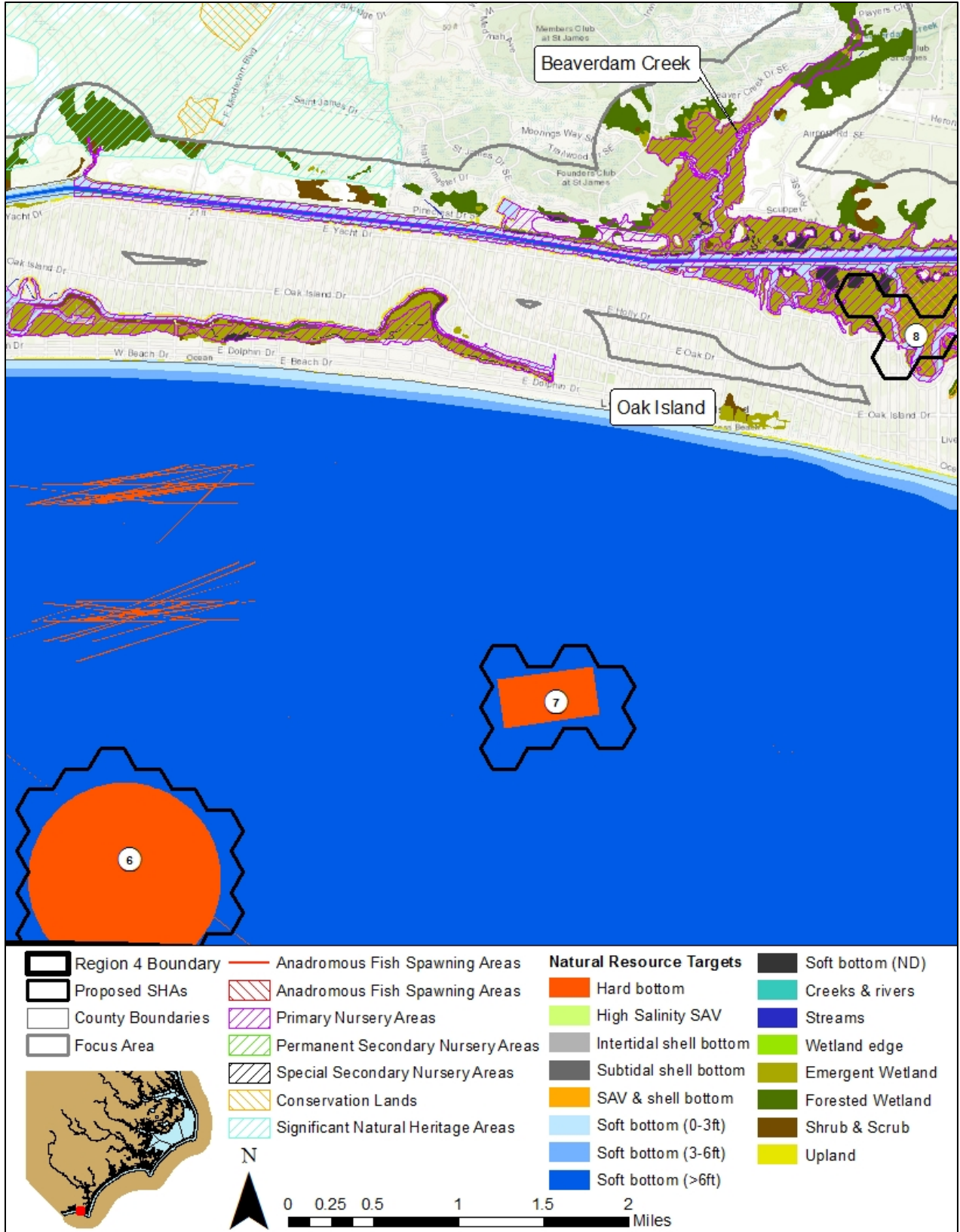


Region 4 Strategic Habitat Area Nominations Draft Report



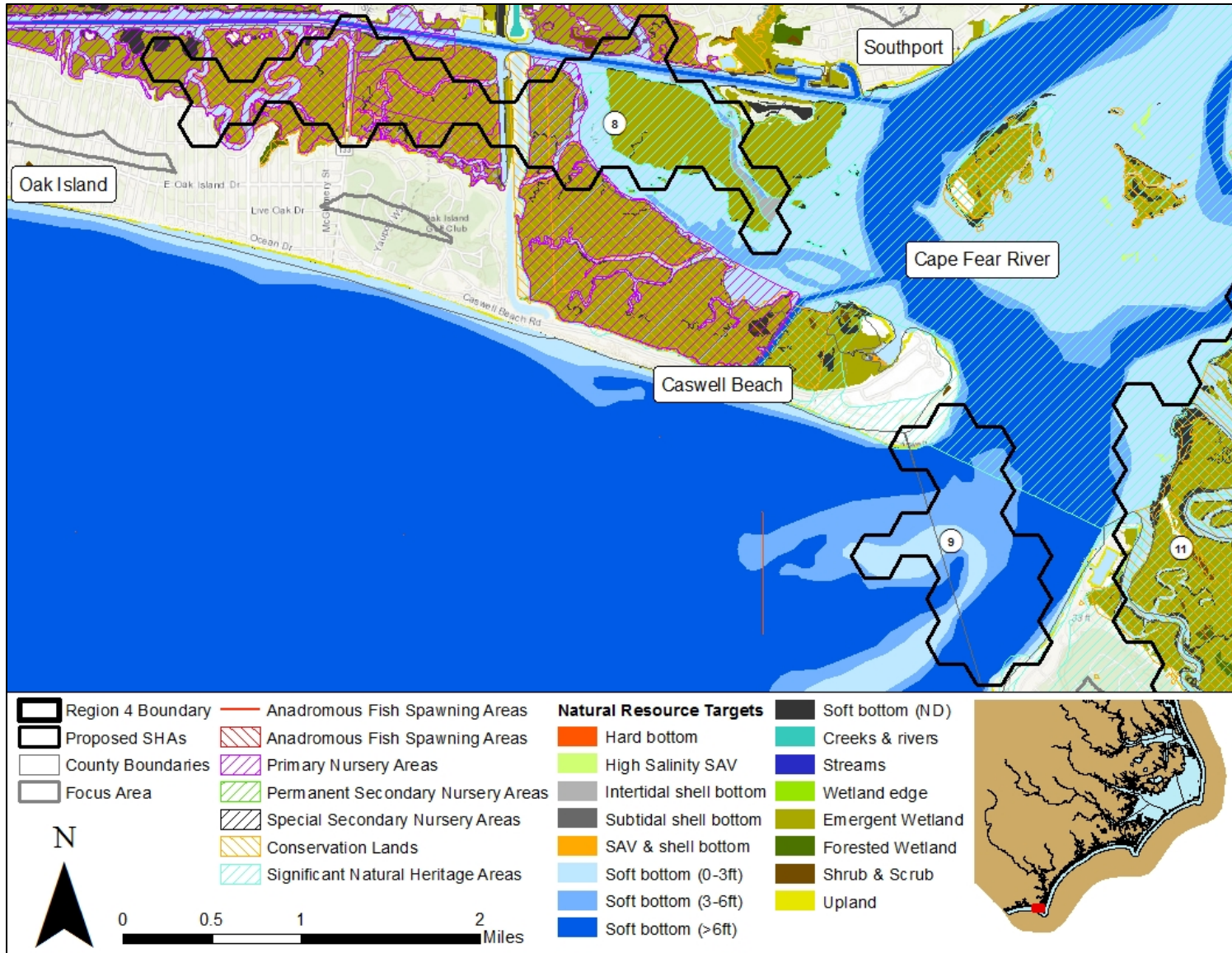
Map 13. Draft Strategic Habitat Area (SHA) nomination #5 – Lockwoods Folly River northeast of Supply.

Region 4 Strategic Habitat Area Nominations Draft Report



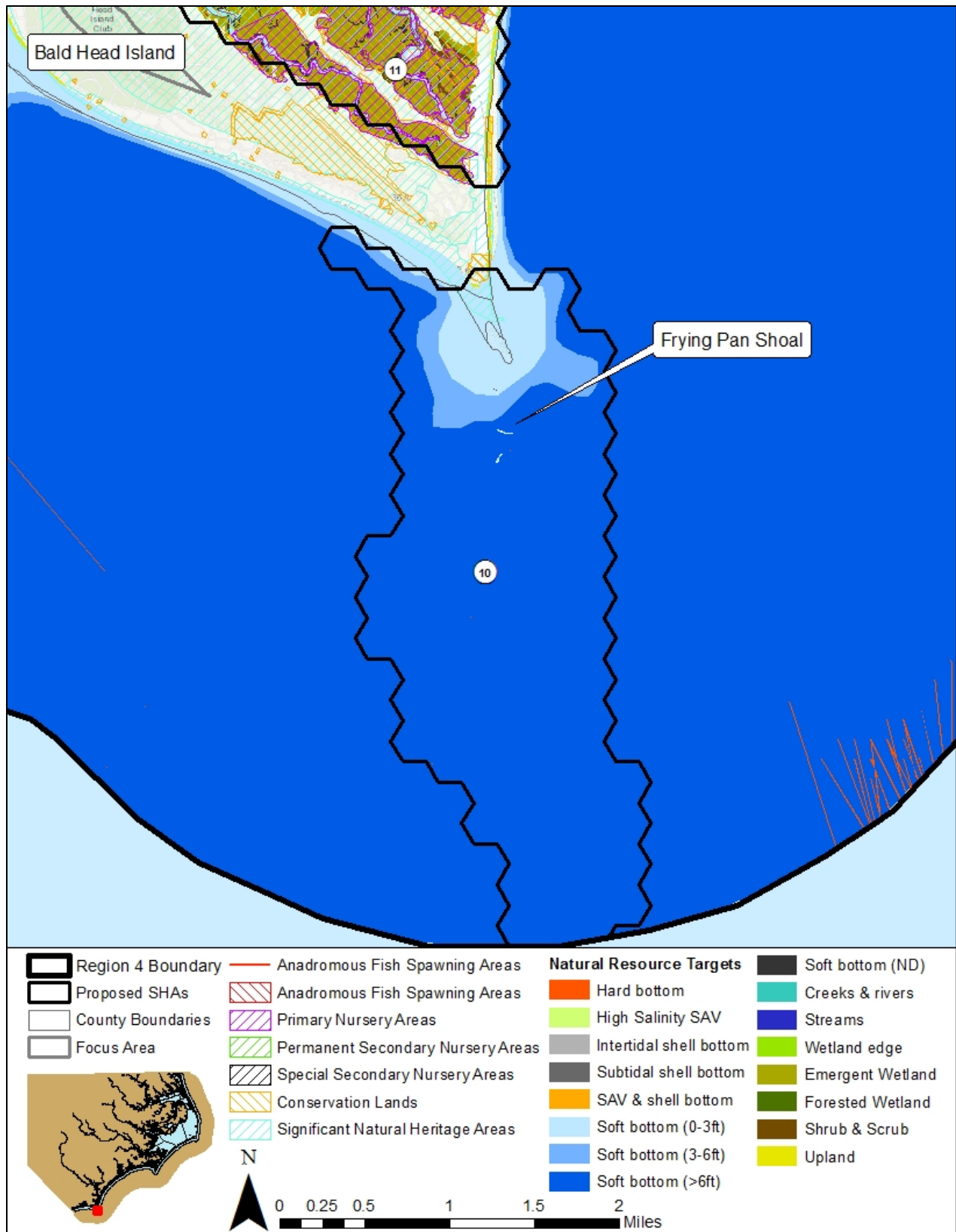
Map 14. Draft Strategic Habitat Area (SHA) nominations #6 – Artificial Reef 430, #7 – Yaupon Beach reef, Artificial Reef 425, and part of #8 – Caswell Beach.

Region 4 Strategic Habitat Area Nominations Draft Report



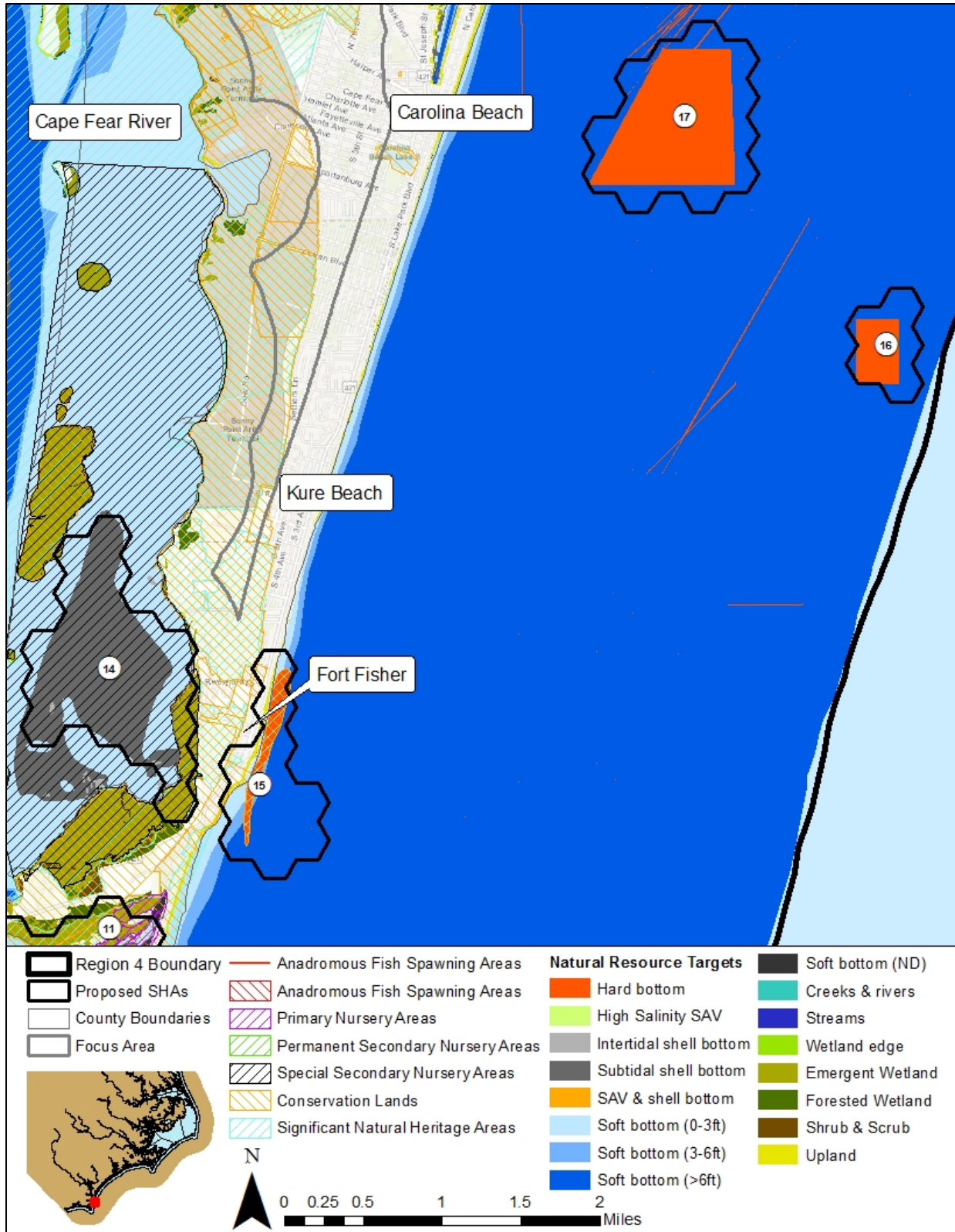
Map 15. Draft Strategic Habitat Area (SHA) nominations #8 – Caswell Beach and #9 – Cape Fear River Inlet and part of #11 – Bald Head Island.

Region 4 Strategic Habitat Area Nominations Draft Report



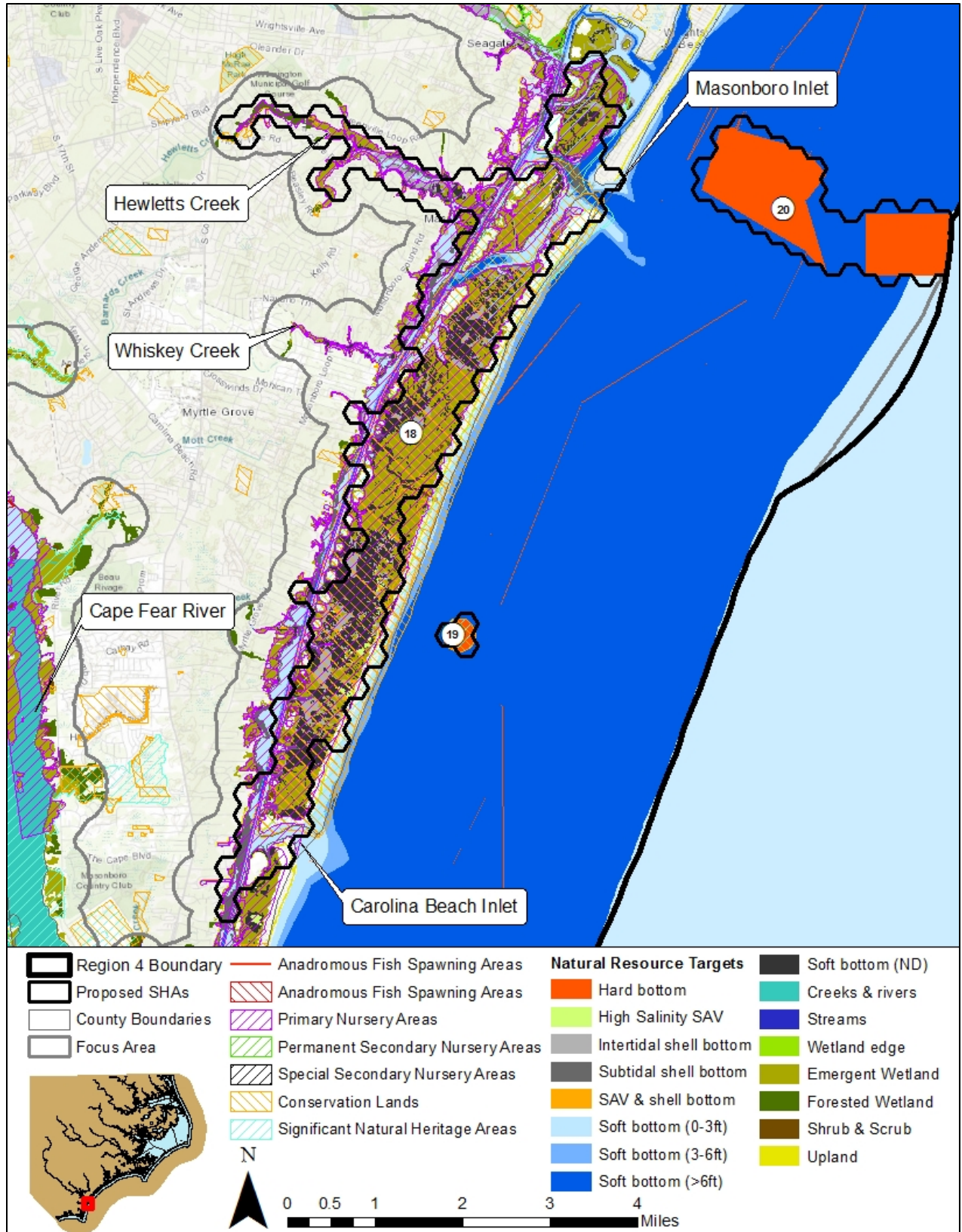
Map 16. Draft Strategic Habitat Area (SHA) nominations #10 – Frying Pan Shoal and parts of #9 – Cape Fear River Inlet and #11 – Bald Head Island.

Region 4 Strategic Habitat Area Nominations Draft Report



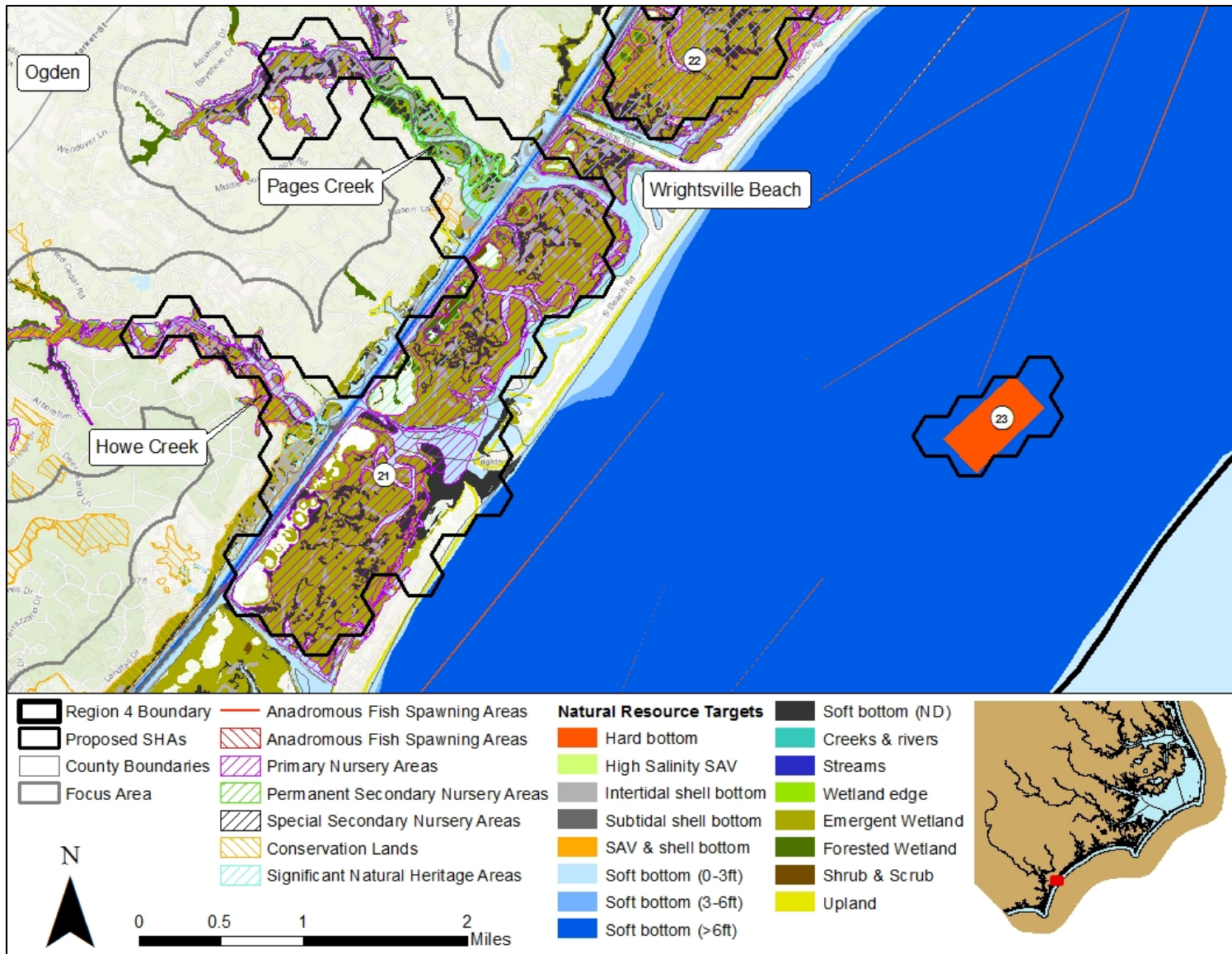
Map 18. Draft Strategic Habitat Area (SHA) nominations #14 – Cape Fear River at Sunny Point, #15 – Fort Fisher Cocquina Outcrop, #16 – Artificial Reef 378B, and #17 – Phillip Wolfe Reef, Artificial Reef 378.

Region 4 Strategic Habitat Area Nominations Draft Report



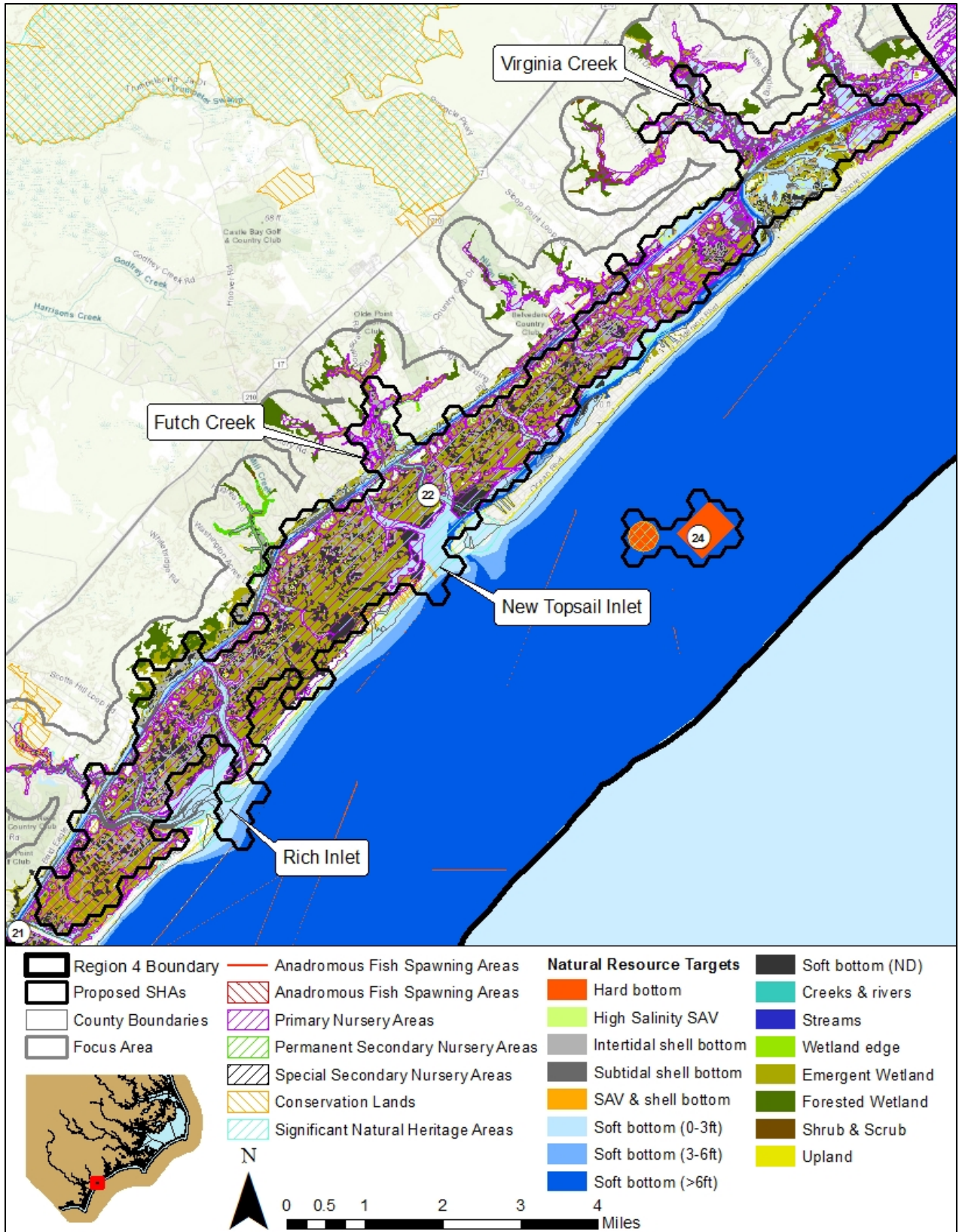
Map 19. Draft Strategic Habitat Area (SHA) nominations #18 – Masonboro Island and Whiskey and Hewletts Creek, #19 – Masonboro Outcrop, #20 – Meares Harris, Artificial Reef 370.

Region 4 Strategic Habitat Area Nominations Draft Report



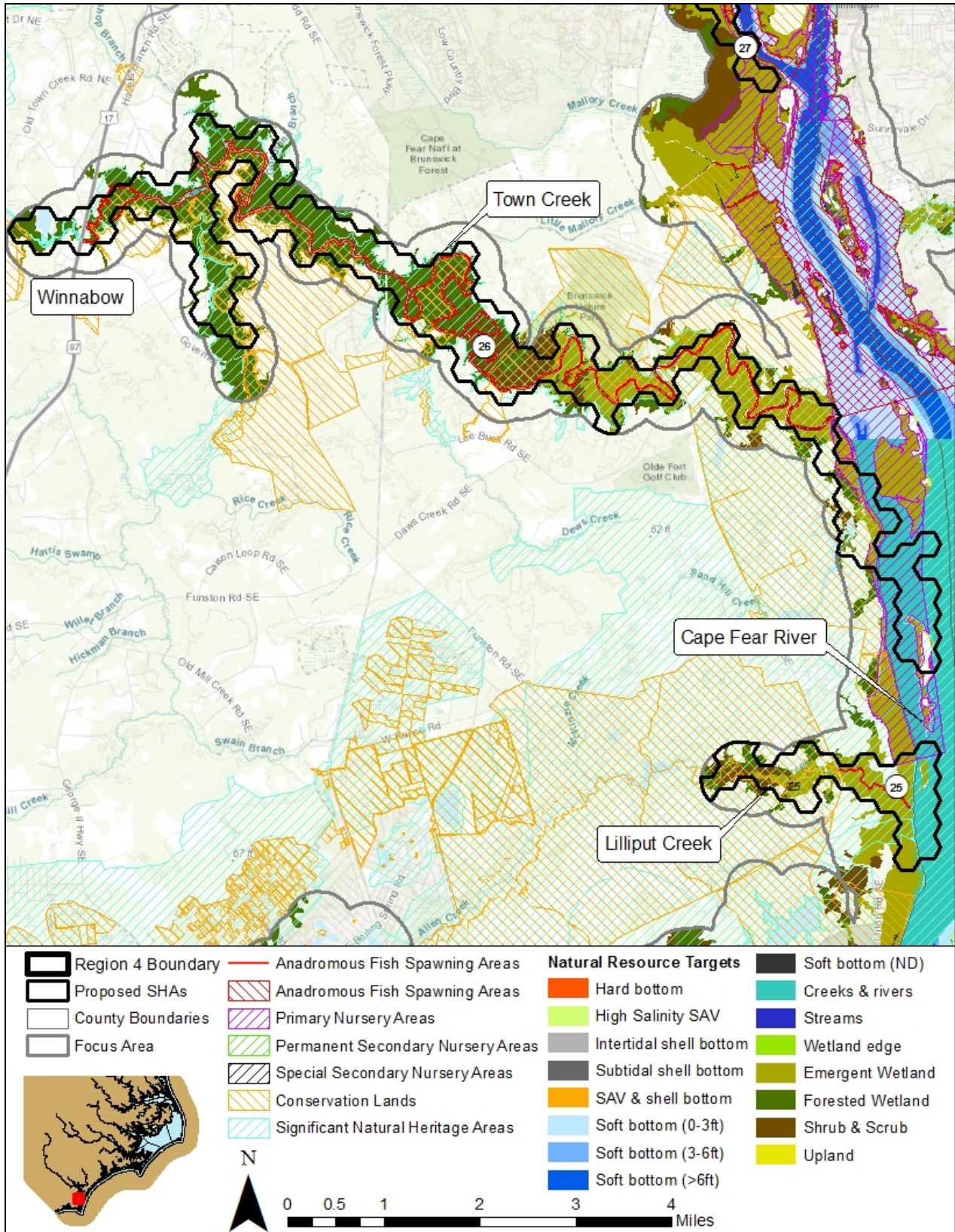
Map 20. Draft Strategic Habitat Area (SHA) nominations #21 – Wrightsville Beach including Howe and Pages creeks, #23 – Billy Murrel Reef, Artificial Reef 364, and part of #22 – Topsail Beach.

Region 4 Strategic Habitat Area Nominations Draft Report



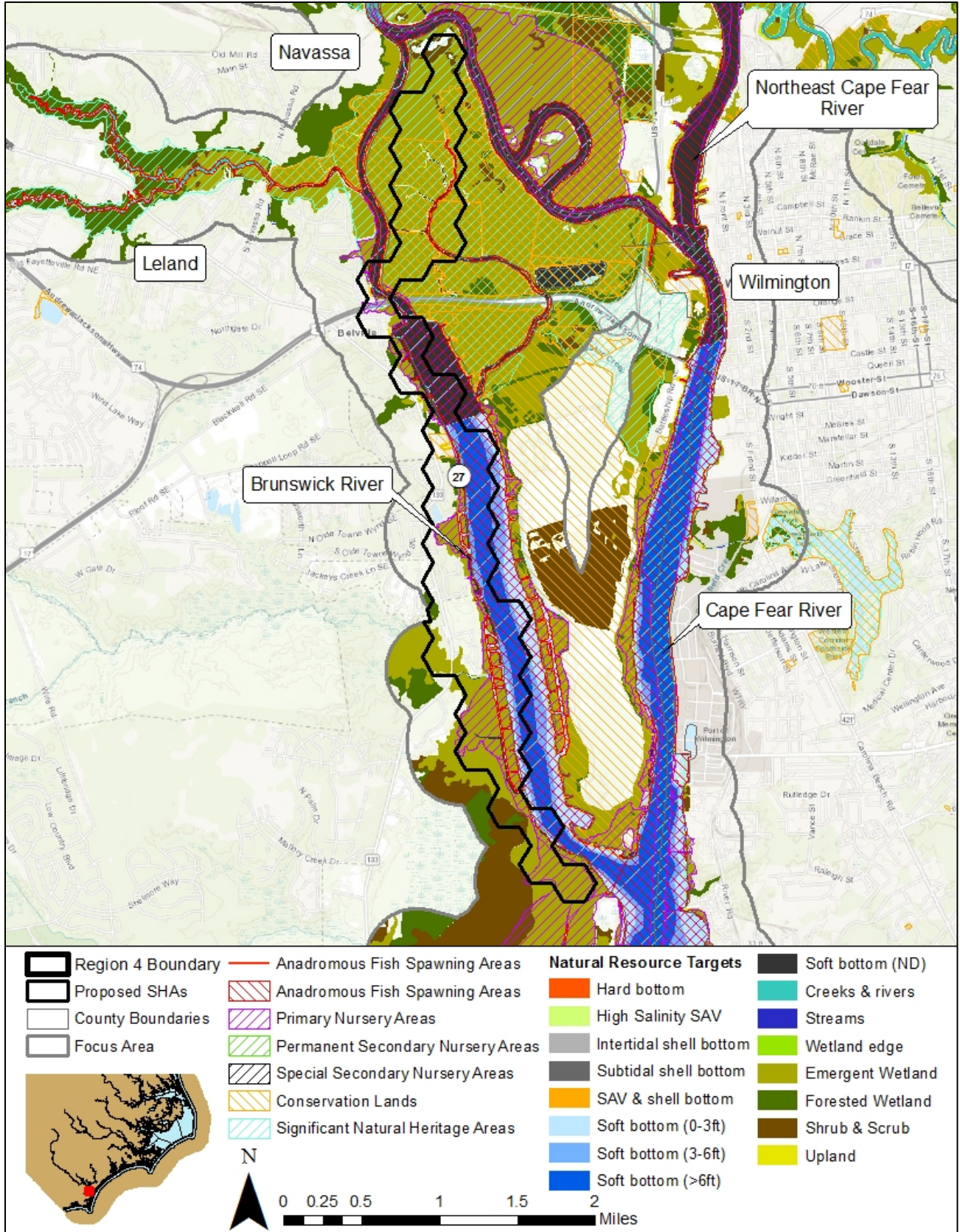
Map 21. Draft Strategic Habitat Area (SHA) nominations #22 – Topsail Beach including Futch and Virginia creeks and Rich and New Topsail inlet and #24 – Topsail Reef, Artificial Reef 360.

Region 4 Strategic Habitat Area Nominations Draft Report

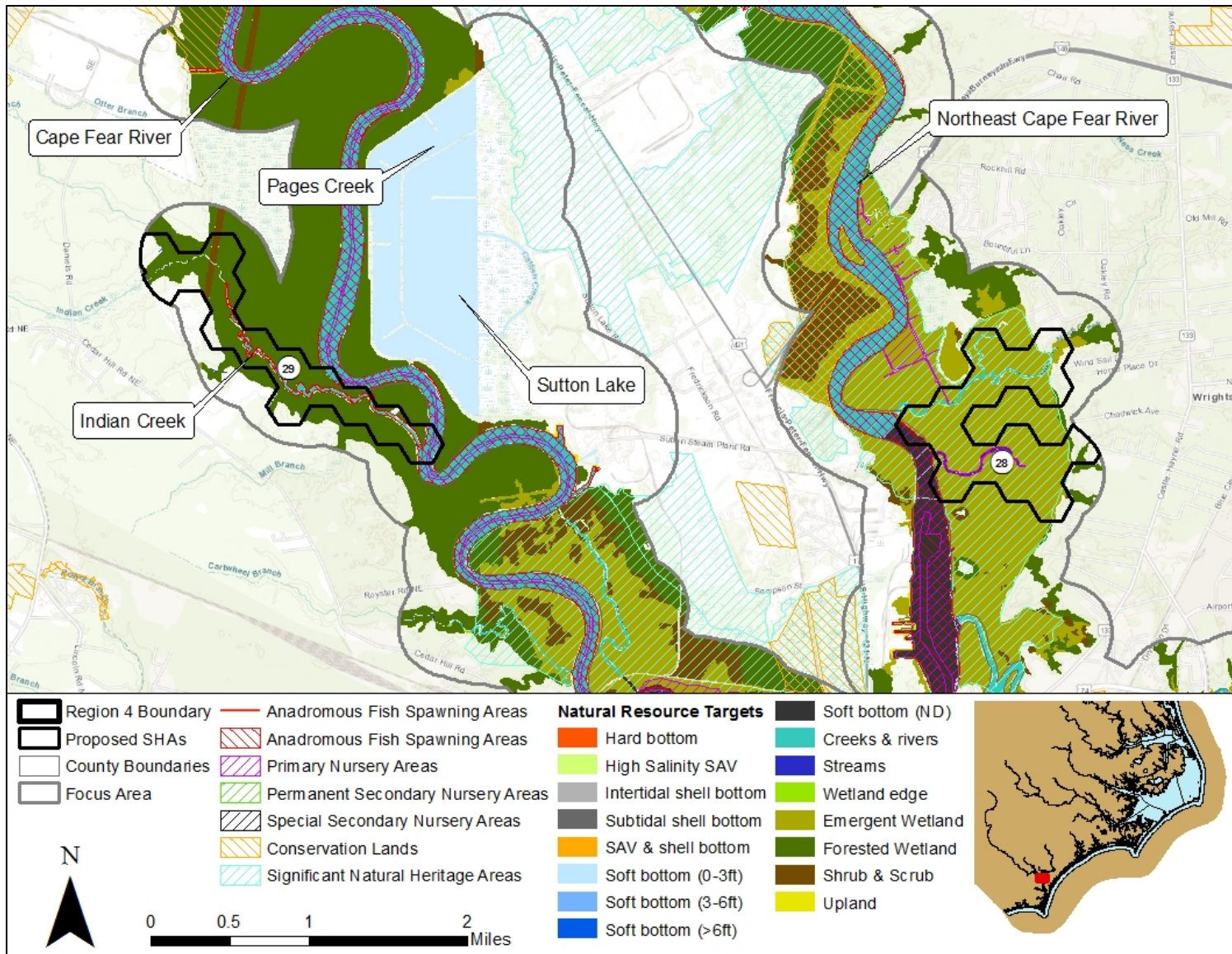


Map 22. Draft Strategic Habitat Area (SHA) nominations #25 – Cape Fear River, Lilliput Creek and #26 – Cape Fear River, Town Creek.

Region 4 Strategic Habitat Area Nominations Draft Report

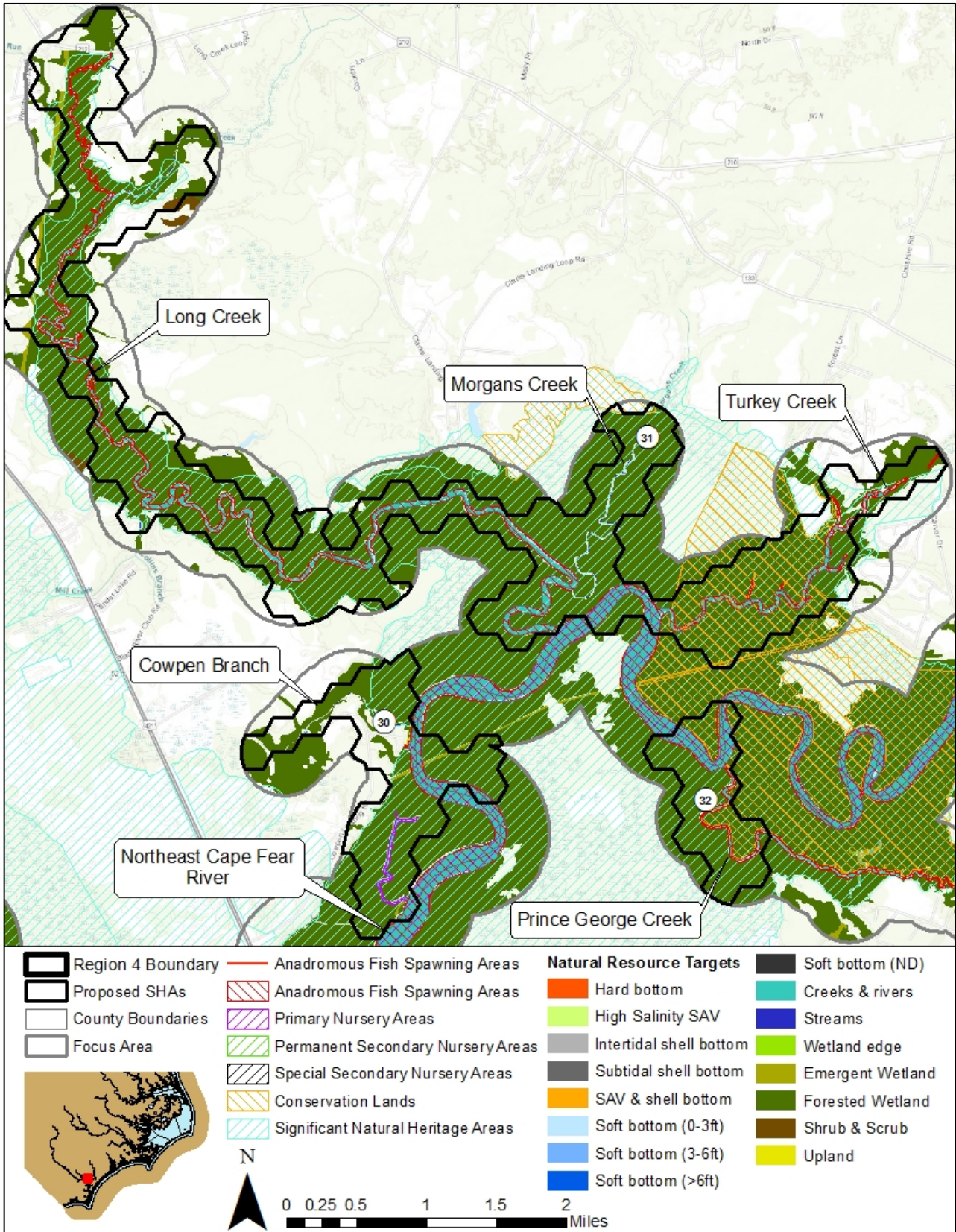


Region 4 Strategic Habitat Area Nominations Draft Report



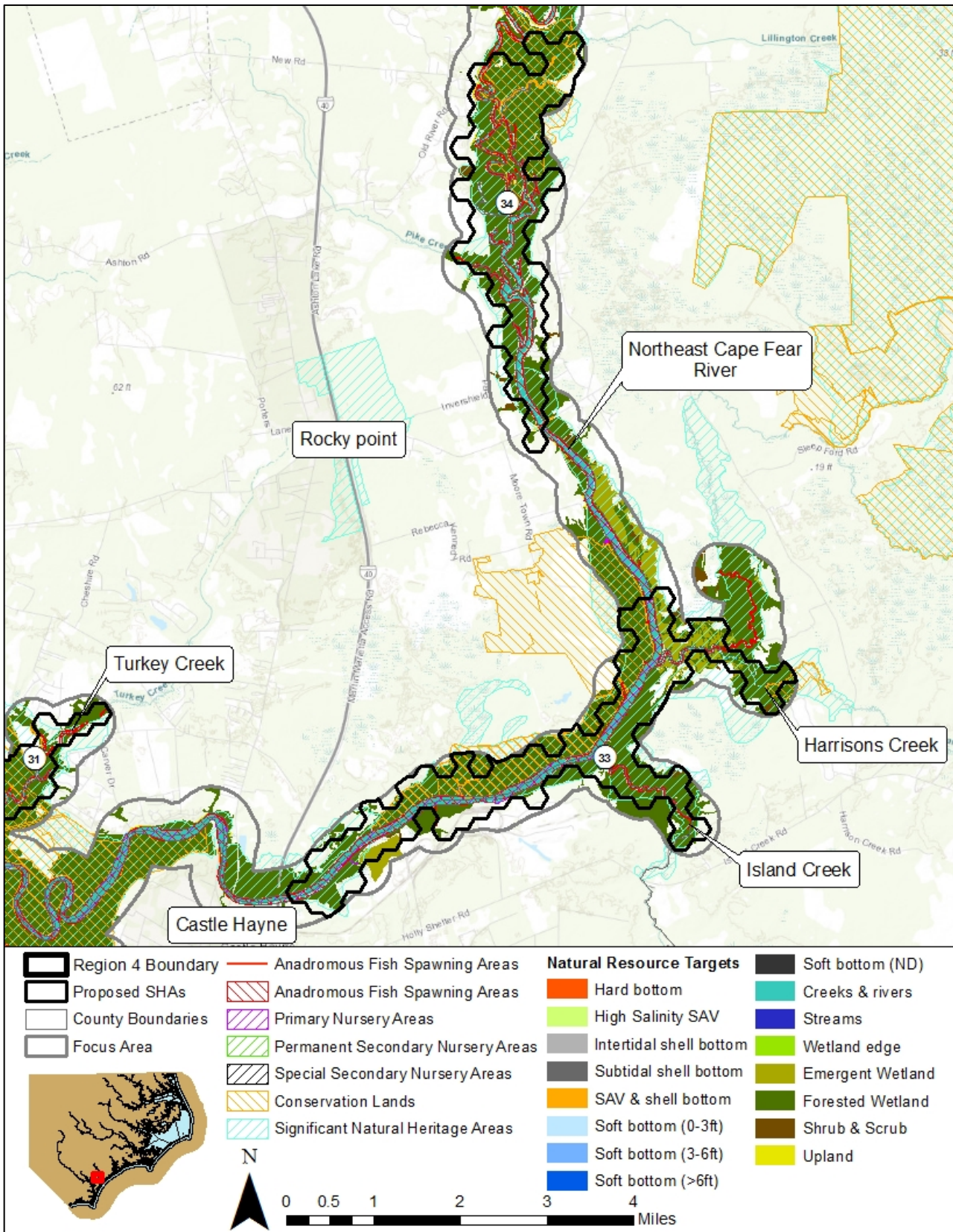
Map 24. Draft Strategic Habitat Area (SHA) nominations #28 – Northeast Cape Fear River, Ness Creek and #29 Cape Fear River, Indian Creek.

Region 4 Strategic Habitat Area Draft Report



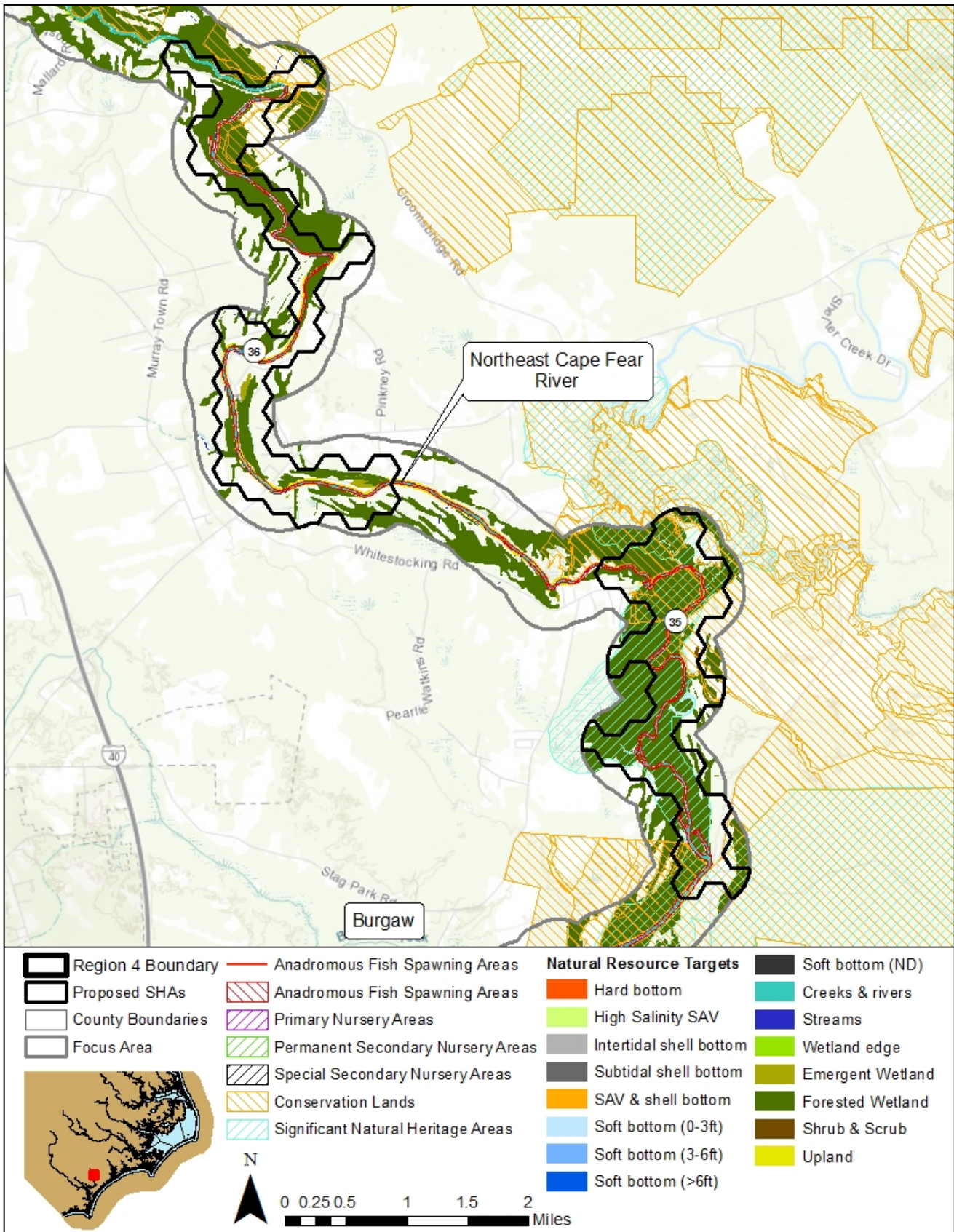
Map 25. Draft Strategic Habitat Area (SHA) nominations #30 – Northeast Cape Fear River, Cowpen Branch, #31 Northeast Cape Fear River, Long, Morgans, and Turkey creeks, and #32 – Northeast Cape Fear River – Prince George Creek.

Region 4 Strategic Habitat Area Draft Report



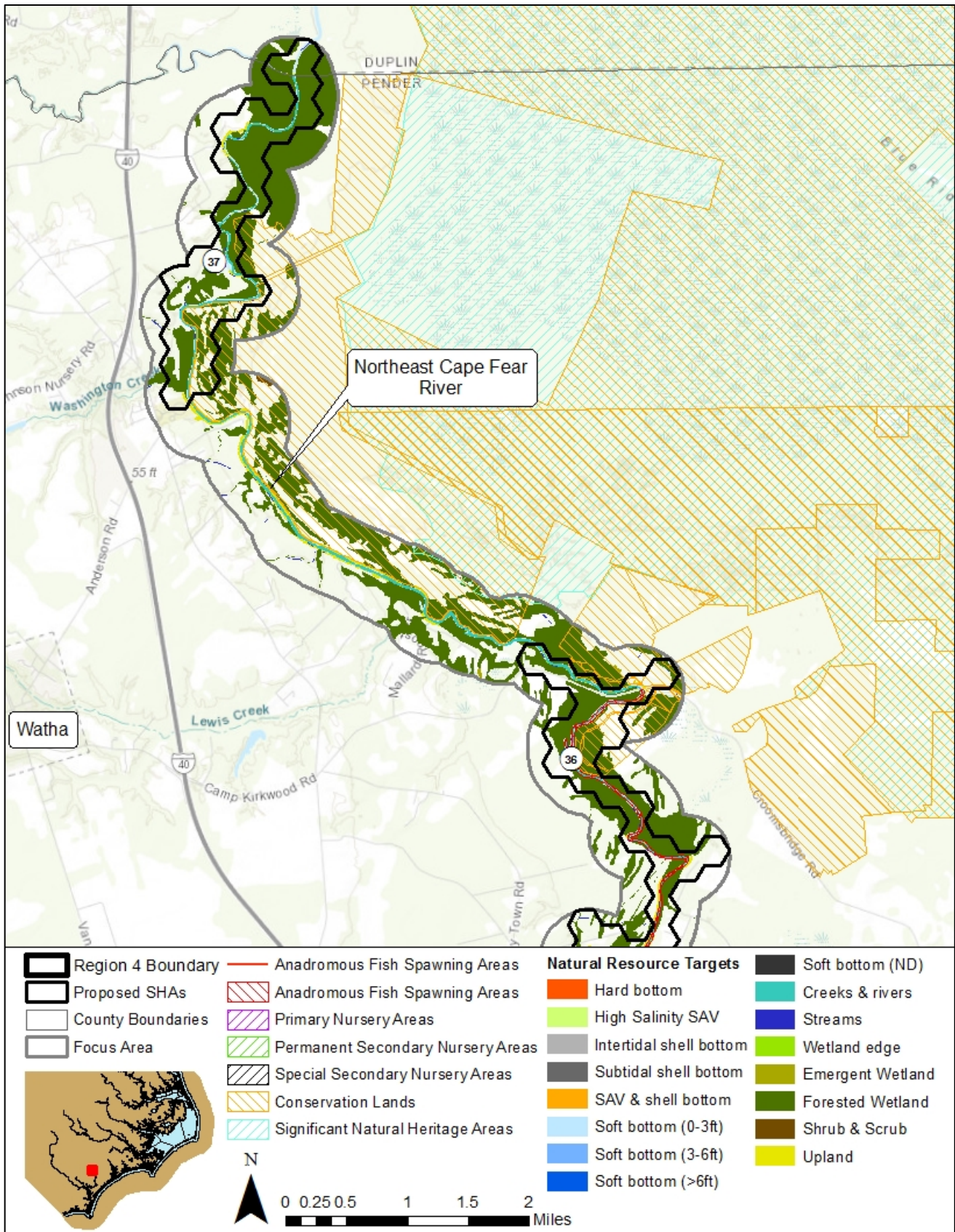
Map 26. Draft Strategic Habitat Area (SHA) nominations #33 – Northeast Cape Fear River, near Castle Hayne including Island and Harrison's creeks and #34 – Northeast Cape Fear River, near Rocky Point.

Region 4 Strategic Habitat Area Draft Report



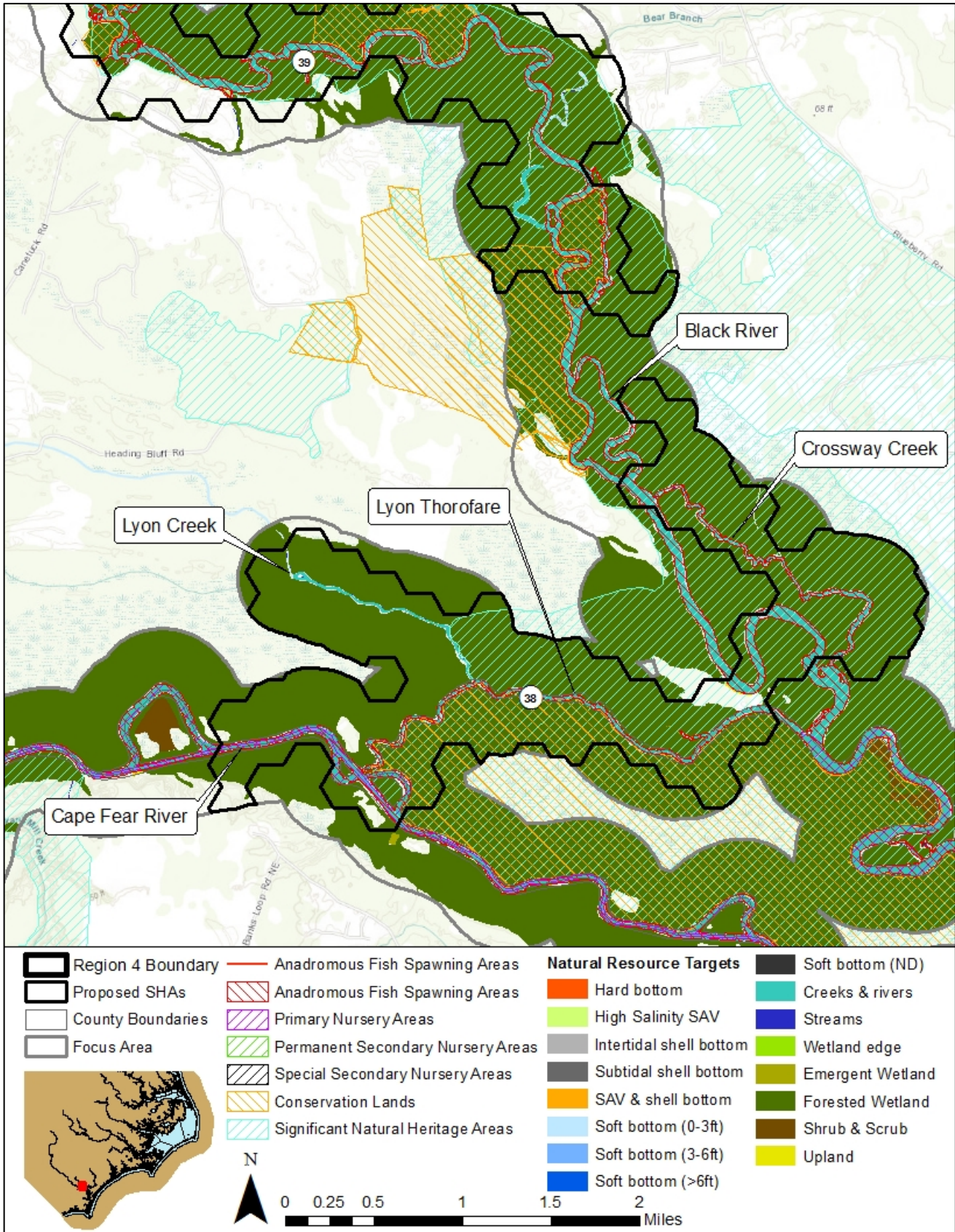
Map 27. Draft Strategic Habitat Area (SHA) nominations #35 – Northeast Cape Fear River, Ashes Creeks and #36 – Northeast Cape Fear River, Watermelon Run.

Region 4 Strategic Habitat Area Draft Report



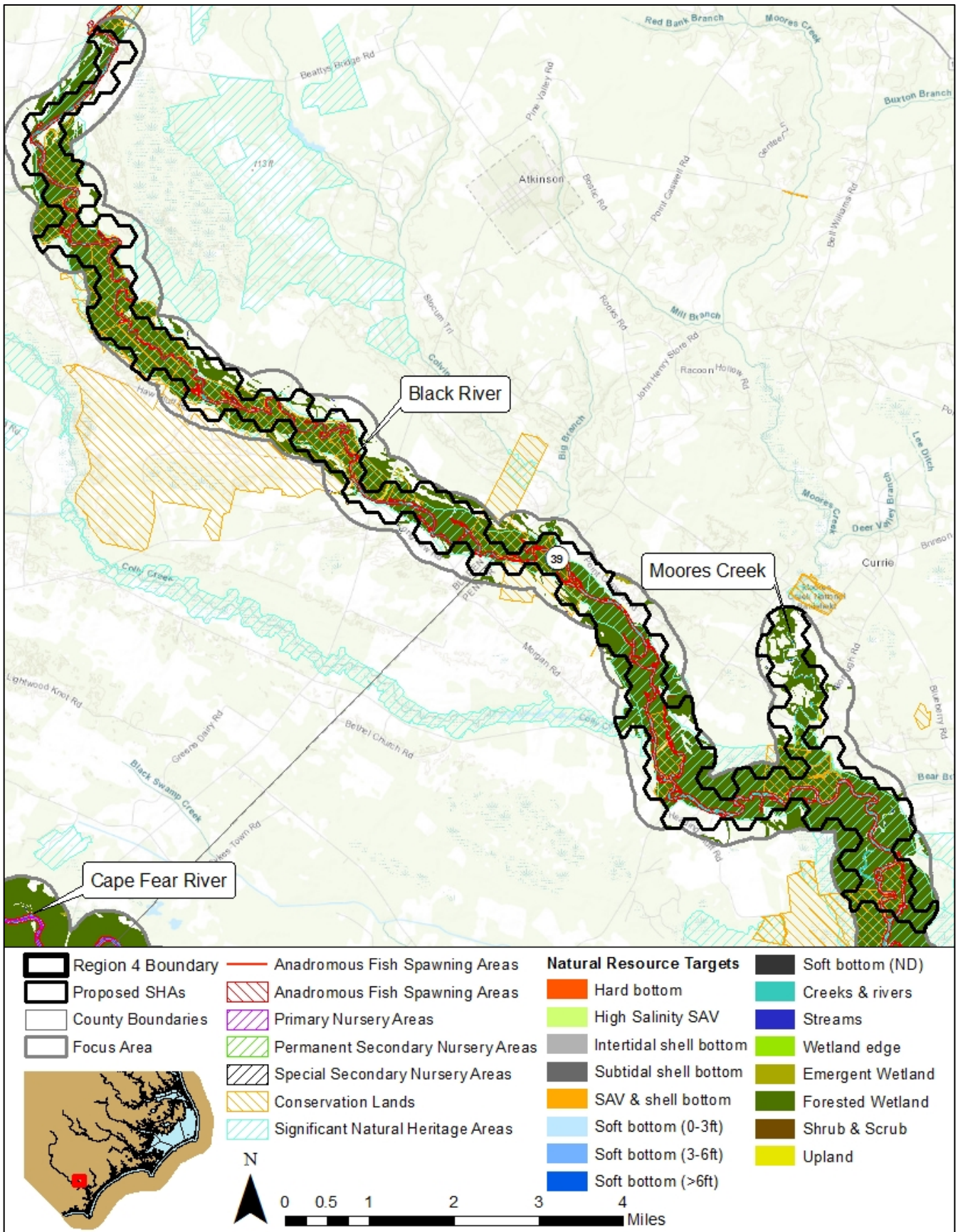
Map 28. Draft Strategic Habitat Area (SHA) nominations #37 – Northeast Cape Fear River, Duplin/Pender County line and part of #36 – Northeast Cape Fear River, Watermelon Run.

Region 4 Strategic Habitat Area Draft Report



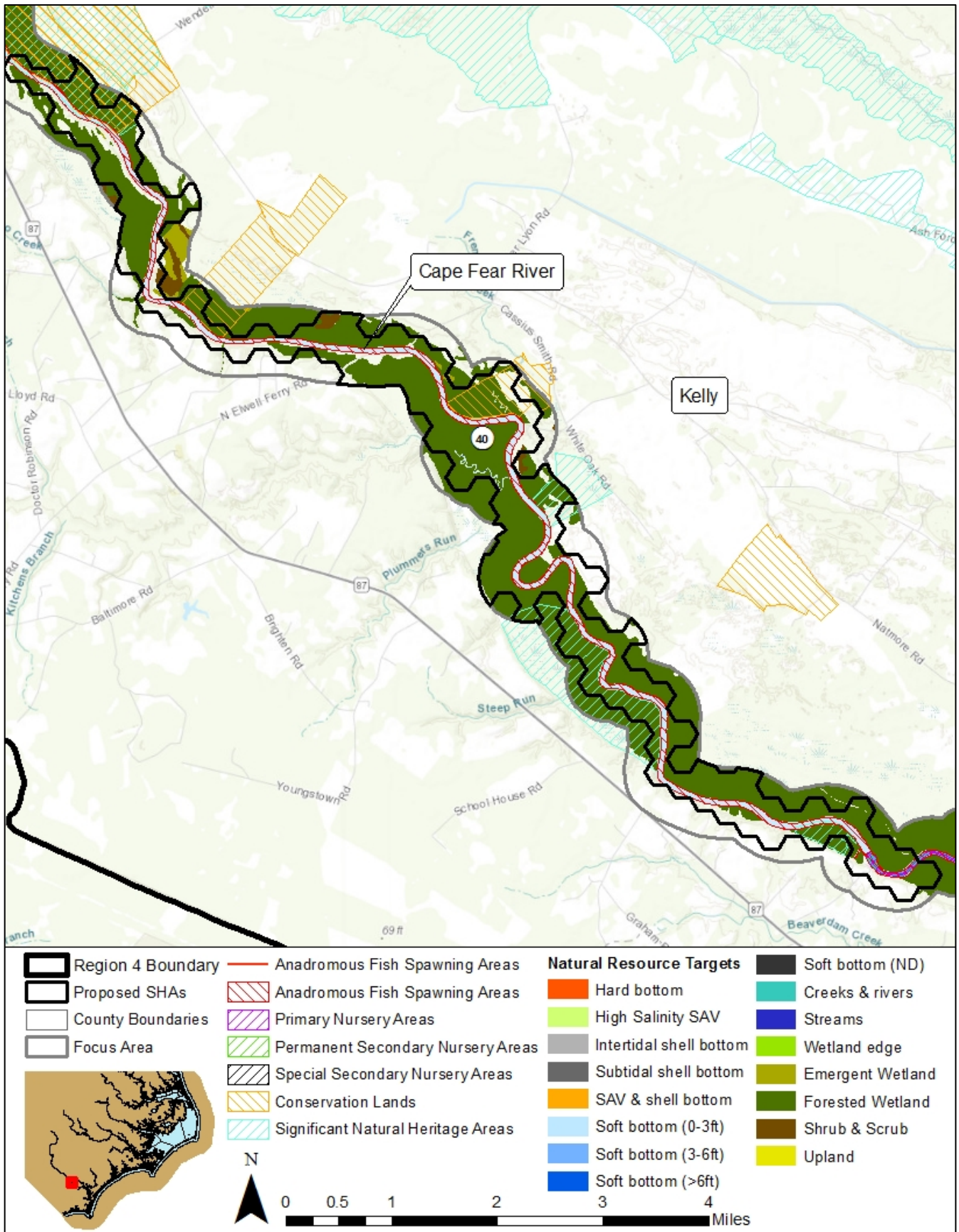
Map 29. Draft Strategic Habitat Area (SHA) nominations #38 – Cape Fear River lowlands, Lyon and Crossway creeks and Lyon Thorofare and part of #39- Black River, Moores Creek..

Region 4 Strategic Habitat Area Draft Report



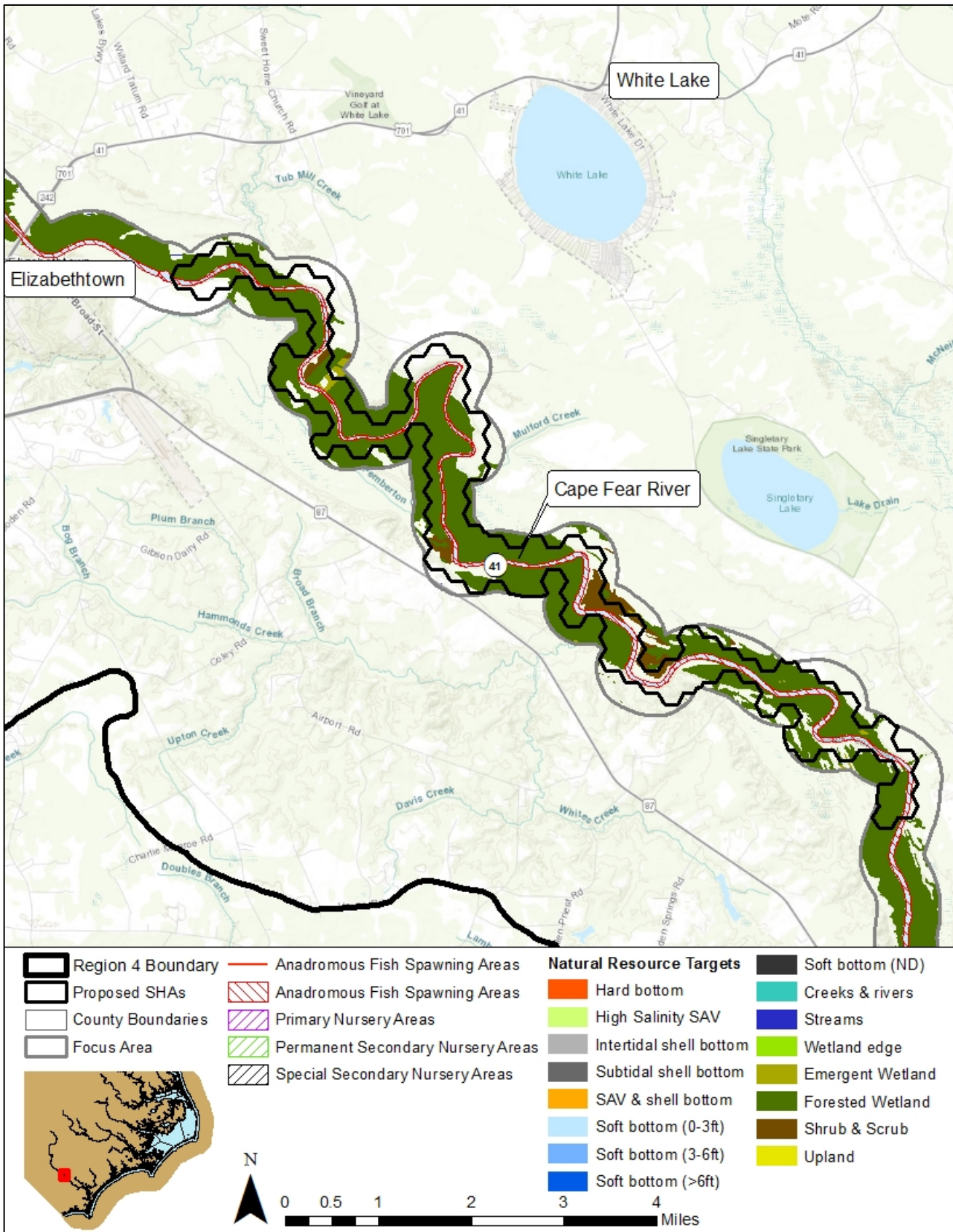
Map 30. Draft Strategic Habitat Area (SHA) nomination #39 – Black River, Moores Creek.

Region 4 Strategic Habitat Area Draft Report



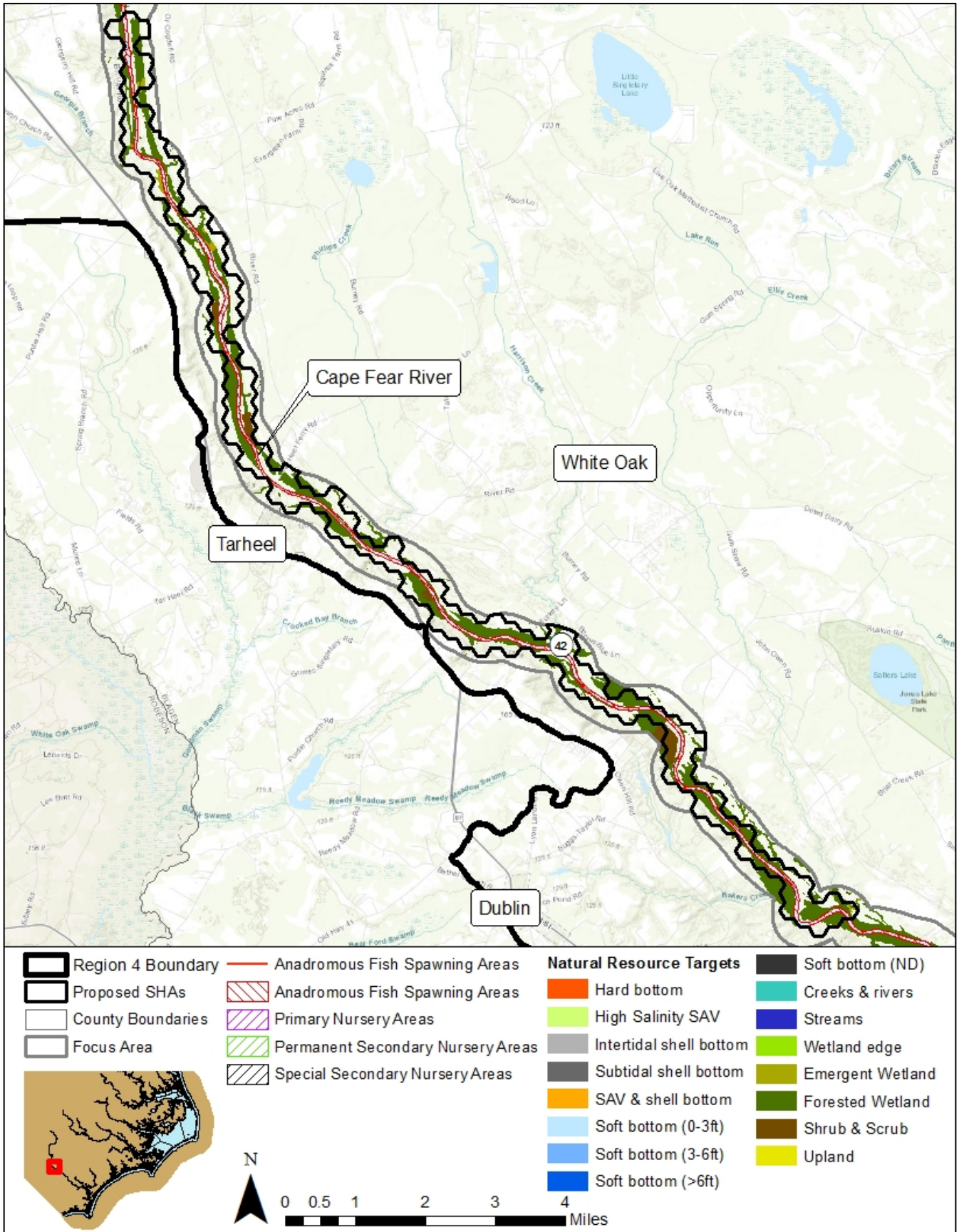
Map 31. Draft Strategic Habitat Area (SHA) nomination #40 – Cape Fear River near Kelly.

Region 4 Strategic Habitat Area Draft Report



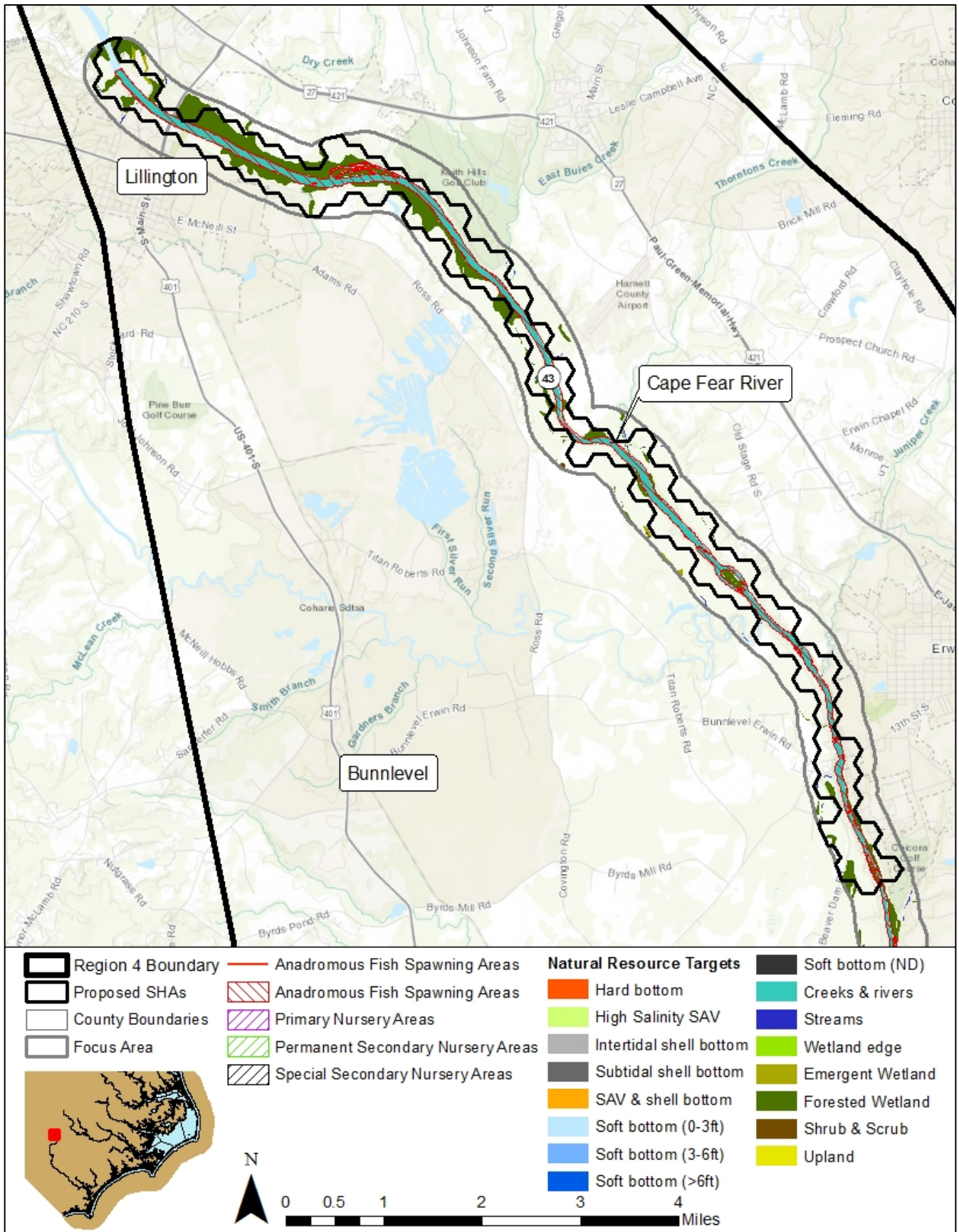
Map 32. Draft Strategic Habitat Area (SHA) nomination #41 – Cape Fear River below Elizabethtown.

Region 4 Strategic Habitat Area Draft Report



Map 33. Draft Strategic Habitat Area (SHA) nomination #42 – Cape Fear River at Tarheel.

Region 4 Strategic Habitat Area Draft Report



Map 34. Draft Strategic Habitat Area (SHA) nomination #43 – Cape Fear River at Lillington.

7 LITERATURE CITED

- Ball, I. R., and H. P. Possingham. 2000. MARXAN (V1.8.2): Marine reserve design using spatially explicit annealing, a manual.
- Cape Fear Arch Conservation Collaboration. 2015. Cape Fear Arch Conservation Plan. 32 p.
- Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Department of Interior Fish and Wildlife Service, Washington, D.C.
- Deaton, A., S. Chappell, and K. West. 2006. Process for identification of Strategic Habitat Areas in coastal North Carolina. North Carolina Division of Marine Fisheries, Morehead City, NC.
- Deaton, A., W. Chappell, K. Hart, J. O'Neal, and B. Boutin. 2010. North Carolina Coastal Habitat Protection Plan. Pages 639 *in* N. D. o. E. a. N. Resources, editor. NC Department of Environment and Natural Resources, Division of Marine Fisheries, Morehead City, North Carolina.
- DEQ (North Carolina Department of Environmental Quality). 2016. North Carolina Coastal Habitat Protection Plan. NC Department of Environmental Quality, Raleigh, NC.
- DMF (North Carolina Division of Marine Fisheries). 2017. North Carolina hard clam fishery management plan, amendment 2. NC Division of Marine Fisheries, Morehead City, NC.
- DMF (North Carolina Division of Marine Fisheries). 2014. Strategic Habitat Area nominations for Region 3: the White Oak River Basin in North Carolina. North Carolina Division of Marine Fisheries, Morehead City, North Carolina.
- DMF (North Carolina Division of Marine Fisheries). 2011. Strategic Habitat Area nominations for Region 2: the Pamlico Sound System in North Carolina. North Carolina Division of Marine Fisheries, Morehead City, North Carolina.
- EWG (Environmental Working Group) and Waterkeeper Alliance. 2016. Exposing fields of filth. (<http://www.ewg.org/research/exposing-fields-filth#.WdVEBmd7I6t>)
- Geis, S., and B. Bendell. 2008. Charting the estuarine environment: methodology spatially delineating a contiguous, estuarine shoreline of North Carolina. North Carolina Division of Coastal Management, Raleigh, NC.
- Geselbracht, L., R. Torres, G. S. Cumming, D. Dorfman, M. Beck, and D. Shaw. 2009. Identification of a spatially efficient portfolio of priority conservation sites in marine and estuarine areas of Florida. *Aquatic Conservation-Marine and Freshwater Ecosystems* 19(4):408-420.
- Hoenke, K.M, Kumar, M, and Batt, L. 2014. A GIS based approach for prioritizing dams for potential removal. *Ecological Engineering* 64:27-36.

Region 4 Strategic Habitat Area Draft Report

- Manley, B.D. 2016. Oyster reef mapping of Masonboro Island Reserve. University of North Carolina - Wilmington, NC.
- McVerry, K. 2012. North Carolina estuarine shoreline mapping project: statewide and county statistics. North Carolina Division of Coastal Management, Morehead City, North Carolina.
- Peterson, C. H., H. C. Summerson, and S. R. Fegley. 1987. Ecological consequences of mechanical harvesting of clams. *Fisheries Bulletin* 85(2):281-298.
- SEAMAP. 2001. Distribution of bottom habitats on the continental shelf from North Carolina through the Florida Keys, Washington, D.C.
- Smith, J. 2005. Identifying Strategic Marine Fisheries Habitat in North Carolina. Master's thesis. Duke University Nicholas School of Environment and Earth Sciences, Beaufort, NC.
- Stewart, R. R., T. Noyce, and H. P. Possingham. 2003. Opportunity cost of ad hoc marine reserve design decisions: an example from South Australia. *Marine Ecology Progress Series* 253:25-38.
- Street, M. W., A. S. Deaton, W. S. Chappell, and P. D. Mooreside. 2005. North Carolina Coastal Habitat Protection Plan. North Carolina Department of Environment and Natural Resources, Division of Marine Fisheries, Morehead City, NC.
- Uphoff, J. 2008. Identifying priority areas for protection and restoration: Chesapeake Bay striped bass spawning and larval nursery areas as a model. Maryland Department of Natural Resources, Fisheries Technical Report Series 52: 1-25.

8 APPENDIX A: NATURAL RESOURCE TARGETS AND CALCULATING TOTAL ALTERATION

Alteration scores are calculated for each hexagon and take into account the following factors:

1. **S**everity of an alteration factor/threat to each natural resource target (**S** rating).
2. **E**xtent that an alteration factor/threat affects each natural resource target (**E** rating)
3. **P**ortion of total natural resource targets in hexagon consisting of natural resource target X (**P** rating).

Severity (**S**) ratings in were based on the individual habitat ratings for each threat listed in the threats table of the Coastal Habitat Protection Plan (CHPP) (Street et al. 2005, p. 486) and approved by the Marine Fisheries Commission, Coastal Resources Commission, Environmental Management Commission, and N.C. Department of Environment and Natural Resources in 2004. This rating ranges from 0 (no impact) to 3 (high impact) and estimates the potential impact of each alteration factor on each natural resource target or habitat type in the assessment. For water-based alteration factors (i.e., trawling or dredging), the rating in the CHPP (Street et al. 2005, p. 486) was directly applied. For land-based alteration factors (i.e., developed land use or agricultural land cover), an adjusted **S** rating is applied to all hexagons within a U.S. Geological Survey-designated hydrologic unit (HU). This adjusted **S** rating scales the intensity of activity to the maximum occurring within the region. To do this, first the relative intensity of the alteration is computed for each HU within the region by dividing by the maximum value occurring in the region. These values are then multiplied by the severity ratings given in Table 3 of the main report to get the adjusted severity for each particular alteration factor and habitat combination in each hexagon.

An example is shown in Table A.1. For example, if the severity rating for agricultural land use on the submerged aquatic vegetation (SAV) natural resource target or habitat type is 2, and the hexagon lies within an HU with 40% cropland coverage and the maximum percent cover in the study area is 50% (resulting in an alteration intensity of 0.8), the resulting **S** rating for that hexagon would be 2 x 0.80 or 1.60 (Table A.1).

Table A.1. Example calculation of the adjusted **S** (severity) value for land-based factors.

HU	Hexagon	% Agricultural Land Use	Scaled Intensity	Adjusted S
1	A	0	0	2 x 0 or 0
1	B	0	0	2 x 0 or 0
1	C	0	0	2 x 0 or 0
2	D	40	0.8	2 x 0.8 or 1.60
3	E	50 (maximum)	1.0	2 x 1.0 or 2.0
3	F	50 (maximum)	1.0	2 x 1.0 or 2.0

Extent (**E**) ratings were determined by calculating the percent of the habitat within the hexagon that is affected by the factor. For water-based factors (i.e. dredging), the threat may only overlap

Region 4 Strategic Habitat Area Draft Report

with a portion of the habitat present. For land-based alteration factors calculated at the HU level, the **E** rating is simply 1 (complete overlap) for hexagons fully within a hydrologic unit.

Portion (**P**) ratings are calculated as the number of acres for a particular natural resource targets divided by the total acres for all natural resource targets present within the hexagon of interest.

The total alteration of each habitat in a hexagon with one alteration factor is determined by multiplying S, E and P ratings: **Habitat X weight rating = S x E x P** (Figure **B-1**).

For example: a hexagon has one alteration factor – dredged channels, and contains 21 acres (70%) soft bottom and 9 acres of SAV (Figure A.1, Table A.2). Within the 9 acres of SAV, trawling is allowed over 0% (E=0.0). The S rating of dredging on SAV is 2 (moderate) and the portion of SAV among targets in the hexagon is 30% or 0.3. The final rating for SAV would be S (2) x E (0.0) x P (0.7) = 0.0. Within the 21 acres of soft bottom, dredging is allowed over 20% (E = 0.2). The portion (P) of the soft bottom among targets in the hexagon is 70% or 0.7. The S rating for dredging on soft bottom is 1. The final rating for soft bottom is S(1) x E(0.2) x P(0.7) = 0.14. The total alteration of the hexagon would be 0.14 (0.00 + 0.14).

Figure A-1. Diagram depicting how alteration weightings are applied within a hexagon containing multiple targets. Hexagon A contains 70% soft bottom, 30% SAV, and a dredged channel through soft bottom.

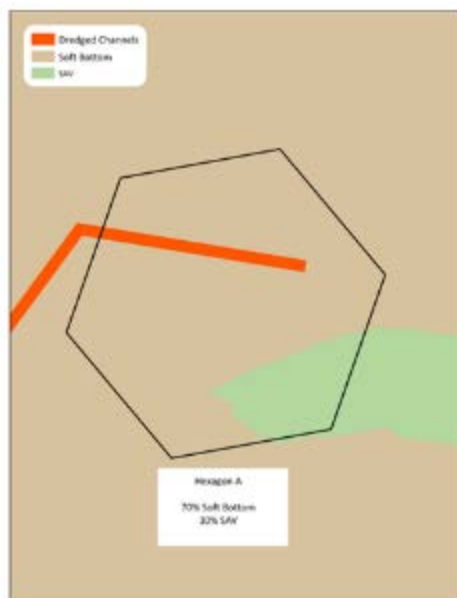


Table A.2. Calculation of hexagon alteration with only one alteration factor, but which occurs in some portion of two habitat types. S=severity, E=extent, P=portion

Hexagon	Natural Resource Target	Total area (acres)	S ^{dredging}	E ^{dredging}	P	SxExP	Total Weight
Hexagon A	SAV	9	2	0.0	0.30	0.00	0.14
	Soft Bottom	21	1	0.2	0.70	0.14	

Region 4 Strategic Habitat Area Draft Report

When more than one alteration factor is present within a hexagon, the weight for each habitat (all factors) is determined by summing the S x E of each factor and multiplying by the percent of that habitat comprising the targets (P). The habitat alterations are summed to obtain one total alteration value for each cell (Table A.3).

Table A.3. Example of calculations to determine total alteration level of one hexagon with multiple alterations and habitats occur.

Factors		S x E			
		Shallow Soft Bottom	Soft Bottom (ND)	Wetland	Upland
HU-based Alterations (land-based alterations)	Animal Operations	0	0	0	0
	Shellfish Closures	0.73	0.02	0	0
	Major NPDES	0	0	0	0
	Minor NPDES	0	0	0	0
	Agricultural Land Use	0.06	0.06	0.06	0.06
	Developed Land Use	0.54	0.54	0.54	0.54
Area-based Alterations (water-based alterations)	Drained	0	0	2	0
	Canals and Boat Basins	1	0.23	0	0
	Bridge Constrictions	0	0	0	0
	Impounded	0	0	0	0
	Docks & Bridges	0	0	0	0
	Dredged	0	0	0	0
	Marinas	1.45	0.041	0	0
	Clam Harvest	0	0	0	0
	Trawl Opened	0	0	0	0
	Bulkhead	0	0	0	0
	Culvert	0	0	0	0
Riprap	0	0	0	0	
SUM		3.78	0.891	2.603	0.603
Fraction of Targets (P)		156.59 (0.07)	464.99 (0.21)	99.02 (0.045)	1495.81 (0.6748)
Sum x P		0.26	0.187	0.117	0.407
Total Alteration Score For Hexagon A					0.97

8.1 Processing Details

For the Region 4 analysis, the alteration calculations were completed using a combination of ArcGIS tools and R scripts. This approach was useful because it allowed the alteration scores to be quickly recalculated as changes were made throughout the SHA process. While the processing models and scripts are currently specific to the data found in this region, they could easily be adapted for the analyses in the following regions.

The process began by building a geodatabase of alteration data layers. Some manipulation was required to create the input layers for the alteration score. Tools were created using ArcGIS

Region 4 Strategic Habitat Area Draft Report

ModelBuilder with ArcGIS version 10.3. ModelBuilder allows the user to combine multiple tools and then execute them as a single process. The benefit to this approach was that it made the process transparent and easy to repeat.

The first step in creating the alteration score is to create the alterations habitat dataset. This is stored in the field ALT_HABITA in the following steps. Below is a table showing the relationship between NRT types for Region 4 and the habitat types for alteration.

Table A.4. Habitat categories used to apply unique alteration ratings.

Natural Resource Targets	Alteration Habitat Type	GIS Layer Type	Notes
Hard Bottom	Hard Bottom	Polygon	Selected post-analysis by SHA AC.
High Salinity SAV	SAV	Polygon	None within Region 4
Low Salinity SAV			
Intertidal Shell Bottom	Shell Bottom	Polygon	
Subtidal Shell Bottom			
SAV & Shell Bottom	SAV & Shell Bottom	Polygon	
Riverine Soft Bottom (0-3ft)	Creeks and Rivers	Polygon	
Riverine Soft Bottom (3-6ft)			
Riverine Soft Bottom (ND)			
Estuarine Soft Bottom (0-3ft)	Shallow Soft Bottom	Polygon	
Palustrine Soft Bottom (0-3ft)			
Marine Soft Bottom (0-3ft)			
Estuarine Soft Bottom (3-6ft)			
Palustrine Soft Bottom (3-6ft)			
Marine Soft Bottom (3-6ft)			
Estuarine Soft Bottom (>6ft)			
Marine Soft Bottom (>6ft)			
Marine Soft Bottom (ND)	Deep Soft Bottom	Polygon	
Estuarine Soft Bottom (ND)			
Palustrine Soft Bottom (ND)	Soft Bottom (ND)	Polygon	
Emergent Wetlands			
Forested Wetlands			
Scrub/Shrub Wetlands	Wetlands	Polygon	
Low Elevation Uplands			
Streams (low elevation)	Uplands	Polygon	
Wetland Shoreline/Edge			
	Streams	Polygon	
	Wetland Edge	Polygon	

It is assumed that a dataset of NRT habitat types has the ALT_HABITA field populated before

the alteration score calculations can begin. Begin by dissolving the Natural Resource Target data layers by the ALT_HABITA field to get a feature class of alteration habitats. The following describes the tools provided in the alterations toolbox. It is divided into three toolsets, which are numbered and in all caps below. Tool names are in bold, under the corresponding toolset.

8.2 Data Processing

These are miscellaneous tools that were used to create some of the inputs to alteration factors. They can be reused if needed but are provided more for convenience.

8.2.1 Aggregate point features by HU

Assigns the frequency of a point feature to the corresponding hydrologic unit in a polygon feature class of hydrologic units. Needs a HU feature class and the point feature to aggregate. This tool allows the user to choose the field or fields to aggregate. The output file contains the frequency of these fields and is named to match the names of the input fields the tool aggregates.

8.2.2 Aggregate marinas by HU

Counts the number of slips at marinas in each hydrologic unit and joins the result to a shapefile of hydrologic units. A marina is defined as a facility with greater than 10 slips.

8.2.3 Calculate marinas per shoreline

Calculates the ‘marinas per shoreline metric’ by calculating the number of slips per linear unit of shoreline for each hydrologic unit and joining it to the hydrologic unit feature class. This tool uses the results of the previous tool (Aggregate marinas by HU) as inputs. The output has the number of slips per meter of shoreline in a HU in the field ‘slips_per_m’.

8.3 Extent Calculations

These tools generate the extent files needed as the inputs for the R scripts. Outputs are saved as DBF tables and currently written to a folder called ‘data’. Field maps are given below for all of the output tables. Currently, they are organized by the aspect of habitat they affect; therefore, there is a separate tool for land-based alterations, physical conversions, and water-based alterations. This was done for Regions 3 and 4 because in Region 2, it was thought that the alteration scores were calculated the same way for each group of alterations. This ended up not being true. In future versions, it might make sense to rearrange these into linear and polygon extent calculations for the purposes of the alteration score calculation.

8.3.1 Land-based Extent (Hydrologic Unit-based Alteration Assessment)

This tool takes the land-based alterations that need to be joined to a hydrologic unit file for the purpose of analysis and creates a master table of alterations by hydrologic unit. The alteration factors that are assessed at the hydrologic unit level are (1) minor national pollutant discharge elimination systems, (2) animal operations, (3) agricultural land use, and (4) developed land use. The tool also creates a table giving the amount of each hydrologic unit in each hexagon; which is used to calculate the land-based alteration scores for hexagons that cross hydrologic unit

Region 4 Strategic Habitat Area Draft Report

boundaries.

INPUTS:

1. Each land-based alteration factor of interest, aggregated by the hydrologic unit. All of these are polygon feature classes.
2. Alteration habitats feature class
3. Hexagon boundaries, with a unique ID
4. Hydrologic unit boundaries with a unique ID

OUTPUTS:

1. **hu_alt_factors20170612.csv**: gives the amount of each alteration factor present by hydrologic unit

Field Name	Description
HU_12	USGS 12-digit hydrologic unit code.
hu_area	Area of hydrologic unit measures in square meters.
maj_NPDES	Number of major NPDES sites per hydrologic unit.
min_NPDES	Number of minor NPDES sites per hydrologic unit.
Cat_Swine_anops	Number of cattle and swine operations per hydrologic unit.
Poultry_anops	Number of poultry operations per hydrologic unit.
ag_use	Relativized proportion of agricultural land use per hydrologic unit.
dev_use	Relativized proportion of developed land per hydrologic unit.

2. **hu_by_hex20170612.csv**: calculates the areas of each hydrologic unit present within a given hexagon assessment unit (for all hexagon assessment units) and the max area of the hydrologic unit in each hexagon assessment unit. This is used to calculate scores for hexagons that cross hydrologic unit boundaries.

Field Name	Description
Unique_ID	Hexagon assessment unit unique identifier.
HU_12	USGS 12-digit hydrologic unit code.
hu_area	Total area of hydrologic unit measured in square meters.
hex_area	Area of hydrologic unit within each hexagon unit measured in square
MAX_HEX_AR	The maximum area of a given hydrologic unit within a single hexagon

3. **shellfish_by_hex20170612.dbf**: gives the area of each hexagon that is comprised of closed shellfish waters and the habitats that the closed areas intersect.

Field Name	Description
Unique_ID	Hexagon assessment unit unique identifier.
ALT_HABITA	Habitat type affected by alteration.
shell_area	Area, measured in square meters, of closed shellfish areas that intersect each

8.3.2 Water-based extent

This tool creates the habitat per hexagon and lines per hexagon tables that are used in all of the following R scripts.

INPUTS:

1. Polygon feature classes of the areas affected by water-based alteration factors:
 - a. Drained wetland areas
 - b. Dredged areas
 - c. Impounded areas
 - d. Canals and boat basins
 - e. Bridge constrictions
 - f. Docks and bridges
 - g. Trawling
 - h. Marinas assessed by shellfish growing areas (SGAs)
 - i. Clam harvesting areas
 - j. Seawalls
 - k. Riprap
 - l. Ditched areas
 - m. Culvert obstructed areas
 - n. Shellfish closures
2. Alteration habitats polygon feature classes
3. Hexagon assessment unit feature class

OUTPUTS:

1. **hab_alt_by_hex20170612.csv** - Each line represents a unique combination of hexagon assessment unit, habitat type, and alteration factor type. The output is a table that gives presence (1) or absence (0) of each alteration factor for each area described in the table. The field alt_area gives the area of each overlapping feature.

Field Name	Description
ALT_HABITA	Habitat type for alteration.
canal_bb	Identifies the alteration present. One (1) for presence and zero (0) for absence.
brdge_cons	
impounded	
docks_br	
dredged	
drained	
mar_SGA	
clam_harv	
culverts	
trawl_perm	
Unique_ID	

Region 4 Strategic Habitat Area Draft Report

alt_area	Area of alteration factor and habitat overlap, measured in square meters.
----------	---

2. **lines by hex table20170612.csv** – gives a list of the linear feature types (wetland shoreline/edge, streams) found in each hexagon and the length of each feature within the hexagon, measured in meters.

Field Name	Description
Unique_ID	Hexagon assessment unit unique identifier.
ALT_HABITA	Linear habitat type for alteration.
length_new	Length, measured in meters, of each habitat type within each hexagon

3. **lines by ditch by hex20170612.csv** – Gives the proportion of linear habitat affected by ditching in each hexagon.

Field Name	Description
Unique_ID	Hexagon assessment unit unique identifier.
ALT_HABITA	Habitat type for alteration (linear features)
length_new	Length of habitat within hexagon unit, in meters.
ditched	Presence (1) or absence (0) of ditching.
ditch_le	Length of ditched segments, measured in meters.
prop_ditch	Proportion of habitat type, per hexagon, that is affected by ditching.

4. **seawalls by hex20170612.csv** – Gives the amount of seawalls in each hexagon.

Field Name	Description
ALT_HABITA	Linear alteration type.
Unique_ID	Hexagon assessment unit unique identifier.
wall_len	Length of the bulkhead (seawall), in meters.

5. **riprap by hex20170612.csv** – Gives the length of riprap in each hexagon and its associated linear habitat type affected.

Field Name	Description
Unique_ID	Hexagon assessment unit unique identifier.
ALT_HABITA	Linear habitat type.
riprap_le	Length of riprap affecting habitat within each hexagon, measured in

6. **streams by culvert by hex20170612.csv** – Gives the total length of streams within hexagons affected by culverts.

Field Name	Description
Unique_ID	Hexagon assessment unit unique identifier.
ALT_HABITA	Habitat type for alteration (only stream habitat type).

Region 4 Strategic Habitat Area Draft Report

strm_leng	Length of stream habitat type per hexagon, measured in meters.
-----------	--

7. shoreline by hex20170612.csv – lists the shorelines found in each hexagon

Field Name	Description
ALT_HABITA	Linear alteration shoreline habitat type (wetland edge or non-wetland)
Unique_ID	Hexagon assessment unit unique identifier.
shoreline	Length of shoreline in hexagon assessment unit, in meters.

8. hab by hex20170612.csv – Gives a table of habitat types and area (in square meters) within each hexagon assessment unit.

Field Name	Description
ALT_HABITA	Habitat type for alteration.
Unique_ID	Hexagon assessment unit unique identifier.
hab_area	Area of each habitat type within hexagon assessment unit.

8.3.3 R Tools for use in calculating alterations

These tools take the outputs of the previous steps (the steps performed in ArcGIS) and use them to combine the severity, extent, and portion into a complete alteration score for each hexagon. There are three separate scripts to calculate the severity by extent ratings: one each for the physical, water-based, and land-based alteration groups. The outputs from these scripts are then combined into the total alteration score in one final script (alteration scores.r). Input and output file locations are in the top portions of all scripts and can be easily changed to match where the data is stored. All scripts require a csv file of the severity ratings in order to calculate the severities for each alteration/habitat combination in each hexagon. This file gives the severity (0-3) for each alteration/habitat combination. Alterations and habitats that do not overlap are assigned a value of 0 for the purpose of calculating the scores. Column names are alteration factors and row names are alteration habitat types.

Names are case sensitive and must match those that are in the output tables from the Arc scripts. Columns do not have to be in any particular order; the scripts will select the correct ones.

Each script file has two sections: a top section labeled “INPUTS” and a lower portion labeled “CALCULATIONS. In order to use these for different files, it will be necessary to open them and change the directories listed under the inputs section to match the correct file locations. The working directory needs to be set to the alteration folder. All files except for the csv of habitat severities are outputs of the ArcGIS tools described in the previous sections. Each input section contains a list of the alterations included in each script. In order to add other alterations in future analyses, these lists would need to be amended with the field names of the new alterations. Corresponding columns would need to be added to the alterations by habitat tables giving the extent of each alteration in each hydrologic unit or hexagon and consistent with their current format. In addition, the severity for new alterations would need to be added to the alteration severity file.

8.3.3.1 Water Based Severity Extent Calculation.r

Input files:

1. Table listing the overlapping area-based alterations and habitat combinations per hexagon with the following fields (**hab alt by hex20170612.csv**):
 - a. **ALT HABITA** – alteration habitat type, must be one of the following: "*creeks and rivers*", "*deep soft bottom*", "*shallow soft bottom*", "*SAV and shell bottom*", "*SAV*", "*shell bottom*", "*soft bottom (ND)*", "*upland*", "*wetland*".
 - b. **Unique ID** – unique hexagon assessment unit identifier.
 - c. **alt area** – area of habitat intersection by the alteration factor in each hexagon.
 - d. Fields for any polygon based alterations considered. Currently, they include the following: "*canal_bb*", "*brdge_cons*", "*impounded*", "*docks_br*", "*dredged*", "*drained*", "*marinas*", "*major_npdes*", "*trawl*"
 - i. Each row gives the presence/absence (1/0) of one specific factor for each hexagon.
 - ii. Each hexagon has multiple rows, one for each habitat type x factor combination.
2. Table listing the overlapping line-based alterations and linear habitat combinations per hexagon with the following fields (**alt lines by hex20170612.csv**):
 - a. **ALT HABITA** – alteration habitat type, must be one of the following: "*Stream*" and "*Wetland Edge*".
 - b. **Unique ID** – unique hexagon assessment unit identifier.
 - c. **alt length** – area of habitat intersection by the alteration factor in each hexagon.
 - d. Fields for any linear-based alterations considered. Currently, they include the following: "*canal_bb*", "*brdge_cons*", "*impounded*", "*docks_br*", "*dredged*", "*drained*", "*marinas*", "*major_npdes*", "*trawl*".
 - i. Each row gives the presence/absence (1/0) of one specific factor for each hexagon.
 - ii. Each hexagon has multiple rows, one for each habitat type x factor combination.
3. Table giving amount of each polygon habitat in each hexagon with the following fields (**hab by hex20170612.csv**):
 - a. **ALT HABITA** – alteration habitat type.
 - b. **Unique ID** – unique hexagon identifier.
 - c. **hab area** – total area of particular habitat type within a hexagon.
4. Table giving amount of each linear habitat in each hexagon with the following fields (**lines by hex20170612.csv**):
 - a. **ALT HABITA** – alteration habitat type.
 - b. **Unique ID** – unique hexagon identifier.
 - c. **length new** – total area of particular habitat type within a hexagon.
5. Alteration severity table (**alteration_factor_weighting_water20170515.csv**):
 - a. **ALT HABITA** – habitat types (rows).
 - b. Alteration list – must match names exactly as they appear in the R alteration file (columns).
6. Seawalls by hexagon (**seawalls by hex20170612.csv**):
 - a. **ALT HABITA** –linear habitat types for alteration (wetland and non-wetland shoreline).
 - b. **Unique ID** – hexagon assessment unit unique identifier.

Region 4 Strategic Habitat Area Draft Report

- c. **wall_len** – length of seawall in hexagon.
7. Length of streams with an amount ditched attribute (lines by ditched by hex20170612.csv). Necessary attributes:
 - a. **Unique ID** – hexagon assessment unit unique identifier.
 - b. **ALT HABITA** – linear habitat type for alteration (streams only).
 - c. **ditch le** – total length of ditched feature within each hexagon, measured in meters.
 - d. **prop ditched** – proportion of total stream length that is ditched.
 - e. **length new** – total amount of linear habitat type within each hexagon, measured in meters.
8. Length of streams with an attribute signifying the amount affected by culverts (streams by culvert by hex20170612.csv). Necessary attributes:
 - a. **Unique ID** – hexagon assessment unit unique identifier.
 - b. **ALT HABITA** – habitat type for alteration (streams only).
 - c. **culv le** – length of culvert-affected features, measured in meters.
9. Length of shoreline affected by riprap (riprap by hex20170612.csv). Necessary attributes:
 - a. **Unique ID** – hexagon assessment unit unique identifier.
 - b. **ALT HABITA** – habitat type for alteration (non-wetland shoreline only).
 - c. **riprap le** – length of riprap-affected shoreline, measured in meters.

Output files:

1. Severity multiplied by extent for all water based factors for each hexagon, in dbf and csv form:
 - a. **WBSE_20170612.csv**
 - b. **WBSE_20170612.dbf**

8.3.3.2 Land Based Severity Extent Calculations.r

Input files:

1. Table of factors for each hydrologic unit (hu alt factors table20170612.dbf):
 - a. **HU_12** – US Geological survey hydrologic unit code.
 - b. **hu_area** – area of hydrologic unit in meters squared.
 - c. *Scaled* values for the affected amount for each hydrologic unit:
 - i. **min_npdcs** – number of sites per hydrologic unit (includes aquaculture facilities) divided by the maximum number of sites in a hydrologic unit to create a scaled ratio.
 - ii. **Cat_Swine_anops** – Number of cattle and swine operations per hydrologic unit divided by the maximum number of sites in a hydrologic unit to create a scaled ratio.
 - iii. **Poultry_anops** – Number of poultry operations per hydrologic unit divided by the maximum number of sites in a hydrologic unit to create a scaled ratio.
 - iv. **dev_use** – proportion of area of each hydrologic unit in the developed land use class.
 - v. **ag_use** – proportion of area of each hydrologic unit in the agricultural land use class.

Region 4 Strategic Habitat Area Draft Report

2. Table giving amount of each polygon habitat in each hexagon (**hab by hex20170612.csv**).
The necessary attributes include:
 - a. **ALT HABITA** – polygon habitat type for alteration.
 - b. **Unique ID** – hexagon assessment unit unique identifier.
 - c. **hab_area** – area of habitat in meters squared.
3. Table identifying which hydrologic unit a hexagon is in (if a hexagon has more than one hydrologic unit it will have more than one line) (**hu by hex20170612.csv**):
 - a. **Unique ID** – hexagon assessment unit unique identifier.
 - b. **HU 12** – US Geological Survey hydrologic unit code.
 - c. **hu_area** – area of each hydrologic unit.
 - d. **hex_area** – area of each hexagon assessment unit unique identifier.
 - e. **FREQUENCY**- number of HU's a hexagon intersects.
 - f. **MAX HEX AR** – maximum area of hexagon in one hydrologic unit.
4. Alteration severity table (**alteration factor weighting land20170515.csv**)
 - a. **ALT HABITA** – habitat types (rows).
 - b. Alteration list – must match names exactly as they appear in the R alteration file (columns).
5. Intersection of closed shellfish areas with habitats in the study area (**shellfish by hex20170612.csv**). Necessary attributes.
 - a. **ALT HABITA** – alteration habitat type.
 - b. **Unique ID** – hexagon assessment unit unique identifier.
 - c. **shell_area** – area of overlap between closed shellfish areas and alteration habitat types.

Output file:

1. **lbse_20170612.csv**
2. **lbse_20170612.dbf**

8.3.3.3 Alteration Scores.r

Combines the outputs of the previous scripts into a final alteration score file.

Inputs:

1. Severity by extent for water-based alterations (**wbse 20170612.csv**)
2. Severity by extent for land-based alterations (**lbse 20170612.csv**).
Note: this is already aggregated so that there's one row per hexagon whereas the other severity by extent file is not.
3. Table giving amount of each polygon habitat in each hexagon (**hab by hex table no marine.csv**)
 - a. **ALT_HABITA** – alteration habitat type
 - b. **Unique_ID** – hexagon assessment unit unique identifier
 - c. **hab_area** – area of habitat features, measured in meters squared
4. Length of lines in each hexagon (**lines by hex table.csv**)
 - a. **ALT_HABITA** – linear habitat type for alteration
 - b. **Unique_ID** – hexagon assessment unit unique identifier

Region 4 Strategic Habitat Area Draft Report

- c. **length_new** – length of feature, in meters

Outputs:

1. **AltScore by Hex20170613.csv** - combined alteration scores for all hexagons. Attributes:
 - a. **ID** – hexagon assessment unit unique identifier.
 - b. **R4 alt score** – alteration score
2. **hab scores20170612.csv** – alteration scores broken down by habitat type per hexagon. One line per hexagon gives the severity * extent * portion for each habitat type in each hexagon.
3. **ind scores 20170612.csv** - alteration scores broken down by alteration factor by hexagon. One line per hexagon gives the severity * extent * portion for each alteration factor for each hexagon.

9 APPENDIX B: PREPARING THE MARXAN FILES

The Marxan documentation and good practices handbook are both comprehensive and can assist in designing and carrying out an analysis. As the documentation is quite thorough, the intent of this appendix is to give specific details about this analysis and not a complete set of instructions for using Marxan. For this analysis, the program was used in its stand-alone form and the input files prepared using ArcGIS, Excel and R. User interfaces such as Zonae Cogito (Watts et al.) are available for users that are less familiar with ArcGIS.

Marxan version 2.4.3 was used for this analysis. There is currently no official user’s manual for this version and some differences exist between it and the previous versions. The accompanying README text file explains the major changes. The biggest difference is in the format of the species vs. planning unit file and is described below. Formatting of the input files seems consistent with the formats described in the Marxan with zones handbook (Watts et al. 2008), which was used to cross-reference formatting questions.

Marxan requires four data files and an input file in order to run. They are all text files (either tab or comma delimited) that have been renamed with the extension .dat. The file names can be changed but they must have the correct extension for Marxan to work properly. There are a specific set of column names that are required for each file. They must be present and match the descriptions given in the handbook in order for Marxan to read the input files.

9.1 Species File (spec.dat)

This contains information on all conservation features in the analysis. It assigns each conservation feature (NRT) a unique numerical id, which is used to relate to the other Marxan input files, and gives the target amounts (or proportion) for each conservation feature in the final solution, and assigns each conservation feature a species protection factor. In addition, it can contain a name for each conservation feature. For Region 4, this was made in Excel and exported to a csv.

Example species file:

id	target	name	spf
1	0	Emergent_wetland	100
2	2796820	Est_soft_bottom_deep	100
3	14916712	Est_soft_bottom_shallow	100
4	2838143	Est_soft_bottom_mid	100
5	0	Est_soft_bottom_ND	100
6	71188072	Forested_wet	100

9.2 Planning Units File (pu.dat)

This is a list giving the planning units in the study area, their cost, and their status. Alteration score was used as the cost. We assigned planning units defined as inlets to have a status of ‘2’, which means they must be included in the final solution. Other options for status are to include a planning unit in the initial solution, or to exclude a planning unit from the final solution. This was created in ArcGIS by joining the alteration score to the planning unit shapefile and exported to a csv.

Example planning unit file:

id	cost	status
1	2.000000	0
2	5.490000	0
3	2.000000	0
4	2.000000	0
5	2.000000	0
6	1.000000	0
7	1.900000	0
9	1.000000	0
10	1.000000	0

9.3 Boundary Tile (bound.dat)

The boundary file gives the length of the boundary between adjacent files. It is in the format of id1, id2, and amount. For the Region 4 analysis it was created in ArcGIS, using the tool ‘Make Boundary file’ in the SHA tools toolbox. This tool requires a layer file of the planning units as an input. The input layer file must have a field called ‘MarxID’ and the workspace should be set to the default geodatabase. The tool outputs a DBF file, which can be converted to a csv using Excel.

Example boundary file:

id1	id2	boundary
1	14650	225.000073
1	14651	225.000000
1	14861	225.000000
2	9281	225.000000
2	9339	225.000000
2	9340	224.999998
3	7745	225.000000
3	8011	225.000000

9.4 Planning Units vs. Species File (puvspr.dat)

This file gives the amount of each conservation feature in each planning unit. Marxan version 2.4.3 differs from previous Marxan in that it will only read the long format, where each combination of planning unit and conservation feature is in a separate row. Previous versions of Marxan were configured to accept this table in the wide format, where each planning unit was a row and the conservation features were the columns. The Marxan software comes with a utility (convert_mtx.exe) to convert records from the long to wide format and vice versa. The file needs to be ordered by the planning unit, and then species ID. This file was made in ArcGIS by intersecting the planning unit with the polygon habitat shapefiles (R4_NRTs). These three tables were exported as DBFs, concatenated and then sorted by planning unit and then species in Excel.

Example planning unit vs species file.

Region 4 Strategic Habitat Area Draft Report

Species	pu	amount
10	1	131527.61
3	2	13031.22
7	2	560.42
10	2	5995.63
11	2	16166.99
12	2	8248.68
13	2	7.25
25	2	13798

9.5 The Input File (input.dat)

Sets the Marxan specifications for the analysis. Marxan comes with an executable called InEdit.exe. that guides the user through all of the Marxan options and generates the input file.

9.6 Marxan Resources:

Watts, M. E., R.R. Stewart, D. Segan, L. Kircher: Using the Zonae Cogito Decision Support System, a Manual.

Ball, I. R., H. P. Possingham, and M. Watts. 2009. Marxan and relatives: software for spatial conservation prioritisation. Pages 185-195 in A. Moilanen, K. A. Wilson, and H. P. Possingham, editors. Spatial conservation prioritisation: quantitative methods and computational tools. Oxford University Press, Oxford, United Kingdom.

Ball, I.R., and H.P. Possingham, 2000. MARXAN (V1.8.2): Marine Reserve Design Using Spatially Explicit Annealing, a Manual.

Game, E.T. and H.S. Grantham, 2008. Marxan User Manual: For Marxan version 1.8.10. University of Queensland, St. Lucia, Queensland, Australia, and Pacific Marine Analysis and Research Association, Vancouver, British Columbia, Canada.

Watts, M.E., C.K. Klein, R. R. Stewart, I. R. Ball, and H. P. Possingham. 2008. Marxan with Zones (V1.0.1): Conservation Zoning using Spatially Explicit Annealing, a Manual.

10 APPENDIX C: DATA/INFORMATION DIRECTORY

Region 4 SHA Natural Resource Target and Alteration Factor GIS models and files:

See Appendix A: Natural Resource Targets and Calculating Total Alteration Section 8.1 Processing Details for further details.

S:\HABITAT\CHPP\SHA\Region 4\GIS\

Models\

1. SHA R4.tbx
2. Final Alteration Tools.tbx

Inputs\AlterationFactors\Finals

1. R4_Bridges.shp
2. R4_Bulkheads_RipRap_Final.shp
3. R4_CAFOSbyHUC.shp
4. R4_CAFOSbyHUC_Poultry.shp
5. R4_Canals_Boat_Basins.shp
6. R4_CCAP_2010_AgHUC_Final.shp
7. R4_CCAP_2010_DevHUC_Final.shp
8. R4_Culverts.shp
9. R4_Dams.shp
10. R4_Ditched_Final.shp
11. R4_DocksandPiers.shp
12. R4_DredgedChannels.shp
13. R4_Major_NPDES_HUC.shp
14. R4_Marinas_SGA_Closures.shp
15. R4_Mechanical_clam_harvesting_areas.shp
16. R4_Minor_NPDES_HUC.shp
17. R4_ProhibitedShellfishHarvest.shp
18. R4_Trawling_allowed

Inputs\Boundaries

1. Region4.shp
2. R4_USGS_HUCs
3. R4_trip_ticket_water_bodies.shp
4. R4_Hex20170615.shp
5. R4_A24k_jurisdictional_waters.shp
6. R4_500m_FocusArea.shp
7. R4_Hexagons225SL_FocusArea.shp

Inputs\NRTs\Finals

1. ALT_HABITA_Poly20170508.shp
2. NRT_by_Hex20170619.shp
3. R4_ContiguousWetlands_W_FA.shp

Region 4 Strategic Habitat Area Draft Report

4. R4_HardBottom_Final.shp
5. R4_NRTs_20170619.shp
6. R4_SAV_Final.shp
7. R4_SAV_ShellBottom_Final.shp
8. R4_ShellBottom_Final.shp
9. R4_Streams_Final.shp
10. R4_WetlandEdge_Final.shp
11. R4_WetlandEdge_w_FA.shp
12. StreamsUplandRiparian.shp

Region 4 SHA R script input/output files:

See Appendix A: Natural Resource Targets and Calculating Total Alteration Section 8.3 Extent Calculations for further details.

S:\HABITAT\CHPP\SHA\Region 4\GIS\Data

1. alt_lines_by_hex20170612.csv
2. alt_scores_20170612.csv
3. alteration_factor_weighting_land20170515.csv
4. alteration_factor_weighting_water20170515.csv
5. hab_alt_by_hex20170612.csv
6. hab_by_hex20170612.csv
7. hab_scores20170612.csv
8. hu_alt_factors_table20170508.csv
9. hu_by_hex20170612.csv
10. ind_scores_20170612.csv
11. LBSE_20170612.csv
12. lines_by_ditch_by_hex20170612.csv
13. lines_by_hex20170612.csv
14. NRT_by_hex20170613.csv
15. riprap_by_hex20170612.csv
16. seawalls_by_hex20170612.csv
17. shellfish_by_hex20170612.csv
18. shoreline_by_hex20170612.csv
19. streams_by_culvert_by_hex20170612.csv
20. WBSE_20170612.csv

Region 4 SHA R script files:

S:\HABITAT\CHPP\SHA\Region 4\GIS\R Scripts

1. alteration scores final_20170405.r
2. water based severity extent calculations_final.r
3. land based severity extent calculations_20170421.r
4. output_processing.r

Region 4 SHA Marxan files:

Region 4 Strategic Habitat Area Draft Report

See Section 9 Appendix B: Preparing the Marxan files for further details.

S:\HABITAT\CHPP\SHA\Region 4\GIS\Marxan2.4.3

1. Marxan.exe
2. Inedit.exe
3. Input.dat

\input

1. Bound.dat
2. Pu.dat
3. Puvspr.dat
4. Spec.dat

11 APPENDIX D: PUBLIC COMMENT

To be completed after public comment



ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

BRAXTON C. DAVIS
Director

MEMORANDUM

TO: Marine Fisheries Commission
Northern Regional Advisory Committee

FROM: Lee Paramore
Kathy Rawls
Division of Marine Fisheries, NCDEQ

DATE: Oct. 27, 2017

SUBJECT: Finfish Regional Advisory Committee Meeting

The Finfish Regional Advisory Committee met on Thursday, Oct. 27, 2017 at 6 p.m. at the Division of Marine Fisheries Central District Office at 5285 Highway 70 W, Morehead City. The following attended:

Advisers: Sammy Corbett (Chair), Sara Winslow, Ken Siegler, Melvin Shepard, Brent Fulcher, Scott Whitley, Ken Siegler, Thomas Brewer

Absent: Mike Wicker, David Clem, Charlie Renda, Jeff Buckel

Staff: Kathy Rawls, Steve Poland, Nancy Fish, Lee Paramore, Tina Moore, Michelle Duval Steve Anthony

Public: Cathy Fulcher

Sammy Corbett, serving as chair, called the meeting to order at 6:15 p.m.

APPROVAL OF AGENDA

Motion by Scott Whitley to approve agenda, seconded by Melvin Shepherd – motion carries 7-0.

APPROVAL OF MINUTES

Motion by Brent Fulcher to approve both sets of meeting minutes (one from April 7, 2016 and one from Jan. 17, 2017), seconded by Scott Whitley – motion carries 6-0 (one abstention).

ASMFC DRAFT INTERSTATE FISHERY MANAGEMENT PLAN FOR ATLANTIC MIGRATORY GROUP COBIA PRESENTATION

Division staff gave a presentation on the Interstate Fisheries Management Plan for Cobia. During the presentation, staff provided a summary of the plan development, the management



options selected by the plan development team, analysis of season and vessel limit options for North Carolina, and asked for input from the advisory committee on the season and vessel limit options to constrain harvest within the recreational harvest limits (RHL) as adopted by the Atlantic States Marine Fisheries Commission. The RHL allowed for the North Carolina recreational fishery is 236,316 pounds. Staff noted that the options provided as examples are for a starting point and all ideas to meet the RHL are on the table. Cobia is a pulse fishery and fish can arrive at specific regions at different times. These options, once adopted by the Marine Fisheries Commission, will be in place for the 2018 fishing season.

Several questions/comments were given related to the presentation: landings for 2015 and 2016 were requested and it was noted that the RHL was exceeded in each of the last three years (2015, 2016, as well as preliminary landings from 2017). One suggestion was to go to a lower bag limit for the whole year. Another suggestion was for regional management so fish do not get caught up in just one portion of state. It was asked if there was a payback for annual overages and staff indicated that there was not, but that the RHL would be adjusted each of the three-year intervals and regulations would be adjusted to bring states into compliance. Some committee members noted they had no confidence in Marine Recreational Information Program (MRIP) survey, but also noted that short of a census survey there is no way to eliminate the large uncertainty in the MRIP estimates. Consideration of a mandatory system to tag and record fish to get a better estimate of harvest was discussed. Commercial representatives felt overages in recreational Annual Catch Limit should be paid back in subsequent years, the same as commercial overages are treated. It was questioned if the management break at the Florida-Georgia line was correct and some felt it disadvantaged the northern stock on their Annual Catch Limit. Staff noted that a stock-ID workshop is upcoming and could adjust where the line is in the future, but for now we are set with the current Annual Catch Limit. The committee wanted to know if there were tagging programs for cobia in other states. Staff noted that Virginia requires a tag and reporting system to capture cobia. It was also reiterated that as a pulse fishery, MRIP has difficulty getting adequate samples to provide good precision on cobia landings. The committee felt if MRIP data continues to be used, there will continue to be problems with the lack of precision; therefore, tagging may be best option. The committee asked how the results of Virginia's catch cards landings compared to MRIP estimates, but the results are not currently known as Virginia's catch card system was just implemented this year. The committee agreed that counting fish through some tagging system was a good idea and would be much more accurate than current MRIP landing estimates. It was also noted that data from the assessment was old (2011) and it is unknown if we are overfishing.

There were questions on portion of catch that occurs north and south of Hatteras. Staff noted that it was difficult to tell, but that the data suggests that harvest is approximately 50 percent north of Carteret County and 50 percent south of Carteret County. Concern was expressed over the fishery closing before fish get to northern portion of state, particularly if data were more real time with a tag system. This was followed by a discussion about the logistics of regional management. It was noted that whatever suggestions were made for tags or regional management, the committee still needed to provide a recommendation to manage within the RHL.

PUBLIC COMMENT

No public comment was provided.



DISCUSSION ON SELECTING OPTION FOR RECCREATIONAL HARVEST LIMIT

Committee asked for a review of the motions passed by Northern and Southern advisory committees.

Northern was four fish for charters, two for private boats and one for shore based with no season. Southern was for two fish for charters and two for private boats and one per person for shore-based with no season.

Motion by Brent Fulcher: Allow up to four fish per day for charter provided four individuals are on the vessel and allow private boats to have two per day provided at least two individuals are on the vessel and keep shore-based possession at one fish per person per day with caveat that for all modes of fishing, fish must be tagged in a system to be developed by the Division of Marine Fisheries. If 50 percent of the RHL is not achieved by July 1, then the possession limit would increase to maximum allowed of six fish per vessel. Second by Scott Whitley. Motion carries 7-0

Discussion noted that motion as intended would not require season.

Staff noted that the state of North Carolina will have to investigate if it has the authority to require recreational anglers to report their catch. This may require statutory changes and rules to be developed.

MARINE FISHERIES COMMISSION UPDATE

An update was given on the August 2017 Marine Fisheries Commission meeting by division staff.

The meeting adjourned at 7:31 p.m.

- | | | | |
|-----|------------------|------------------|-------------------------|
| cc: | Catherine Blum | Jess Hawkins | Patricia Smith |
| | Braxton Davis | Dee Lupton | District Managers |
| | Anne Deaton | Nancy Marlette | Committee Staff Members |
| | Nancy Fish | Phillip Reynolds | Marine Patrol Captains |
| | Christine Goebel | Jerry Schill | Section Chiefs |





ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

BRAXTON C. DAVIS
Director

MEMORANDUM

TO: Marine Fisheries Commission
Northern Regional Advisory Committee

FROM: Michael Loeffler
Katy West
Division of Marine Fisheries, NCDEQ

DATE: October 25, 2017

SUBJECT: Northern Regional Advisory Committee Meeting

The Northern Regional Advisory Committee met on Tuesday, Oct. 24, 2017 at 6 p.m. at the Dare County Center, Commissioners Meeting Room at 950 Marshall C. Collins Drive, Manteo. The following attended:

Advisers: Sara Winslow (Chair), Everett Blake (Vice Chair), Riley Williams, Steve Bradshaw, Jim Rice, Michael Blanton, Raymond Pugh

Absent: Glenn Barnes, Dell Newman, Gilbert Tripp, Keith Bruno

Staff: Katy West, Kathy Rawls, Steve Poland, Nancy Fish, Michael Loeffler, Lee Paramore, Charlton Godwin, Brian Long, Daniel Ipock, William Boyd

Public: Bill Gorham, Tony Lombardi, Linda Lombardi, Kathy Sparrow, Greg Mayer

Sara Winslow, serving as chair, called the meeting to order at 6:15 p.m.

APPROVAL OF AGENDA

Motion by Everett Blake to approve agenda, seconded by Jim Rice – motion carries 7-0.

APPROVAL OF MINUTES

Motion by Riley Williams to approve both sets of meeting minutes (one from April 7, 2016 and one from January 17, 2017), seconded by Everette Blake – motion carries 7-0.

ASMFC DRAFT INTERSTATE FISHERY MANAGEMENT PLAN FOR ATLANTIC MIGRATORY GROUP COBIA PRESENTATION

Steve Poland, division cobia species lead reviewed the Atlantic States Marine Fisheries



Commission (ASMFC) recently-adopted Interstate Fisheries Management Plan for the Atlantic Fisheries Management Group Cobia. This plan complements the federal South Atlantic Fisheries Management Council's cobia regulations developed under Framework Amendment 4 to the Coastal Migratory Pelagics Fishery Management Plan. Staff provided a summary of the plan development, the cobia management options selected by the ASMFC South Atlantic Board, analysis of season and vessel limit recreational options for North Carolina and input from the committee on their preferred season and vessel limits to stay within the annual 236,316-pound recreational harvest limit (RHL) stipulated for North Carolina (38.5 percent of the coastwide RHL of 620,000 pounds set by the council).

The board-approved fishery management plan specified the recreational fishery will be managed with a one fish bag limit and minimum size limit of 36-inch fork length or total length equivalent. Vessel limits will be determined once individual states set their seasonal restrictions, but may not exceed six fish per vessel. Recreational harvest overages of specific state allocations will be evaluated over a three-year period. If overages occur, states will be required to adjust management measures to reduce harvest in the subsequent three-year period.

The commercial fishery will maintain the current management measures as implemented through the council plan and continue to be managed with a 33-inch fork length minimum size limit and two fish limit per person, with a six-fish maximum vessel limit. The federal annual catch limit of 50,000 pounds is allocated to the entire commercial fishery from Georgia through New York. The commercial Atlantic Migratory Group cobia fishery will close once the Annual Catch Limit is projected to be reached.

Several questions were asked related to the presentation: how do we go from allocation percent based on numbers of fish to the RHL in pounds (state number percent applied to the total coastwide RHL pounds), maturity schedule (L50 is ~29 inch), changes in recreational effort for 2016 and 2017, how are the Gulf states cobia fisheries managed (Gulf more of a year round fishery and they have not exceeded their annual harvest allotments), how did the redefined stock boundaries impact the annual catch limit for each region, was the assessment primarily based on Florida data (yes), what are the recreational estimates for the shore or man-made sectors, have we had a biomass estimate since 2011 (no), when does the new stock assessment start (2018), why was the recreational size limit fixed to 36 inches (above the L100 of 33 inches but breakeven point to minimize overage risk). The committee noted that numbers do not add up in Table 1 of the cobia memo. Staff clarified that shore-based is not the same as the man-made column and that shore-based was included in the "all modes combined" column.

PUBLIC COMMENT

Bill Gorham, recreational fisherman from Southern Shores, has been fighting this battle for three years. From day one, he said he was against unjust federal regulation that resulted in unjust allocations. The data is incomplete and resulted from one state and it was not North Carolina. The process is hard and it is extremely difficult to get people to show up for these meetings. There were 41 out of 44 comments against the complimentary plan and it was ignored and there were 200 comments last year supporting not moving forward with management. The catch is increasing which led to South Atlantic fishery Management Council Amendment 4, he was part of the advisory committee. Gorham said he wished we could go by numbers of fish and that fish are moving earlier than they previously had. Social media is a powerful tool, maybe we are just seeing more because of social media. He said the state was cut out of the fall season, that fish caught on the piers had to be released, as well as a lot of discard from the commercial fishery.



Getting involved with the ASMFC could have been good if eliminated the council plan and their Annual Catch Limit requirement. He suggested the season start mid or late April through mid-September. He pointed out that offshore stock is genetically the same but the management is not. He recommended to set a season where there would not be a closure and said that the worst case would be start May 1 with the highest boat limit possible. He advocated mirroring this years' regulation and that we should go to number of fish not weight. He closed by saying that even if it doesn't fit to do mid-April to end of September, restrictions should be fair and equitable for each sector.

DISCUSSION ON SELECTING OPTION FOR RECREATIONAL HARVEST LIMIT

Additional discussion concerning the management options included: Doesn't seem to be a problem for charters. Season of May 1 to Aug. 31 with four fish per vessel was what was in effect this year for charter and private and we went over. Private boat sector makes up over 70 percent of the recreational harvest. Would prefer no payback if we go over because we will not get extra if we are under. Can't track recreational catch in a timely manner to justify extending or closing the season from week to week. If we propose something that doesn't come out below the 236,316 pounds what happens? North Carolina should challenge the RHL (consider no closure with six fish charter and three fish private). Why did ASMFC select the 5 and 10-year average when the 3-year average seemed higher (48 percent), could do a five day per week instead of seven days per week. What is the commercial limit (set coastwide, not by state) and how much does North Carolina get? Why in the option d allocation chosen do North Carolina and Virginia have reduced landings while South Carolina and Georgia double? The 236,316 poundage is too low for North Carolina.

RECOMMENDATION TO THE MARINE FISHERIES COMMISSION FOR THE 2018 COBIA SEASON AND MANAGEMENT MEASURES

Motion by Jim Rice that the Northern Advisory Committee notes there is substantive uncertainty in the projected North Carolina recreational harvest estimates provided in the *table of Analysis of Recreational Management Option, 2011-2015* and that the selection of the 5-year/10-year average as the base timeframe for setting the 236,316 pounds annual North Carolina recreational harvest limit (RHL) disadvantaged our fisheries. Committee recommends for the charter sector no closed season and a four-fish vessel limit, and for the private vessel no closed season and a two-fish vessel limit. Projected harvest for this recommendation is 259,763 pounds which exceeds RHL by 23,447 pounds, however this is within the 35,726 pounds difference shown for 2017 between the projected harvest (297,240 pounds) and the preliminary harvest (261,514 pounds) for 2017. Seconded by Raymond Pugh Jr – motion carries 6-1.

MARINE FISHERIES COMMISSION UPDATE and OTHER BUSINESS

Katy West gave an update on the August 2017 Marine Fisheries Commission meeting, status of ongoing state fishery management plan-related activities (striped bass, southern flounder, blue crab, and shrimp), and highlighted the new division web stock status page. The committee inquired about the status of the shrimp petition, the makeup of the southern flounder advisory committee (no one from the Albemarle area), and the incidental takes of sturgeon and sea turtles. Riley Williams indicated he was resigning after many years on the committee. He thanked his



fellow committee members, felt he no longer had a real voice in management and it was time to leave.

The meeting adjourned at 8:47 p.m.

cc: Catherine Blum Jess Hawkins Patricia Smith
Braxton Davis Dee Lupton District Managers
Anne Deaton Nancy Marlette Committee Staff Members
Nancy Fish Phillip Reynolds Marine Patrol Captains
Christine Goebel Jerry Schill Section Chiefs





ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

BRAXTON C. DAVIS
Director

MEMORANDUM

TO: N.C. Marine Fisheries Commission
Southern Regional Advisory Committee

FROM: Trish Murphey
Chris Stewart
Division of Marine Fisheries, NCDEQ

DATE: Oct. 26, 2017

SUBJECT: Southern Regional Advisory Committee Meeting

The Southern Regional Advisory Committee met at 6 p.m. on Wed. Oct. 25, 2017 at the Wilmington Regional Office, 127 Cardinal Drive Extension, Wilmington. The following attended:

Advisers: Randy Proctor, Charles Griffin, Adam Tyler, Pam Morris, Chris Medlin, Tom Smith, Fred Scharf (phone), Chris Hunt

Absent: Ron McPherson, Ruth King, Phillip Smith

Staff: Trish Murphey, Chris Stewart, Kathy Rawls, Nancy Fish, Carter Witten, Ashley Bishop, Mclean Seward, Casey Knight, Steve Poland

Public: Dave Timpy, Bob Lorenz

Pam Morris, serving as chair, called the meeting to order.

APPROVAL OF THE AGENDA

Chris Medlin made a motion to approve the agenda. The motion was seconded by Adam Tyler. The motion passed unanimously.

APPROVAL OF MINUTES

Chris Medlin made a motion to approve the Apr. 6, 2016 and Jan. 17, 2017 minutes. The motion was seconded by Randy Proctor. The motion passed unanimously.

REVIEW OF MANAGEMENT MEASURES CONTAINED IN THE ATLANTIC STATES MARINE FISHERIES COMMISSION'S DRAFT INTERSTATE FISHERY MANAGEMENT PLAN FOR ATLANTIC MIGRATORY GROUP COBIA

Steve Poland, cobia species lead gave a presentation on the Interstate fisheries Management Plan for Cobia. He provided an overview of the plan and management measures approved by the Atlantic States Marine Fisheries Commission (ASMFC) Board on Thursday, Oct. 19, 2017. He described the season and vessel limit options which were similar to what had been provided to the N.C. Marine Fisheries Commission in February. During his presentation, Poland reviewed the time line for the development of the fishery management plan which began in August of 2016 through the final actions made in October of 2017. He explained that it is now up to the states to provide a plan for implementation to the ASMFC by Jan. 1, 2018 with the plan to be in effect April 1 for the 2018 fishing season.

Poland provided background concerning recent overages of the recreational annual catch limit which caused early closures of the recreational fishery in 2016 and 2017. Because of this issue and other issues, the South Atlantic Fishery Management Council asked the ASMFC to pursue an FMP. He provided objectives of the plan which is to complement the South Atlantic's plan, constrain the harvest to the Annual Catch Limit and provide the states with flexibility to manage the fishery.

Poland reviewed the management unit, stock status, South Atlantic Fishery Management Council's Framework Amendment 4, and the management options that were selected by the board which included commercial options and *De Minimis* options. Recreational options that were selected by the board were a 36-inch fork length minimum size limit and a bag limit of one fish per person. Vessel limits will be state specific daily limits not to exceed six fish per vessel. Harvest limits are defined in the plan for each state. For North Carolina, the recreational harvest soft target is 236,316 pounds. The average annual landings will be evaluated against the state-allocated quota over a three-year period with over harvest paid back in the following three-year period. Management measures may be relaxed if there is under harvest. Poland reviewed analyses of recreational management options between the charter sector and the private sector (shore/man-made and private boat).

Poland requested input from the advisory committee on the season and vessel limits to present to the Marine Fisheries Commission in November.

Morris asked what the Northern Advisory Committee recommended. Poland explained that their recommendation was for a four-fish limit on charter vessels and a two-fish limit for the private sector. They also recommended no season closure on either sector. This equated to approximately 260,000 pounds. The committee discussed the regional seasonality of the cobia fishery with the southern area seeing fish before the northern area. Chris Hunt described what he sees in the fishery in the southern area which has been low the last several years. He stated that there is an increase in the amount of tower boats and ladder boats in the recreational fishery over the past few years. He also discussed the Marine Recreational Information Program and asked how many intercepts there are. Poland discussed the problem of cobia being a pulse fishery and intercepts are limited. Fred Scharf pointed out to get meaningful reductions, the data indicates that vessel limits will need to be one or two fish per vessel or the season should be shortened. The group also discussed how often a charter boat catches six fish. Poland indicated that the average is one fish per trip. It was pointed out that six cobia is a lot of fish (meat). Chris Medlin

stated that he would prefer a longer season than six fish at once. Medlin also noted, that if you get one or two fish, you can target something else. If you have a closed season and you catch a cobia and must release it, no one is happy.

PUBLIC COMMENT

David Timpy, a charter boat captain, reviewed the fishery management plan. He commented that there are a lot of tower boats and ladder boats out on the water and to contact the hard-top guys about how many are being built. He also commented that there is a lot of spear fishing for cobia and no one knows the rules and regulations. This number needs to be included in the analysis. He would like to see a definition for what is “for-hire” and suggested that it be defined as someone who holds a federal for-hire permit. He stated that he supported the 33-inch size limit for commercial and the 36-inch size limit for recreational, but wanted both to be the same, either -33 or 36-inch. He felt that the six-fish per vessel limit was too much and suggested two-fish per vessel. He supported a three-fish vessel limit for the for-hire sector. He also stated that the fishery management plan did not consider all options and that catch and release should be an option for consideration.

Bob Lorenz stated that he has been watching this for a while and needed to learn more. He stated that in the stock assessment the biomass was declining. However, it appears that we are catching too many fish and that they are large fish. But now the numbers are increasing and their sizes are smaller. He is looking forward to the next stock assessment, because this goes against what he thought he knew about fisheries management based on what is happening with red snapper.

RECOMMENDATIONS TO THE MARINE FISHERIES COMMISSION FOR THE 2018 COBIA SEASON AND MANAGEMENT MEASURES

Morris opened the floor to discussion. The group reviewed the differences in the recreational size limit and the commercial size limit. They discussed the recommendation of the Northern Advisory Committee and concerns that it was over the recreational harvest limit set by the fishery management plan. Poland explained that state management strategies will be evaluated by the ASMFC Cobia Technical Committee to ensure that the strategies represent an attempt to constrain the harvest. Poland gave further details of why the season closed early in 2017. Medlin asked for Poland’s advice for an option. Poland advised that for any meaningful reductions, it would be to consider carving out of the peak landings timeframe or to consider a low vessel limit.

Randy Proctor made a motion to recommend to the Marine Fisheries Commission a 36-inch fork length, one fish per person, three fish per vessel for all sectors (private and charter) with no season closure. The motion was seconded by Fred Scharf.

Further discussion ensued over the number per vessel, noting that the limit needed to be easy to follow and that people liked the idea of limiting out. The committee also discussed a seasonal closure, but supported no closure of the season. Proctor suggested a friendly amendment to change the motion from three fish per vessel to two fish per vessel. Scharf agreed and the committee agreed by consensus. The committee discussed recommending a season for the

charter sector, but not the private sector. Concerns were raised about how well the charter fleet is intercepted; noting that there was a high level of uncertainty for this sector. The committee also had concerns of going over the quota.

Randy Proctor made a motion to recommend to the Marine Fisheries Commission a 36-inch fork length, one fish per person, two fish per vessel for all sectors (private and charter) with no season closure. The motion passed unanimously.

MARINE FISHERIES COMMISSION UPDATE

Stewart provided updates on the last commission meeting and provided information on the Fishery Management Plan Schedule, the 2016 Division of Marine Fisheries stock status overview, ASMFC highlights, the opening of oyster season, and snapper grouper season openings and closures.

PLAN AGENDA ITEMS FOR NEXT MEETING

No items were discussed for the next meeting. However, Proctor expressed some concerns of the use of bottom disturbing practices associated with run-around gill nets.

Chris Medlin made a motion to adjourn. Seconded by Tom Smith. The motion passed unanimously.

The meeting adjourned at 8 p.m.

Enclosures

cc:	Catherine Blum	Jess Hawkins	Patricia Smith
	Braxton Davis	Dee Lupton	District Managers
	Anne Deaton	Nancy Marlette	Committee Staff Members
	Nancy Fish	Phillip Reynolds	Marine Patrol Captains
	Christine Goebel	Jerry Schill	Section Chiefs



ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

BRAXTON C. DAVIS
Director

Nov. 1, 2017

MEMORANDUM

TO: Marine Fisheries Commission

FROM: Jason Rock, Co-lead Blue Crab Plan Development Team
Corrin Flora, Co-lead Blue Crab Plan Development Team

SUBJECT: Blue Crab Fishery Management Plan Advisory Committee Meeting

The Blue Crab Fishery Management Plan Advisory Committee met on Sept. 12, 2017 at 6 p.m., at the NCDEQ Washington Regional Office located at 943 Washington Square Mall in Washington, NC. The following attended:

Advisers: Perry Beasley, Steven Bradshaw, Robert Bruggeworth, Janice Corbett, Elizabeth Cox, Mike Marshall, Thomas Roller, Joseph Romano, Kenneth Seigler

Staff: Catherine Blum, Nancy Fish, Corrin Flora, Jennifer Lewis, Kathy Rawls, Jason Rock, Katy West, Odell Williams

Public: Jack Cox

MFC: Sammy Corbett

Chairman Romano called the meeting to order at 6 p.m.

APPROVAL OF THE AGENDA/PUBLIC COMMENT/INTRODUCTIONS/ORIENTATION

The meeting agenda was approved by consensus. No members of the public provided public comment. Committee members and staff introduced themselves to each other. Division staff presented orientation information regarding the fishery management plan process and the role of advisors. There was discussion regarding new per diem, travel reimbursement and tax requirements. There were also general questions about the size of the committee and how many members are required for a quorum.

BLUE CRAB TRAFFIC LIGHT UPDATE

Division staff presented the 2016 Blue Crab Traffic Light update. The committee discussed:

1. Regulations passed by the Marine Fisheries Commission in May 2016;
2. Data inputs and make-up of the traffic light and if it could be modified;
3. How commercial landings compared to the traffic light results; and
4. The adaptive management plan in Amendment 2.



Additional discussion concerned the impacts of water quality (e.g., algae blooms, GenX, weather) and declining effort (participation) on the blue crab stock and the fishery as well as the adequacy of division sampling programs. Committee members asked where to find more information on the traffic light and were referred to Amendment 2. Some members noted that crabs are difficult to model and it would be useful if the traffic light could be supplemented with anecdotal information from crabbers around the state.

OTHER QUESTIONS FROM THE ADVISORY COMMITTEE

Veteran committee members were asked by new members what to expect throughout this process. One member noted that better science is needed and the division should look at current changes in the crab fishery. Another member noted that crabbers should pay attention to the menhaden management due to the rising cost of bait for crab pots making it difficult to turn a profit. Discussion also touched on trends in the traffic light characteristics and if there was any correlation between adult and recruit abundance as well as the success/failure of other state's regulations.

OTHER BUSINESS

Staff and the committee discussed the upcoming meeting schedule. The next meeting scheduled to occur in January 2018, once the stock assessment process is closer to completion. The committee also discussed preferred meeting days. Staff was also asked to provide the number of crabbers currently in the fishery at the next meeting.

The meeting adjourned at 7:37 p.m.

Cc:	Catherine Blum	Dee Lupton	Jason Walker
	Anne Deaton	Nancy Marlette	District Managers
	Nancy Fish	Phillip Reynolds	Committee Staff Members
	Christine Goebel	Jerry Schill	Marine Patrol Captains
	Jess Hawkins	Tricia Smith	Section Chiefs



Issues/Reports



INFORMATION
WILL BE
PROVIDED AT
THE MEETING.



ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

BRAXTON C. DAVIS
Director

Nov. 1, 2017

MEMORANDUM

FMP 11-17

TO: Marine Fisheries Commission
FROM: Catherine Blum, Fishery Management Plan and Rulemaking Coordinator
SUBJECT: Fishery Management Plan Update

This memo provides an overview on the status of the North Carolina fishery management plans for the November 2017 commission meeting. No action is required by the commission.

The advisory committee has been appointed to assist the division in the review of the **Blue Crab Fishery Management Plan**. A meeting was held in September to provide advisers an orientation, review the latest traffic light update and determine a schedule for regular meetings. In the meantime, the division's plan development team is continuing to develop the stock assessment in preparation for the review of the plan.

In preparation for the review of the **Southern Flounder Fishery Management Plan**, work is continuing on the coastwide stock assessment of southern flounder by a group of representatives from North Carolina, South Carolina, Georgia and Florida. The stock assessment is expected to be completed in the first part of 2018, after which the next review of the plan will commence. The advisory committee has been appointed and will meet once the stock assessment process is complete.

While the request for a supplement to the **Estuarine Striped Bass Fishery Management Plan** is under review by the Secretary of the Department of Environmental Quality, stock assessments for the Central Southern Management Area stocks and the Albemarle Sound Management Area and Roanoke River Management Area stock that began in 2017 are continuing. Staff is addressing follow-up tasks that resulted from the data workshops held in September. This is a joint plan with the Wildlife Resources Commission, so all updates and reviews are joint efforts by both agencies.

After completing the annual update in July for the **Striped Mullet Fishery Management Plan**, the stock status was moved from "viable" to "concern" because 2016 commercial landings fell below the minimum landings trigger established in Amendment 1 to the plan. In accordance with the plan, the division reviewed striped mullet data in more detail to determine what factors are responsible for this decline. Additional information is provided in the briefing materials and the commission will receive a presentation at the November meeting.





ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

BRAXTON C. DAVIS
Director

Nov. 1, 2017

MEMORANDUM

TO: N.C. Marine Fisheries Commission

FROM: Daniel Zapf, Co-lead Striped Mullet Plan Development Team
Tracey Bauer, Co-lead Striped Mullet Plan Development Team

SUBJECT: Recommendations and Update on Preliminary 2016 Striped Mullet Data Analysis.

Amendment 1 to the Striped Mullet Fishery Management Plan established minimum and maximum commercial landings triggers of 1.13 and 2.76 million pounds, respectively. Under Amendment 1, if a trigger is activated, further analysis of striped mullet data will be completed to identify causes of increased or decreased striped mullet commercial landings. If, upon completion of the data analysis, it is determined that additional management is needed, adaptive management will be used to implement management measures needed to maintain sustainable harvest. Any management measures will be developed by the division's plan development team, in conjunction with an advisory committee, and approved by the Marine Fisheries Commission prior to implementation using the proclamation authority of the Fisheries Director.

Striped mullet commercial landings in 2016 were 964,348 pounds, which is below the minimum commercial landings trigger (1.13 million pounds) established in Amendment 1 of the Striped Mullet Fishery Management Plan. Therefore, the division initiated further analysis of available fishery dependent and fishery independent striped mullet data to determine if the decline in commercial landings was the result of decreased fishing effort or a possible stock decline.

The Striped Mullet Plan Development Team met Oct. 2, 2017 to discuss the draft analysis of fishery dependent and fishery independent striped mullet data. Observations from the team included:

- No other state fishery management plan has a review trigger based on a single year. There is always some uncertainty regarding the status of any stock (including striped mullet) that can only be addressed through a stock assessment.
- Fishery independent indices of striped mullet relative abundance should be standardized to account for the impact environmental factors may have in limiting or enhancing the availability of striped mullet.
- In the northern area (Core Sound and north), there is a declining trend in striped mullet commercial landings that is mirrored in fishery independent indices, which includes those used in the 2013 striped mullet stock assessment.



- In the southern area (Bogue Sound and south) striped mullet commercial landings have generally declined, but not to the extent of northern areas, and fishery independent indices in the south increased in 2016.
- Success in other fisheries in 2016, particularly shrimp, may have impacted participant numbers and associated effort in the striped mullet fishery. To better understand the impact shifts in effort may have had on 2016 striped mullet commercial landings, further analysis needs to be completed examining commercial fishing trips that specifically targeted striped mullet.
- Since 1972, hurricanes have had minor impacts on striped mullet landings, but may have significantly impacted landings in 2016.
- The striped mullet commercial fishery in North Carolina is primarily a roe-based fishery targeting spawning females and is susceptible to overfishing, potentially leading to poor recruitment.
- There is currently no fishery independent survey that provides a juvenile abundance index for striped mullet; therefore, there is no way to monitor annual year class strength.
- Results of the 2013 striped mullet stock assessment indicated both recruitment and spawning stock biomass were declining in the last few years (2007-2011) of the assessment period.

The division recommends the following:

- Further analysis of commercial landings from trips that specifically targeted striped mullet and standardization of fishery independent indices to account for the impact environmental factors may have in limiting or enhancing the availability of striped mullet needs to occur in early 2018. The addition of commercial landings and fishery independent data through 2017, a year with no major hurricane, will allow for better assessment of trends in the striped mullet fishery and striped mullet stock abundance.
- The division recommends the Marine Fisheries Commission take no management action at the November 2017 business meeting, as further updates will be provided in February 2018 that will incorporate additional data and analysis. Since most of the striped mullet commercial harvest occurs in October and November the regulatory impact window will have passed for 2017. However, with the commission's 2018 meeting schedule, there is sufficient time to enact management measures to have an impact on the 2018 striped mullet harvest and beyond.

At the February 2018 Marine Fisheries Commission meeting, the division will present the completed analysis including preliminary 2017 striped mullet commercial landings as well as fishery independent data analysis through 2017.





ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

BRAXTON C. DAVIS
Director

October 20, 2017

MEMORANDUM

RS 11-17

TO: Marine Fisheries Commission
FROM: Kathy Rawls, Fisheries Management Section Chief
SUBJECT: Rule Suspensions

Attached is the temporary rule suspension information for the November 2017 meeting. In accordance with the North Carolina Division of Marine Fisheries Resource Management Policy Number 2014-2, the North Carolina Marine Fisheries Commission will vote on any new rule suspensions that have occurred since the last meeting of the commission. No new rule suspensions have occurred since the August 2017 meeting, therefore, no action is necessary at this time. In accordance with the policy the division will provide a verbal reminder of all current rule suspensions at each November meeting of the commission. The current rule suspensions are as follows:

- Continued suspension of North Carolina Marine Fisheries Commission Rule 15A NCAC 03M .0516 Cobia, allows the division to manage the commercial and recreational cobia fisheries in accordance with management actions taken by the commission and in accordance with Framework Amendment 4 to the federal Coastal Migratory Pelagics Fishery Management Plan. This suspension was continued in Proclamation FF-32-2017.
- Continued suspension of portions of North Carolina Marine Fisheries Commission Rule 15A NCAC 03J .0301 Pots, for an indefinite period of time. This 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 effective Jan. 15, 2017, implemented in Proclamation M-11-2016.
- Continued suspension of portions of North Carolina Marine Fisheries Commission Rule 15A NCAC 03L .0201 Crab Harvest Restrictions, and portions of 03L .203 Crab Dredging, for an indefinite period of time. 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.

- Continued suspension of portions of North Carolina Marine Fisheries Commission Rule 15A NCAC 03J .0501 Definitions and Standards for Pound Nets and Pound Net Sets, for an indefinite period of time. 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.
- Continued suspension of portions of North Carolina Marine Fisheries Commission Rule 15A NCAC Shad and 03Q .0107 Special Regulations: Joint Waters, for an indefinite period of time. 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 implemented in Proclamation FF-59-2016.

NORTH CAROLINA'S COASTAL HABITAT PROTECTION PLAN

2018 - 2020

BIENNIAL IMPLEMENTATION PLAN

North Carolina Department of Environmental Quality,
North Carolina Marine Fisheries Commission,
North Carolina Coastal Resources Commission, and
North Carolina Environmental Management Commission

November 2017

Introduction

The legislative goal of the NC Coastal Habitat Protection Plan (CHPP) is the long-term enhancement of coastal fisheries associated with coastal habitats. The plan was first completed and approved in 2004 and is updated on approximately five year cycles. It was last updated in 2016. Since 2004, North Carolina's environmental agencies and commissions have been working together to achieve this goal through the development of biennial implementation plans that work toward achieving the goals and recommendations of the CHPP.

Agencies statutorily required to be involved with plan development and implementation include NC Department of Environmental Quality (DEQ) Divisions of Marine Fisheries (DMF), Coastal Management (DCM), Water Resources (DWR), and Energy, Mineral, and Land Resources (DEMLR). Other agencies that voluntarily participate in CHPP implementation include Albemarle Pamlico National Estuary Program (APNEP), DEQ Division of Mitigation Services (DMS), Wildlife Resource Commission (WRC), and Sea Grant. Under the Department of Agriculture and Consumer Services (NCDA&CS) (formerly organized under what is currently referred to as DEQ), the Forest Service (DFR), and Division of Soil and Water Conservation (DSWC) participate. Some federal agencies and universities have been engaged with the CHPP process as needed.

The first implementation plan covered the 2005-2007 period. This document serves as the guidance for implementation of the CHPP recommendations during the 2018-2020 period.

Each division was charged with developing implementation actions that address the goals and recommendations of the CHPP. The 2018-2020 implementation plan contains some ongoing or modified actions from previous plans as well as new actions.

By working together on complicated, multi-jurisdictional issues, the CHPP Steering Committee (CSC) has played a key role in accomplishing or making substantial progress on several environmental issues over the past six years. This included improving compliance on existing environmental rules, completion or major progress on mapping of shell bottom, SAV, and wetland shorelines, restoration of subtidal oyster reefs, increasing public awareness on environmental issues, supporting research and conducting analyses to identify Strategic Habitat Areas for focused protection, increasing scientific understanding on the benefit of living shorelines and public awareness of this alternative option to shoreline hardening, and passing of the coastal stormwater rules.

Successful implementation of CHPP recommendations can only be achieved through continued commitment to improving coastal habitats and water quality, interagency cooperation, and funding. There is a clear economic benefit to protecting and enhancing healthy ecosystems that reach far beyond the fishing industry. With that in mind, the CSC remains committed to moving forward to protect our estuarine resources through execution of the 2018-2020 Implementation Plan.

Over the next two years, implementation will focus on four identified priority issues:

- **Restoring oyster reef habitat**
- **Encouraging use of living shorelines**
- **Reducing sedimentation impacts in estuarine creeks**
- **Developing metrics on habitat trends and management effectiveness**

While these issues are a priority, other existing actions continue to be worked on. Habitat and water quality degradation has occurred from many sources over time, and therefore requires a diversity of strategies to fully achieve protection and restoration of fish habitat. Specific implementation actions are listed in the tables below by agency and priority issue, followed by other actions.

Division of Marine Fisheries

DIVISION OF MARINE FISHERIES

ACTIONS TO RESTORE OYSTER REEF HABITAT

Action #	Implementation Action	Agency	Issue
<i>Recommendation 2.1. Support assessments to classify habitat value, condition, and status through mapping and monitoring.</i>			
2.1b.1	Facilitate mapping of deep (>15 ft) estuarine bottoms, starting with lower Neuse River. To do this, seek funding to hire staff to side scan key areas in Pamlico Sound and post-process the data.	DMF	O
<i>Recommendation 3.1a. Expand habitat restoration including increasing subtidal and intertidal oyster habitat through restoration.</i>			
3.1a.1	Identify the size and number of sanctuaries needed, and whether constructed intertidal reefs should be incorporated into the sanctuary network.	DMF	O
3.1a.2	Continue expanding the oyster sanctuary program.	DMF	O
3.1a.3	Establish a long-term monitoring program (oyster survival, growth, condition, recruitment) of oyster sanctuaries and cultch planting sites to assist with future siting, design, and management decisions.	DMF	O
3.1a.4	Identify alternative substrates for cultch and oyster sanctuary projects that are appropriate for larval settlement at intertidal and subtidal sites; compare the costs and benefits of them.	DMF	O
3.1a.5	Cooperate with university researchers on new siting tools (eg. larval distribution and transport models) and monitoring protocols to maximize oyster restoration success.	DMF	O
3.1a.6	Work with university researchers to monitor fish/invertebrate use of oyster sanctuaries and effect of oysters on local water quality.	DMF	O
3.1b.2	Work with the Corps of Engineers and the Department of Transportation on innovative mitigation projects and an appropriate crediting system for them under the DMS. Such projects may include the protection and restoration of SAV and oyster beds, and the removal of certain dams and other aquatic organism barriers, and enhancing wetlands through construction of living shorelines.	DMS, DEQ, DMF, DCM, DWR	O, L
<i>Recommendation 3.3. Protect habitat from adverse fishing gear effects through improved compliance.</i>			
3.3.1	Evaluate through the FMP process the need for further restrictions of bottom-disturbing gear.	DMF	O

Division of Marine Fisheries

ACTIONS TO DEVELOP METRICS ON HABITAT TRENDS AND MANAGEMENT EFFECTIVENESS

Action #	Implementation Action	Agency	Issue
<i>Recommendation 1.2a. Coordinate and enhance monitoring of water quality, habitats, and fisheries</i>			
1.2a.2	The Department, through the APNEP, will develop a comprehensive monitoring plan for the estuarine system within the APNEP region.	APNEP, DMF	M
<i>Recommendation 1.2b. Coordinate and enhance assessment and monitoring of effectiveness of rules established to protect coastal habitats.</i>			
1.2b.1	Investigate development of performance criteria for measuring success of management actions (eg. stormwater rules, BMPs).	DEMLR, DWR, DCM, DMF, APNEP	M
<i>Recommendation 1.6. Enhance management of invasive species with existing programs. Monitor and track status in affected waterbodies.</i>			
1.6.1**	Assess invasive SAV in the APNEP region annually and continue to coordinate invasive SAV treatment with DMF and APNEP.	DWR, APNEP, DMF	M
1.6.2	Monitor and track invasive catfish through an information cooperative identifying data sources, current research, and research needs.	DMF	M
<i>Recommendation 2.1a. Support assessments to classify habitat value and condition by coordinating, completing, and maintaining baseline habitat mapping (seagrass, shell bottom, shoreline)</i>			
2.1a.1	Map SAV on five year cycles.	APNEP, DMF	M
2.1a.2	Establish sentinel sites in the five SAV regions and monitor annually.	APNEP, DMF	M
2.1a.3	Seek dedicated funding for the state SAV mapping program.	DEQ, DMF, APNEP	M
<i>Recommendation 2.1b. Support assessments to classify habitat value and condition by selectively monitoring the condition and status of those habitats.</i>			
2.1b.2	Modify shellfish mapping program to establish and monitor sentinel sites for shell bottom habitat condition. Develop shell bottom metrics to monitor.	DMF	M
2.1b.3	Develop indicator metrics for the six fish habitats; data to be used to establish habitat thresholds and conduct habitat assessments.	DMF, APNEP, DWR, DCM	M
2.1b.4	Develop a coastwide sampling protocol to collect metric data and seek funding to accomplish it.	DMF, APNEP, DWR, DCM	M
2.1b.5	Implement data collection of habitat metrics.	DMF, APNEP, DWR, DCM	M
<i>Recommendation 2.2. Continue to identify and field groundtruth strategic coastal habitats.</i>			
2.2.2	Conduct fish and habitat sampling in SHA Region 3 to validate SHA selections and develop indicators.	DMF	M
2.2.3	Complete SHA Region 4 analysis	DMF	M
<i>Recommendation 3.5b. Protect and restore habitat for migratory fishes by restoring fish passage through elimination or modification of stream obstructions, such as dams and culverts.</i>			
3.5b.2	Survey previously identified Albemarle Sound river herring spawning areas to estimate current condition and spawning function, identify stream obstructions on river herring spawning streams, and prioritize obstructions for herring-friendly replacement.	DMF, WRC	M

Division of Marine Fisheries

OTHER ACTIONS

Action #	Implementation Action	Agency
GOAL 1. IMPROVE EFFECTIVE OF EXISTING RULES AND PROGRAMS PROTECTING COASTAL FISH HABITAT		
1.1.1	Cross train Marine Patrol officers to take note of and report violations of EMC rules and permits in Coastal Waters to appropriate agencies.	DCM, DMF
1.3.2	Promote habitat conservation by incorporating habitat information into division outreach efforts, including, 1) creating interactive materials for events highlighting life history, habitat use, and threats of species; 2) setting up fish habitat aquarium displays for longer events; 3) seeking funding for additional displays	DMF, DCM, Sea Grant
1.4.2	Identify any Primary Nursery Areas (PNA) that are not currently designated as High Quality Waters (HQW), and work to reclassify to HQW.	DMF, DWR
GOAL 2. IDENTIFY AND DELINEATE STRATEGIC COASTAL HABITATS		
2.2.1	Work with agencies to include strategic coastal habitat (SHA) priorities within DMS local watershed plans, and other restoration programs.	DMF, DMS, DEQ
GOAL 3. ENHANCE AND PROTECT HABITATS FROM ADVERSE PHYSICAL IMPACTS		
3.1b.3	Obtain funding to restore streams and associated wetlands designated as anadromous fish spawning areas in the Albemarle Sound area as implementation steps for the River Herring Fishery Management Plan.	DMF, APNEP, DMS, WRC
3.1c.1	Work with researchers to establish methods to restore SAV.	DMF, APNEP, DMS, DWR
3.5a.1	Continue to study the feasibility and benefits of dam and barrier removal in general and for mitigation.	DMF, WRC, DWR, DMS
3.5b.1	Encourage research to determine the minimum acceptable culvert dimensions and characteristics that will allow passage of river herring and whether there are other causes inhibiting river herring from migrating upstream past culverts.	DMF, APNEP, DOT, WRC
GOAL 4. ENHANCE AND PROTECT WATER QUALITY		
4.1a.1	Identify research priorities regarding impacts of endocrine-disruptors and other chemicals to blue crabs and oysters.	DMF, DWR

Division of Coastal Management

DIVISION OF COASTAL MANAGEMENT

ACTIONS TO ENCOURAGE USE OF LIVING SHORELINES

Action #	Implementation Action	Agency	Issue
<i>Recommendation 3.1b. Expand habitat restoration, including re-establishing of riparian wetlands and stream hydrology.</i>			
3.1b.2	Work with the Corps of Engineers and the Department of Transportation on innovative mitigation projects and an appropriate crediting system for them under the DMS. Such projects may include the protection and restoration of SAV and oyster beds, and the removal of certain dams and other aquatic organism barriers, and enhancing wetlands through construction of living shorelines.	DMS, DEQ, DMF, DCM, DWR	O, L
<i>Recommendation 3.4. Improve management of estuarine and public trust shorelines and shallow water habitats by revising shoreline stabilization rules to include consideration of site specific conditions and advocate for alternatives to vertical shoreline stabilization structures.</i>			
3.4.1	Encourage waterfront property owners to utilize the shoreline stabilization technique recommended for their shoreline type.	DCM, DWR	L
3.4.2	Encourage alternatives to vertical shoreline stabilization methods through permit requirements, fees, and process simplification, including but not limited to refining rule 15A NCAC 07H .2700 GP for Marsh Sills and coordinating permit process changes with the Corps of Engineers (USACOE).	DCM, DWR	L
3.4.3	Promote efforts to educate the public and waterfront property owners on living shoreline benefits by 1) seeking funding and partnerships to increase the number of highly visible demonstration projects; 2) developing case studies as guidance for property owners; 3) engaging with contractors, realtors, and Homeowners Associations regarding design and benefits of living shorelines; and 4) enhance marketing and education initiatives to build public demand for living shorelines.	DCM	L
3.4.4	Promote research and monitoring of living shorelines to 1) examine effectiveness of natural and other materials of erosion control and ecosystem enhancement; 2) examine long-term stability of living shorelines and vertical structures, particularly after storm events; 3) map areas where living shorelines would be suitable for erosion control; and 4) investigate use of living shorelines as a BMP or mitigation option.	DCM, DWR, DMF	L
3.4.5	Update maps of shoreline structures in the CAMA counties.	DCM	L, M
3.4.6	Promote the appropriate use of oyster shells to facilitate habitat enhancement in living shoreline structures.	DCM	L, O
<i>Recommendation 3.8. Develop coordinated policies including management adaptations and guidelines to increase resiliency of fish habitat to ecosystem changes.</i>			
3.8.1	Direct outreach to local governments on sea level rise to allow coastal communities to assess needs and implement strategies to minimize hazard risk and increase environmental resiliency.	DCM	L
<i>Recommendation 4.4. Enhance coordination with, and provide financial/technical support for, local government/private actions to effectively manage stormwater, stormwater runoff, and wastewater.</i>			
4.4.1	Pursue funding for the Community Conservation Assistance Program with emphasis on CHPP stormwater priorities in coastal counties	DSWC, DEQ	S, L

Division of Coastal Management

ACTIONS TO DEVELOP METRICS ON HABITAT TRENDS AND MANAGEMENT EFFECTIVENESS

Action #	Implementation Action	Agency	Issue
Recommendation 1.2b. Coordinate and enhance assessment and monitoring of effectiveness of rules established to protect coastal habitats.			
1.2b.1	Investigate development of performance criteria for measuring success of management actions (eg. stormwater rules, BMPs).	DEMLR, DWR, DCM, DMF, APNEP	M

OTHER ACTIONS

Action #	Implementation Action	Agency
GOAL 1. IMPROVE EFFECTIVE OF EXISTING RULES AND PROGRAMS PROTECTING COASTAL FISH HABITAT		
1.1.1	Cross train Marine Patrol officers to take note of and report violations of EMC rules and permits in Coastal Waters to appropriate agencies.	DCM, DMF
1.3.2	Promote habitat conservation by incorporating habitat information into division outreach efforts, including, 1) creating interactive materials for events highlighting life history, habitat use, and threats of species; 2) setting up fish habitat aquarium displays for longer events; 3) seeking funding for additional displays	DMF, DCM, Sea Grant
1.4.1	The Department will hold quarterly meetings on proposed projects and enforcement cases that are or may be subject to the permitting or enforcement jurisdiction of the programs of more than one division and invite other state and federal agencies to participate as appropriate.	DCM, DEQ
GOAL 3. ENHANCE AND PROTECT HABITATS FROM ADVERSE PHYSICAL IMPACTS		
3.2.1	Implement the beach and inlet management plan, and continue to require minimum criteria for monitoring beach nourishment projects to evaluate ecological effects.	DCM
3.4.7	Work with NOAA's Technical Advisory Committee members in their sponsored research program "Ecological Effects of Sea Level Rise" to develop information/tools to better forecast and manage landscape responses of critical natural resources relative to sea level rise.	DCM
GOAL 4. ENHANCE AND PROTECT WATER QUALITY		
4.7.2	Improve wastewater/stormwater management at coastal marinas.	DWR, DCM

Divisions of Water Resources / Energy, Minerals, and Land Resources

DIVISION OF WATER RESOURCES/ ENERGY, MINERALS, AND LAND RESOURCES

ACTIONS TO REDUCE SEDIMENTATION IMPACTS IN ESTUARINE CREEKS

Action #	Implementation Action	Agency	Issue
<i>Recommendation 1.3. Enhance and expand outreach on the fish habitat value, threats from land use and other activities, and explanations of management measures and challenges.</i>			
1.3.4	Educate traditional economic interests (eg. developers) on the impact of stormwater and new options included in the stormwater design manual; implement workshops for engineers and consultants on stormwater management, buffers, and 401 Certifications.	DWR, DEMLR, WRRI	S
<i>Recommendation 4.3c. Prevent additional shellfish closures and swimming advisories by continuing to phase-out existing outfalls by implementing alternative stormwater management strategies.</i>			
4.3c.1	Implement new stormwater BMPs and Low Impact Development (LID) program to reduce runoff.	DEMLR	S
4.3c.2	Partner with NCDOT to retrofit road ditches that discharge to shellfish waters.	DEMLR DWR, DMF	S
<i>Recommendation 4.4. Enhance coordination with, and provide financial/technical support for, local government/private actions to effectively manage stormwater, stormwater runoff, and wastewater.</i>			
4.4.2	Encourage development of effective local erosion control programs to maintain compliance and reduce sediment from reaching surface waters.	DEMLR	S
4.4.3	Provide education and financial/technical support (funding, training, equipment) for local and state programs to better manage sediment control measures from all land disturbing activities and enhance monitoring capabilities (ie purchase turbidity meters).	DEMLR, DWR	S
4.4.4	Continue to educate the public, developers, contractors, and farmers on the need for sediment erosion control measures and techniques for effective sediment control.	DEMLR, DWR	S
<i>Recommendation 4.5a. Continue to improve strategies throughout the river basins to reduce nonpoint pollution and minimize cumulative losses of fish habitat through voluntary actions, assistance, and incentives, including improved methods to reduce pollution from construction sites, agriculture, and forestry.</i>			
4.5a.1	Provide outreach to the public and government agencies on stormwater BMP techniques by holding workshops that include visiting project demonstration sites.	DEMLR, DCM	S
<i>Recommendation 4.6. Maintain effective regulatory strategies throughout the river basins to reduce nonpoint pollution and minimize cumulative losses of fish habitat, including use of vegetated buffers and established stormwater controls.</i>			
4.6.1	Assess if coastal stormwater rules are effectively reducing runoff.	DEMLR, DWR	S, M
<i>Recommendation 4.7. Maintain adequate water quality conducive to the support of present and future mariculture in public trust waters.</i>			
4.7.1	Investigate management needed to maintain open shellfish waters; encourage aquaculture that will enhance or minimize impacts to water quality that affect public trust uses.	DMF, DWR, DEMLR, DCM	S

Divisions of Water Resources / Energy, Minerals, and Land Resources

ACTIONS TO DEVELOP METRICS ON HABITAT TRENDS AND MANAGEMENT EFFECTIVENESS

Action #	Implementation Action	Agency	Issue
<i>Recommendation 1.2b. Coordinate and enhance assessment and monitoring of effectiveness of rules established to protect coastal habitats.</i>			
1.2b.1	Investigate development of performance criteria for measuring success of management actions (eg. stormwater rules, BMPs).	DEMLR, DWR, DCM, DMF, APNEP	M
<i>Recommendation 1.6. Enhance management of invasive species with existing programs. Monitor and track status in affected waterbodies.</i>			
1.6.1**	Assess invasive SAV in the APNEP region annually and continue to coordinate invasive SAV treatment with DMF and APNEP.	DWR, APNEP, DMF	M
<i>Recommendation 2.1b. Support assessments to classify habitat value and condition by selectively monitoring the condition and status of those habitats.</i>			
2.1b.3	Develop indicator metrics for the six fish habitats; data to be used to establish habitat thresholds and conduct habitat assessments.	DMF, APNEP, DWR, DCM	M
2.1b.4	Develop a coastwide sampling protocol to collect metric data and seek funding to accomplish it.	DMF, APNEP, DWR, DCM	M
2.1b.5	Implement data collection of habitat metrics.	DMF, APNEP, DWR, DCM	M

Divisions of Water Resources / Energy, Minerals, and Land Resources

ACTIONS TO ENCOURAGE USE OF LIVING SHORELINES

Action #	Implementation Action	Agency	Issue
<i>Recommendation 3.1b. Expand habitat restoration in accordance with restoration plan goals, including re-establishing of riparian wetlands and stream hydrology.</i>			
3.1b.2	Work with the Corps of Engineers and the Department of Transportation on innovative mitigation projects and an appropriate crediting system for them under the DMS. Such projects may include the protection and restoration of SAV and oyster beds, and the removal of certain dams and other aquatic organism barriers, and enhancing wetlands through construction of living shorelines.	DMS, DEQ, DMF, DCM, DWR	O, L
<i>Recommendation 3.4. Improve management of estuarine and public trust shorelines and shallow water habitats by revising shoreline stabilization rules to include consideration of site specific conditions and advocate for alternatives to vertical shoreline stabilization structures.</i>			
3.4.1	Encourage waterfront property owners to utilize the shoreline stabilization technique recommended for their shoreline type.	DCM, DWR	L
3.4.2	Encourage alternatives to vertical shoreline stabilization methods through permit requirements, fees, and process simplification, including but not limited to refining rule 15A NCAC 07H .2700 GP for Marsh Sills and coordinating permit process changes with the Corps of Engineers (USACOE).	DCM, DWR	L
3.4.4	Promote research and monitoring of living shorelines to 1) examine effectiveness of natural and other materials of erosion control and ecosystem enhancement; 2) examine long-term stability of living shorelines and vertical structures, particularly after storm events; 3) map areas where living shorelines would be suitable for erosion control; and 4) investigate use of living shorelines as a BMP or mitigation option.	DCM, DWR, DMF	L

OTHER ACTIONS

Action #	Implementation Action	Agency
GOAL 1. IMPROVE EFFECTIVE OF EXISTING RULES AND PROGRAMS PROTECTING COASTAL FISH HABITAT		
1.3.1	Conduct outreach to educate citizens about DWR's Neuse and Tar-Pamlico riparian buffer rules and 401 Water Quality Certification program.	DWR, APNEP
1.3.5	Provide information to focus students in K-12 understanding the biodiversity of lakes, streams, and estuaries.	DWR, DPR, APNEP, DSWC
GOAL 3. ENHANCE AND PROTECT HABITATS FROM ADVERSE PHYSICAL IMPACTS		
3.1c.1	Work with researchers to establish methods to restore SAV.	DMF, APNEP, DMS, DWR
3.5a.1	Continue to study the feasibility and benefits of dam and barrier removal in general and for mitigation.	DMF, WRC, DWR, DMS
3.5b.3	The Department, through the DWR and the DMS will pursue dam removal projects where appropriate.	DWR, DMS
GOAL 4. ENHANCE AND PROTECT WATER QUALITY		
4.7.2	Improve wastewater/stormwater management at coastal marinas.	DWR, DCM

Divisions of Water Resources / Energy, Minerals, and Land Resources

4.8a.1 Implement environmentally superior alternatives to animal waste lagoon and spray field systems.

DEQ, DWR

Partner Agencies

PARTNER AGENCIES

ACTIONS TO ENCOURAGE USE OF LIVING SHORELINES

Action #	Implementation Action	Agency	Issue
<i>Recommendation 3.1b. Expand habitat restoration in accordance with restoration plan goals, including re-establishing of riparian wetlands and stream hydrology.</i>			
3.1b.2	Work with the Corps of Engineers and the Department of Transportation on innovative mitigation projects and an appropriate crediting system for them under the DMS. Such projects may include the protection and restoration of SAV and oyster beds, and the removal of certain dams and other aquatic organism barriers, and enhancing wetlands through construction of living shorelines.	DMS, DEQ, DMF, DCM, DWR	O, L

ACTIONS TO REDUCE SEDIMENTATION IMPACTS IN ESTUARINE CREEKS

Action #	Implementation Action	Agency	Issue
<i>Recommendation 1.3. Enhance and expand educational outreach on the value of fish habitat, threats from land use and other activities, and explanations of management measures and challenges.</i>			
1.3.4	Educate traditional economic interests (eg. developers) on the impact of stormwater and new options included in the stormwater design manual; implement workshops for engineers and consultants on stormwater management, buffers, and 401 Water Quality Certifications.	DWR, DEMLR, WRRRI	S
<i>Recommendation 3.1b. Expand habitat restoration in accordance with restoration plan goals, including re-establishing of riparian wetlands and stream hydrology.</i>			
3.1b.1	Encourage local SWCDs to include strategic coastal habitat areas and other CHPP priorities in local priority ranking system for the Agriculture Cost Share Program, Community Conservation Assistance Program and Conservation Reserve Enhancement Program (CREP).	DMF, DSWC	S
<i>Recommendation 4.3c. Prevent additional shellfish closures and swimming advisories by continuing to phase-out existing outfalls by implementing alternative stormwater management strategies.</i>			
4.3c.2	Partner with NCDOT to retrofit road ditches that discharge to shellfish waters.	DEMLR, DWR, DMF, DOT	S
<i>Recommendation 4.4. Enhance coordination with, and provide financial/technical support for, local government/private actions to effectively manage stormwater, stormwater runoff, and wastewater.</i>			
4.4.1	Pursue funding for the Community Conservation Assistance Program with emphasis on CHPP stormwater priorities in coastal counties	DSWC, DEQ	S, L

Partner Agencies

ACTIONS TO DEVELOP METRICS ON HABITAT TRENDS AND MANAGEMENT EFFECTIVENESS

Action #	Implementation Action	Agency	Issue
<i>Recommendation 1.2a. Coordinate and enhance monitoring of water quality, habitat, and fisheries resources (including data management) from headwaters to the nearshore ocean.</i>			
1.2a.2	The Department, through the APNEP, will develop a comprehensive monitoring plan for the estuarine system within the APNEP region.	APNEP, DMF	M
<i>Recommendation 1.2b. Coordinate and enhance assessment and monitoring of effectiveness of rules established to protect coastal habitats.</i>			
1.2b.1	Investigate development of performance criteria for measuring success of management actions (eg. stormwater rules, BMPs).	DEMLR, DWR, DCM, DMF, APNEP	M
<i>Recommendation 1.6. Enhance management of invasive species with existing programs. Monitor and track status in affected waterbodies.</i>			
1.6.1**	Assess invasive SAV in the APNEP region annually and continue to coordinate invasive SAV treatment with DMF and APNEP.	DWR, APNEP, DMF	M
<i>Recommendation 2.1a. Support assessments to classify habitat value and condition by coordinating, completing, and maintaining baseline habitat mapping</i>			
2.1a.1	Map SAV on five year cycles.	APNEP, DMF	M
2.1a.2	Establish sentinel sites in the five SAV regions and monitor annually.	APNEP, DMF	M
2.1a.3	Seek dedicated funding for the state SAV mapping program.	DEQ, DMF, APNEP	M
<i>Recommendation 2.1b. Support assessments to classify habitat value and condition by selectively monitoring the condition and status of those habitats.</i>			
2.1b.3	Develop indicator metrics for the six fish habitats; data to be used to establish habitat thresholds and conduct habitat assessments.	DMF, APNEP, DWR, DCM	M
2.1b.4	Develop a coastwide sampling protocol to collect metric data and seek funding to accomplish it.	DMF, APNEP, DWR, DCM	M
2.1b.5	Implement data collection of habitat metrics.	DMF, APNEP, DWR, DCM	M
<i>Recommendation 3.5b. Protect and restore habitat for migratory fishes by restoring fish passage through elimination or modification of stream obstructions, such as dams and culverts.</i>			
3.5b.2	Survey previously identified Albemarle Sound river herring spawning areas to estimate current condition and spawning function, identify stream obstructions on river herring spawning streams, and prioritize obstructions for herring-friendly replacement.	DMF, WRC	M

Partner Agencies

OTHER ACTIONS

Action #	Implementation Action	Agency
GOAL 1. IMPROVE EFFECTIVE OF EXISTING RULES AND PROGRAMS PROTECTING COASTAL FISH HABITAT		
1.1.2	The Department will seek funding for additional compliance positions in appropriate programs and regulatory divisions will continue to educate the public on rules and the ecological importance and need for compliance.	DEQ
1.2a.1	Enhance dependable water quality monitoring by investing in Neuse Estuary MODMON and FerryMon.	DEQ
1.3.1	Conduct outreach to educate citizens about DWR's Neuse and Tar-Pamlico riparian buffer rules and 401 Water Quality Certification program.	DWR, APNEP
1.3.2	Promote habitat conservation by incorporating habitat information into division outreach efforts, including, 1) creating interactive materials for events highlighting life history, habitat use, and threats of species; 2) setting up fish habitat aquarium displays for longer events; 3) seeking funding for additional displays	DMF, DCM, Sea Grant
1.4.1	The Department will hold quarterly meetings on proposed projects and enforcement cases that are or may be subject to the permitting or enforcement jurisdiction of the programs of more than one division and invite other state and federal agencies to participate as appropriate.	DCM, DEQ
GOAL 2. IDENTIFY AND DELINEATE STRATEGIC COASTAL HABITATS		
2.2.1	Work with agencies to include strategic coastal habitat (SHA) priorities within DMS local watershed plans, and other restoration programs.	DMF, DMS, DEQ
GOAL 3. ENHANCE AND PROTECT HABITATS FROM ADVERSE PHYSICAL IMPACTS		
3.1b.3	Obtain funding to restore streams and associated wetlands designated as anadromous fish spawning areas in the Albemarle Sound area as implementation steps for the River Herring Fishery Management Plan.	DMF, APNEP, DMS, WRC
3.1c.1	Work with researchers to establish methods to restore SAV.	DMF, APNEP, DMS, DWR
3.5a.1	Continue to study the feasibility and benefits of dam and barrier removal in general and for mitigation.	DMF, WRC, DWR, DMS
3.5b.1	Encourage research to determine the minimum acceptable culvert dimensions and characteristics that will allow passage of river herring and whether there are other causes inhibiting river herring from migrating upstream past culverts.	DMF, APNEP, DOT, WRC
3.5b.3	The Department, through the DWR and the DMS will pursue dam removal projects where appropriate.	DWR, DMS
GOAL 4. ENHANCE AND PROTECT WATER QUALITY		
4.8a.1	Implement environmentally superior alternatives to animal waste lagoon and spray field systems.	DEQ, DWR

LIST OF ACRONYMS

Acronym	Name
APNEP	Albemarle-Pamlico National Estuary Partnership
BMP	Best Management Practices
CAMA	Coastal Area Management Act
CHPP	Coastal Habitat Protection Plan
CRC	Coastal Resource Commission
DACS	Department of Agriculture and Consumer Services
DCM	Division of Coastal Management
DEMLR	Division of Energy, Mineral, and Land Resources
DEQ	Department of Environmental Quality
DMF	Division of Marine Fisheries
DMS	Division of Mitigation Services
DSWC	Division of Soil and Water Conservation
DWR	Division of Water Resources
EMC	Environmental Management Commission
HQW	High Quality Waters
MFC	Marine Fisheries Commission
NCFS	NC Forest Service
PNA	Primary Nursery Area
SAV	submerged aquatic vegetation
SCC	Sedimentation Control Commission
SHA	strategic coastal habitats
SWCC	Soil and Water Conservation Commission
WRC	Wildlife Resources Commission
USACOE	US Army Corps of Engineers