RULEMAKING UPDATE

2020-2021 RULEMAKING UPDATE MEMO

RULEMAKING PACKAGE A

RULEMAKING PACKAGE B

ROY COOPER
Governor
MICHAEL S. REGAN
Secretary
STEPHEN W. MURPHEY
Director

July 31, 2020

MEMORANDUM

TO: N.C. Marine Fisheries Commission

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

SUBJECT: Rulemaking Update

Issues

Update the N.C. Marine Fisheries Commission (MFC) on the status of the 2020-2021 annual rulemaking cycle, including rulemaking in support of the Periodic Review and Expiration of Existing Rules per G.S. 150B-21.3A, and request the MFC vote on approval to begin the rule readoption and amendment process for rules in "Package B".

Findings

- Periodic Review and Readoption of Rules – Requirements
  - North Carolina G.S. 150B-21.3A, adopted in 2013, requires state agencies to review existing rules every 10 years in accordance with a prescribed process that includes rule readoption.
    - 15A NCAC 18A – Sanitation: On Jan. 16, 2020, the Rules Review Commission (RRC) approved the readoption schedule of June 30, 2024 for 164 MFC rules.
    - 15A NCAC 03 – Marine Fisheries: On June 14, 2018, the RRC approved the readoption schedule of June 30, 2022 for 172 MFC rules.
  - The MFC must readopt these rules by these deadlines or the rules will expire and be removed from the N.C. Administrative Code.
- Periodic Review and Readoption of Rules – Rule Readoptions for August MFC Meeting
  - 15A NCAC 18A – Sanitation
    - Classification of Shellfish Growing Waters and Laboratory Procedures (14 rules)
    - Rules with minor changes relating to standards for commercial shellfish sanitation and processing procedures (21 rules)
  - 15A NCAC 03 – Marine Fisheries
    - Shellfish Lease User Conflicts, per Session Law 2019-37 (3 rules)
    - General Regulations: Joint (9 rules)
    - Shrimp Fishery Management Plan Amendment 1 Special Secondary Nursery Areas (2 rules; 1 readoption and 1 amendment)
- Rule Amendments for August MFC Meeting
  - 15A NCAC 03R .0117, Oyster Sanctuaries (1 rule)

Recommendation

Staff recommends the MFC vote on approval to begin the rule readoption and amendment process for the 50 listed rules. For more information, please refer to the Rulemaking section of the briefing materials.

2020-2021 Annual Rulemaking Cycle Update

"Package A"

Coastal Recreational Waters Monitoring, Evaluation, and Notification

At its May 2020 business meeting, the MFC approved Notice of Text for readoption of the seven rules in 15A NCAC 18A .3400, Coastal Recreational Waters Monitoring, Evaluation, and Notification. These rules were adopted in 2004 and need updating to bring the Recreational Water Quality Program into compliance with new Environmental Protection Agency criteria and standards released in 2014 and to be more efficient as a program in protecting public health. The purpose of the program is to protect public health by monitoring recreational coastal waters and to notify the public when samples collected exceed the safe swimming standard. The new guidance is recommending the same bacterial threshold for all swimming locations regardless of usage category. These bacteriological limits will create efficiencies for how the division issues public notifications when samples collected exceed the safe swimming standard.

On Aug. 3, 2020 the proposed rules were published in the *N.C. Register*. The rules have an intended effective date of April 1, 2021, which coincides with the start of the 2021 recreational swimming season, creating a smooth transition. The MFC is accepting public comments on the proposed rules from Aug. 3 through 5 p.m. Oct. 2, 2020. Public comments on the proposed rules may be submitted by an online form available at http://portal.ncdenr.org/web/mf/mfc-proposed-rules (click on April 1, 2021 package) or by U.S. mail to division Rules Coordinator Catherine Blum, P.O. Box 769, Morehead City, NC 28557. Comments submitted by email will not be accepted. An online public hearing will also be held via WebEx on Aug. 26, 2020 at 6 p.m. Details about the hearing and about how to register to speak at the hearing are also available on the website, as are the proposed rules and the corresponding fiscal analysis. The MFC will receive an update on the public comments at its November 2020 business meeting.

For more information, please refer to the materials for "Package A" in the Rulemaking section of the briefing materials, including a table showing the timing of the steps in the process and the Aug. 3 news release and *N.C. Register* publication of the proposed rules.

"Package B"

Periodic Review and Expiration of Existing Rules – Rule Readoptions for August MFC Meeting

At its August 2020 business meeting, the MFC is scheduled to vote on approval to begin the rule readoption and amendment process for 49 rules. A summary of the proposed rules is provided here. Please refer to the materials for "Package B" in the Rulemaking section of the briefing materials, including a table showing the timing of the steps in the process and the fiscal analysis of each of the six issues described below. The proposed rules are appended to each respective fiscal analysis. The intended effective date of the rule package is May 1, 2021. Rules with an asterisk (*) are subject to legislative review pursuant to Session Law 2019-198 and G.S. 14-4.1, Legislative review of regulatory crimes, and thus are expected to have a delayed effective date. The MFC may request a group of related rules to become effective at the same time per G.S. 150B-21.3.

CLASSIFICATION OF SHELLFISH GROWING WATERS AND LABORATORY PROCEDURES (15A NCAC 18A .0431, .0704, .0901-.0910, .0913, .0914)

The MFC is scheduled to vote on proposed amendments to readopt and repeal through readoption 14 rules in 15A NCAC 18A pursuant to the requirements of G.S. 150B-21.3A. Additionally, proposed

amendments will conform the rules with minimum standards for the National Shellfish Sanitation Program Guide for the Control of Molluscan Shellfish. North Carolina must meet these minimum standards in order for N.C. shellfish to be sold through interstate commerce. Additional amendments update rule language to be more concise, consistent, and homogenized. Rule language is also proposed to formalize the use of conditionally approved shellfish areas to increase the overall flow of shellfish from the state; the use of conditional areas has been in place in North Carolina for over 20 years. In short, none of the proposed rule changes lead to any substantive changes in the ongoing operations of the Division, but rather conform language to these practices and requirements.

RULES WITH MINOR CHANGES RELATING TO STANDARDS FOR COMMERCIAL SHELLFISH SANITATION AND PROCESSING PROCEDURES
(15A NCAC 18A .0140-.0143, .0146, .0150, .0154, .0155, .0159, .0160, .0163, .0167, .0169-.0172, .0179, .0180, .0188-.0190)

The MFC is scheduled to vote on proposed amendments to readopt 21 rules in 15A NCAC 18A pursuant to the requirements of G.S. 150B-21.3A. The rules relate to standards for commercial shellfish sanitation and processing procedures. Of these, 13 rules have minor changes proposed, such as updates to punctuation, agency names, capitalization, acronym introduction, and a missing degree symbol for a temperature provided; the changes conform the rules to current standards for rulemaking. The remaining eight rules are proposed for readoption with no changes.

SHELLFISH LEASE USER CONFLICTS, PER SESSION LAW 2019-37
(15A NCAC 03O .0201, .0202, .0204*)

The MFC is scheduled to vote on proposed amendments to readopt three rules in 15A NCAC 03 pursuant to the requirements of G.S. 150B-21.3A. Additionally, Session Law 2019-37 was passed with the explicit goal of providing increased support to the state's shellfish aquaculture industry. Central to this was the goal of understanding user conflict issues of shellfish leasing and amending state regulations based on these findings. Section 9 of the law required the North Carolina Department of Environmental Quality, division, and MFC to study how to reduce user conflict related to shellfish cultivation leases, and to adopt rules and reform internal operating procedures consistent with the findings of the study.

Proposed rule amendments are based on the results of the study and aim to reduce user conflict issues while supporting a productive shellfish aquaculture industry. Specifically, the amendments proposed would increase setback limits from developed shorelines for new shellfish leases, limit the allowable number of corners for demarcating shellfish leases to simplify polygon shape, set new criteria for shellfish lease stakes and signage to alleviate navigation concerns, and initiate a new leaseholder training program that emphasizes user conflict reduction strategies.

GENERAL REGULATIONS: JOINT
(15A NCAC 03Q .0101-.0109; [.0107*])

The MFC is scheduled to vote on proposed amendments to readopt nine rules in 15A NCAC 03 pursuant to the requirements of G.S. 150B-21.3A. The proposed readoptions do not contain any changes to the rules. In accordance with G.S. 113-132, these nine rules, subtitled "Jurisdiction of Agencies: Classification of Waters" were originally adopted jointly by the MFC and the N.C. Wildlife Resources Commission (WRC). As a result, each agency must approve readoption of the rules. The WRC has not taken action on these rules.

SHRIMP FISHERY MANAGEMENT PLAN AMENDMENT 1 SPECIAL SECONDARY NURSERY AREAS
(15A NCAC 03R .0104, .0105)

The MFC is scheduled to vote on proposed amendments to readopt one rule (.0105) pursuant to the requirements of G.S. 150B-21.3A and amend one rule (.0104) in 15A NCAC 03. In February 2015, the Shrimp Fishery Management Plan Amendment 1 and its rules were adopted by the MFC. One of the final management measures to implement after adoption of Amendment 1 was to evaluate changing the designation of nine Special Secondary Nursery Areas (SSNAs) that have not been opened to trawling since at least 2004 to permanent Secondary Nursery Areas (SNAs). The evaluation was undertaken and shows these nine sites have all been functioning as SNAs for nearly 30 years. None of these sites has been open for trawling since 1991 at the latest, except for one site (Newport River), which was opened by proclamation in 2004. At its February 2020 business meeting, the MFC voted to select its preferred management option for this management measure, which was to change the designation of all nine proposed SSNAs to SNAs. These changes would convert 8,670 acres of current SSNA waters to SNAs, making them subject to all standard SNA gill net attendance requirements under 03R .0112(b)(1).

The two practical differences between SNAs and SSNAs relates to trawling and small mesh gill net attendance. In SNAs, it is unlawful to use trawl nets for any purpose, but since none of the proposed SSNAs have been opened to trawling since at least 2004, the only impactful management change is the new requirements related to small mesh gill net attendance in all but one of these waters. (Scranton Creek would see no changes in its small mesh gill net attendance requirements.) Please refer to Appendix III of the fiscal analysis for associated tables and figures for the nine areas that shows the gill net attendance requirements that would be in place once the rule changes become effective. The fiscal analysis can be found in the Rulemaking section of the briefing materials.

Rule Amendments for August MFC Meeting

OYSTER SANCTUARIES
(15A NCAC 03R .0117)

At its August 2020 business meeting, the MFC is scheduled to vote to amend one rule in 15A NCAC 03. Rule amendments are proposed to add the boundaries of the five most recently developed oyster sanctuaries (i.e., Long Shoal, Little Creek, Pea Island, Raccoon Island, and Swan Island) and update boundaries for three existing sanctuaries (i.e., Neuse River, West Bluff, and Gibbs Shoal). Boundaries delineating the area for two existing sanctuaries (i.e., Ocracoke and Clam Shoal) are proposed to be removed from rule as they no longer function as biologically productive oyster sanctuaries. The term "sanctuary" refers to reefs protected from oyster harvest in MFC rule or by proclamation issued by the Fisheries Director under the authority of MFC rule.

The Blue Ribbon Advisory Council on Oysters (BRACO) made the first recommendations concerning the establishment of oyster sanctuaries in North Carolina in 1995. The BRACO recommended the state provide selected areas where wild oyster stocks can adapt to present water quality and disease conditions without being subjected to the additional stress of habitat disturbance and oyster harvest. In addition to providing a sanctuary for oysters, these areas would also provide good nursery habitat for other species, increasing their abundance for commercial and recreational fishing. The protected oysters would also provide for increased water filtration reducing turbidity and excess nutrients in the estuary. As part of the recommendation, oyster sanctuaries would be closed to taking of shellfish (i.e.,

oysters, clams, mussels, and scallops) and to bottom disturbing activities such as trawling, long hauling, and dredging for an indefinite period.[1]

While the growing interest in oyster and other shellfish products has promoted sanctuary networks, continuing evidence of the additive environmental benefits mentioned by BRACO has also helped drive industry growth. Specifically, oyster reefs, even those artificially built as sanctuaries, provide a suite of ecosystem services to the surrounding water body, which are defined as the tangible benefits that humans gain from different natural environments. In the case of oyster sanctuaries, the primary ecosystem services benefits that can be measured, as discussed above, are increased output for recreational and commercial fishing of other species through habitat enhancement, improvement of water quality, primarily from nitrogen removal, and shoreline protection due to the energy-capturing potential of oyster reefs.

In all, these direct and indirect benefits that come from constructing sanctuary reefs have been recognized by the state of North Carolina, both in statute and by appropriations. Firstly, the N.C. General Assembly recognized the continued importance of oyster sanctuaries in the 2014 and 2015 legislative sessions: Session Law 2014-120, Section 44 as amended by Session Law 2015-241, Section 14.9, which established the Senator Jean Preston Oyster Sanctuary Network. This was done "to enhance shellfish habitats within the Albemarle and Pamlico Sounds and their tributaries to benefit fisheries, water quality, and the economy. This will be achieved through the establishment of a network of oyster sanctuaries, harvestable enhancement sites, and coordinated support for the development of shellfish aquaculture." While this demonstrates the state's commitment to these sites, it is the state-appropriated spending that has already occurred which signals this long-term investment.

For these reef sites to serve their intended management function as oyster broodstock sanctuaries, harvest protections needed to be applied. As part of the 2008 Oyster Fishery Management Plan Amendment 2, the MFC moved the protection of sanctuaries from proclamation into rules 15A NCAC 03K .0209 and 03R .0117, Oyster Sanctuaries, the former placing restrictions on fishing activities within defined oyster sanctuaries and the latter defining in rule the specific location of each oyster sanctuary using coordinate points. While some sites are currently protected by rule, it is proposed to add the five most recently developed sites, currently protected by proclamation authority, to the existing permanent rule delineating the sanctuary boundaries. The division recommends moving long-standing proclamations into rule once variable conditions have stabilized, to aid in the clarity of regulations for the public. Boundaries delineating the area for two existing sanctuaries (i.e., Ocracoke and Clam Shoal) are proposed to be removed from rule as they no longer function as biologically productive oyster sanctuaries.

In an ongoing effort to review oyster sanctuary boundaries post-construction, the division discovered through side-scan imagery that three of the 10 currently defined sanctuaries in rule (i.e., Neuse River, Gibbs, Shoal, and West Bluff) have material slightly outside of their permitted boundaries. This is likely due to construction error or slight movement during material settlement. To prevent this error from occurring during future development, the division intends to establish a 100-foot buffer of no development for reef construction. The no-development buffer is intended to protect against deployment error and possible material transport over time. The division's Oyster Sanctuary Program has updated the boundary coordinates for these sites to incorporate any material that was found outside of the original depicted sanctuary perimeters. Revisions have already been made to existing reef site permits (state and federal) and now need to be updated in rule for consistency. Proposed rule

[1] Frankenberg, D. 1995. North Carolina Blue Ribbon Advisory Council on Oysters. Final Report on Studies and Recommendations. North Carolina Department of Environment, Health, and Natural Resources. Raleigh, NC.

changes for the Neuse River, Gibbs, Shoal, and West Bluff sanctuaries would delineate all reef site area intended for oyster sanctuary purposes so that protections provided by 15A NCAC 03K .0209 and 03R .0117 may be accurately applied. In addition, accurately delineated boundaries would help safeguard boaters navigating the area.

Today, the division maintains and manages 15 oyster sanctuaries in the network, 10 protected in the oyster sanctuary rules and five currently protected via proclamation. The sanctuaries are in Pamlico Sound and its tributaries encompassing 4.59 – 60.30 acres each, totaling 395.44 acres, with over 205,000 tons of material deployed for oyster habitat. This includes the five new sanctuary sites that are proposed to be added to this rule, which have already had material deployed and reefs constructed. Please refer to Appendix III of the fiscal analysis for tables and figures providing oyster sanctuary names, locations, spatial extents, and development. The fiscal analysis can be found in the Rulemaking section of the briefing materials.

Background Information

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

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

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

Rules	2017	2018	2019	2020	2021	2022	2023	2024
Chapter 03 (172 rules)	Report	41 Rules Readopted	2 Rules Readopted	13 Rules Proposed	Rule Readoption (116)	6/30/22 deadline		
Subchapter 18A (164 rules)			Report	42 Rules Proposed	Rule Readoption (122)			6/30/24 deadline

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

Action Needed

The MFC is scheduled to begin the rule readoption and amendment process for the 50 rules in "Package B".

RULEMAKING UPDATE

PACKAGE A

2020-2021 ANNUAL RULEMAKING CYCLE TABLE

AUGUST 3 NEWS RELEASE

NC REGISTER PUBLICATION OF PROPOSED RULES

N.C. Marine Fisheries Commission
2020-2021 Annual Rulemaking Cycle
Package A

August 2020

Time of Year	Action
February-April 2020	Fiscal analysis of rules prepared by DMF staff and approved by Office of State Budget and Management
May 2020	MFC approves Notice of Text for Rulemaking
August 2020	Publication of proposed rules in the *North Carolina Register*
August-October 2020	Public comment period held
Aug. 26, 2020	Public hearing held via WebEx
November 2020	MFC considers approval of permanent rules
January 2021	Rules reviewed by Office of Administrative Hearings/ Rules Review Commission
April 1, 2021	Proposed effective date of rules
April 1, 2021	Rulebook supplement available online
April 15, 2021	Commercial license sales begin

Roy Cooper
Governor

Michael S. Regan
Secretary

Steve Murphey
Director

Release: Immediate	Contact: Patricia Smith
Date: Aug. 3, 2020	Phone: 252-726-7021

MEDIA ADVISORY: Public hearing scheduled for comment on coastal recreational water quality rules

MOREHEAD CITY – The N.C. Marine Fisheries Commission is accepting public comment on proposed amendments and re-adoption of seven rules under a state-mandated periodic review schedule. The rules pertain to coastal recreational water quality monitoring to protect the public health of swimmers.

A public hearing will be held by web conference on Aug. 26 at 6 p.m. The public may join the meeting online; however, those who wish to speak during the hearing must register by noon Aug. 26.

Members of the public also may submit written comments through an online form or through the mail to N.C. Marine Fisheries Commission Recreational Water Quality Rules Comments, P.O Box 769, Morehead City, N.C. 28557. Comments must be posted online or be received by the Division of Marine Fisheries by 5 p.m. Oct. 2, 2020.

Links to the public hearing registration form and online comment form, as well as text of the proposed rules and links to join the meeting, can be found on the N.C. Marine Fisheries Commission's Proposed Rules Page.

Up for re-adoption are marine fisheries rules in 15A NCAC 18A .3400. Rules .3401, .3402, .3403, and .3405 contain the primary proposed changes that will:

- Update biological standards so they align with new federal performance criteria.
- Ensure equal protection for swimmers by requiring the same bacteriological threshold triggers public health advisories for all swimming locations, regardless of usage frequency.
- Modify the public notification process to reduce delays and confusion, without generating an increased frequency of swimming advisories for the public.

Other proposed changes are technical in nature; two rules are proposed for repeal because they duplicate requirements.

The proposed rule changes will be presented to the Marine Fisheries Commission for final approval in November 2020 and have an intended effective date of April 1, 2021.

For questions about the Marine Fisheries Commission rulemaking process, email Catherine Blum, rules coordinator for the N.C. Division of Marine Fisheries. For questions about the proposed changes to the N.C. Recreational Water Quality Program rules, email Erin Bryan-Millush, with the division's Recreational Water Quality Program, or call her at 252-808-8153.

Event Title:	Marine Fisheries Commission Public Hearing for Proposed Rules
Date and Time:	Aug. 26, 2020 at 6 p.m.
WebEx Link:	https://ncdenrits.webex.com/ncdenrits/onstage/g.php?MTID=ea8608d0638d06136715b7a10b3dce68a
Password:	1234
Event Number:	161 720 5186

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Contact List for Rulemaking Questions or Concerns

For questions or concerns regarding the Administrative Procedure Act or any of its components, consult with the agencies below. The bolded headings are typical issues which the given agency can address but are not inclusive.

Rule Notices, Filings, Register, Deadlines, Copies of Proposed Rules, etc.

Office of Administrative Hearings
Rules Division
1711 New Hope Church Road — 984-236-1850
Raleigh, North Carolina 27609 — 984-236-1947 FAX

contact:	Molly Masich, Codifier of Rules	molly.masich@oah.nc.gov	984-236-1934
	Dana McGhee, Publications Coordinator	dana.mcghee@oah.nc.gov	984-236-1937
	Lindsay Silvester, Editorial Assistant	lindsay.silvester@oah.nc.gov	984-236-1938
	Cathy Matthews-Thayer, Editorial Assistant	cathy.thayer@oah.nc.gov	984-236-1901

Rule Review and Legal Issues

Rules Review Commission
1711 New Hope Church Road — 984-236-1850
Raleigh, North Carolina 27609 — 984-236-1947 FAX

contact:	Amber Cronk May, Commission Counsel	amber.may@oah.nc.gov	984-236-1936
	Amanda Reeder, Commission Counsel	amanda.reeder@oah.nc.gov	984-236-1939
	Ashley Snyder, Commission Counsel	ashley.snyder@oah.nc.gov	984-236-1941
	Karlene Turrentine, Commission Counsel	karlene.turrentine@oah.nc.gov	984-236-1948
	Alexander Burgos, Paralegal	alexander.burgos@oah.nc.gov	984-236-1940
	Julie Brincefield, Administrative Assistant	julie.brincefield@oah.nc.gov	984-236-1935

Fiscal Notes & Economic Analysis

Office of State Budget and Management
116 West Jones Street
Raleigh, North Carolina 27603-8005
Contact: Carrie Hollis, Economic Analyst — osbmruleanalysis@osbm.nc.gov — 984-236-0689

NC Association of County Commissioners
215 North Dawson Street — 919-715-2893
Raleigh, North Carolina 27603
contact: Amy Bason — amy.bason@ncacc.org

NC League of Municipalities — 919-715-4000
150 Fayetteville Street, Suite 300
Raleigh, North Carolina 27601
contact: Sarah Collins — scollins@nclm.org

Legislative Process Concerning Rulemaking

545 Legislative Office Building
300 North Salisbury Street — 919-733-2578
Raleigh, North Carolina 27611 — 919-715-5460 FAX

Jason Moran-Bates, Staff Attorney
Jeremy Ray, Staff Attorney

FILING DEADLINES			NOTICE OF TEXT		PERMANENT RULE			TEMPORARY RULES
Volume & issue number	Issue date	Last day for filing	Earliest date for public hearing	End of required comment Period	Deadline to submit to RRC for review at next meeting	RRC Meeting Date	Earliest Eff. Date of Permanent Rule	270th day from publication in the Register
34:13	01/02/20	12/06/19	01/17/20	03/02/20	03/20/20	04/16/20	05/01/20	09/28/20
34:14	01/15/20	12/19/19	01/30/20	03/16/20	03/20/20	04/16/20	05/01/20	10/11/20
34:15	02/03/20	01/10/20	02/18/20	04/03/20	04/20/20	05/21/20	06/01/20	10/30/20
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35:08	10/15/20	09/24/20	10/30/20	12/14/20	12/21/20	01/21/21	02/01/21	07/12/21
35:09	11/02/20	10/12/20	11/17/20	01/04/21	01/20/21	02/18/21	03/01/21	07/30/21
35:10	11/16/20	10/23/20	12/01/20	01/15/21	01/20/21	02/18/21	03/01/21	08/13/21
35:11	12/01/20	11/05/20	12/16/20	02/01/21	02/22/21	03/18/21	04/01/21	08/28/21
35:12	12/15/20	11/20/20	12/30/20	02/15/21	02/22/21	03/18/21	04/01/21	09/11/21

EXPLANATION OF THE PUBLICATION SCHEDULE

This Publication Schedule is prepared by the Office of Administrative Hearings as a public service and the computation of time periods are not to be deemed binding or controlling. Time is computed according to 26 NCAC 2C .0302 and the Rules of Civil Procedure, Rule 6.

GENERAL

The North Carolina Register shall be published twice a month and contains the following information submitted for publication by a state agency:

(1) temporary rules;
(2) text of proposed rules;
(3) text of permanent rules approved by the Rules Review Commission;
(4) emergency rules
(5) Executive Orders of the Governor;
(6) final decision letters from the U.S. Attorney General concerning changes in laws affecting voting in a jurisdiction subject of Section 5 of the Voting Rights Act of 1965, as required by G.S. 120-30.9H; and
(7) other information the Codifier of Rules determines to be helpful to the public.

COMPUTING TIME: In computing time in the schedule, the day of publication of the North Carolina Register is not included. The last day of the period so computed is included, unless it is a Saturday, Sunday, or State holiday, in which event the period runs until the preceding day which is not a Saturday, Sunday, or State holiday.

FILING DEADLINES

ISSUE DATE: The Register is published on the first and fifteen of each month if the first or fifteenth of the month is not a Saturday, Sunday, or State holiday for employees mandated by the State Personnel Commission. If the first or fifteenth of any month is a Saturday, Sunday, or a holiday for State employees, the North Carolina Register issue for that day will be published on the day of that month after the first or fifteenth that is not a Saturday, Sunday, or holiday for State employees.

LAST DAY FOR FILING: The last day for filing for any issue is 15 days before the issue date excluding Saturdays, Sundays, and holidays for State employees.

NOTICE OF TEXT

EARLIEST DATE FOR PUBLIC HEARING: The hearing date shall be at least 15 days after the date a notice of the hearing is published.

END OF REQUIRED COMMENT PERIOD An agency shall accept comments on the text of a proposed rule for at least 60 days after the text is published or until the date of any public hearings held on the proposed rule, whichever is longer.

DEADLINE TO SUBMIT TO THE RULES REVIEW COMMISSION: The Commission shall review a rule submitted to it on or before the twentieth of a month by the last day of the next month.

(1)	Inflatables	$100.00	Annually
(2)	Rock ~~Walls~~ Walls, portable	$100.00	Annually
(3)	Kiddie Rides (48 inch maximum height restriction)	~~$45.00~~ $100.00	Every setup, except in permanent parks, which shall be inspected annually
(4)	Go Karts	~~$35.00~~ $50.00	Every setup, except in permanent parks, which shall be inspected annually
(5)	Go Kart Tracks	$100.00	Every setup, except in permanent parks, which shall be inspected annually
~~(5)~~(6)	Major Rides (any ride not otherwise listed herein) ~~and Water Slides~~	~~$90.00~~ $100.00	Every setup, except permanent parks, which shall be inspected annually
~~(6)~~(7)	Roller Coasters ~~Coasters, other than mobile or portable roller coasters~~	$250.00	Annually
(8)	Simulators, portable	$100.00	Every setup
(9)	Simulators, stationary	$100.00	Annually
(10)	Trains, small fixed track	$100.00	Annually
(11)	Waterslides	$150.00	Annually

Authority G.S. 95-107; 95-111.4(19).

13 NCAC 15 .0704 SPECIAL AMUSEMENT DEVICE INSPECTION FEE

(a) In the event that an inspection is scheduled and the amusement device operator or owner fails to have all amusement devices scheduled for inspection ready for inspection, any follow up inspection visits requested by the operator or owner shall be charged at two hundred fifty dollars ($250.00) per amusement device, notwithstanding the provisions of 13 NCAC 15 .0703.

(b) All inspections conducted outside normal business hours for the North Carolina Department of Labor ~~(7:00~~ (8:00 a.m. to 6:00 ~~7:00~~ p.m. Monday through Friday, exclusive of State government holidays) shall be charged at the rate of two hundred fifty dollars ($250.00) per inspection, plus the amusement device inspection fee, notwithstanding the provisions of 13 NCAC 15 .0703, however, in no instance may the total fee assessed exceed an aggregate of two hundred fifty dollars ($250.00) for each device inspected.

Authority G.S. 95-107; 95-111.4(19).

13 NCAC 15 .0705 PASSENGER TRAMWAY INSPECTION FEE SCHEDULE

Inspection fees for all passenger tramway devices shall be ~~as follows:~~ $137.00.

	~~Equipment~~	~~Unit Fee~~
~~(1)~~	~~Gondolas, Chairlifts, and Inclined Railroads~~	~~$137~~
~~(2)~~	~~J- or T-Bars and Conveyors~~	~~$62~~
~~(3)~~	~~Rope Tows~~	~~$31~~

Authority G.S. 95-120(9).

TITLE 15A – DEPARTMENT OF ENVIRONMENTAL QUALITY

***Notice** is hereby given in accordance with G.S. 150B-21.3A(c)(2)g. that the Marine Fisheries Commission intends to readopt with substantive changes the rules cited as 15A NCAC 18A .3401-.3405 and repeal through readoption the rules cited as 15A NCAC 18A .3406, and .3407.*

Link to agency website pursuant to G.S. 150B-19.1(c): *http://portal.ncdenr.org/web/mf/mfc-proposed-rules*

Proposed Effective Date: *April 1, 2021*

Public Hearing:
Date: *August 26, 2020*
Time: *6:00 p.m.*
Location: *In an abundance of caution and to address protective measures to help prevent the spread of COVID-19, this public hearing will be held by webinar. WebEx Events meeting link: https://ncdenrits.webex.com/ncdenrits/onstage/g.php?MTID=ea8608d0638d06136715b7a10b3dce68a*
Event number: 161 720 5186 Event password: 1234

Reason for Proposed Action: *The agency proposes five rules for readoption and two rules for repeal through readoption in accordance with G.S. 150B-21.3A for the Periodic Review and Expiration of Existing Rules. This is the first package of rules in 15A NCAC 18A for readoption over a four-year period. As part of the readoption process the agency is proposing changes to comply with the U.S. Environmental Protection Agency (EPA) performance criteria released in 2014. The program follows guidance set forth by the EPA in accordance with the Beach*

Environmental Assessment Coastal Health Act (BEACH Act). The new guidance will increase efficiency in protecting public health and is recommending the same bacterial threshold for all swimming locations regardless of usage category. These bacteriological limits will impact how the agency issues public notifications when samples collected exceed the safe swimming standard.

Comments may be submitted to: *Catherine Blum, P.O. BOX 769, Morehead City, NC 28557; Written comments may also be submitted via an online form available at http://portal.ncdenr.org/web/mf/mfc-proposed-rules.*

Comment period ends: *October 2, 2020*

Procedure for Subjecting a Proposed Rule to Legislative Review: If an objection is not resolved prior to the adoption of the rule, a person may also submit written objections to the Rules Review Commission after the adoption of the Rule. If the Rules Review Commission receives written and signed objections after the adoption of the Rule in accordance with G.S. 150B-21.3(b2) from 10 or more persons clearly requesting review by the legislature and the Rules Review Commission approves the rule, the rule will become effective as provided in G.S. 150B-21.3(b1). The Commission will receive written objections until 5:00 p.m. on the day following the day the Commission approves the rule. The Commission will receive those objections by mail, delivery service, hand delivery, or facsimile transmission. If you have any further questions concerning the submission of objections to the Commission, please call a Commission staff attorney at 919-431-3000.

Fiscal impact. Does any rule or combination of rules in this notice create an economic impact? Check all that apply.

☒ **State funds affected**
☐ **Local funds affected**
☐ **Substantial economic impact (>= $1,000,000)**
☒ **Approved by OSBM**
☐ **No fiscal note required**

CHAPTER 18 - ENVIRONMENTAL HEALTH

SUBCHAPTER 18A - SANITATION

SECTION .3400 - COASTAL RECREATIONAL WATERS MONITORING, EVALUATION, AND NOTIFICATION

15A NCAC 18A .3401 DEFINITIONS

The following definitions shall apply ~~throughout~~ to Section ~~18A~~ .3400 of this Subchapter:

(1) "Division" means the Division of Marine Fisheries or its authorized agent.

~~(1)~~(2) "Enterococcus" means a gram positive coccoid-shaped bacteria that is found in the intestinal tracts of warm-blooded animals that include Enterococcus faecalis, Enterococcus faecium, Enterococcus avium, and Enterococcus gallinarium.

~~(2)~~(3) "Geometric mean" means the mean of "n" positive numbers obtained by taking the ~~"n"th~~ "n^{th}" root of the product of the numbers with at least five samples collected within a ~~30 day~~ 30-day period.

(4) "Pending swimming advisory" means a notification to the public that recommends no primary contact with the water in a specific swimming area when bacteriological limits are exceeded but, does not close a swimming area to the public. A pending swimming advisory shall include a public notification via social media release to notify the public of the risks of swimming in the area. A pending swimming advisory is followed by a resample that will determine if a swimming advisory will be issued.

~~(3)~~(5) "Point source discharge" means the discharge of liquids through a pipe, drain, ~~ditch~~ ditch, or other conveyance into a swimming area.

~~(4)~~(6) "Primary contact" means an activity in water in which a person's head is partially or completely submerged.

(7) "Resample" means a water sample that is collected after the results of the initial water sample collected are processed and the results are analyzed.

~~(5)~~(8) "Storm water discharge" means any natural or manmade conveyance of rainwater or the resultant runoff into coastal recreational waters.

~~(6)~~(9) "Swimming advisory" means a notification to the public that recommends no primary contact with the water in a specific swimming area ~~for public health reasons~~ when bacteriological limits are exceeded, but does not close a swimming area to the public. A swimming advisory shall include a sign posted at the site of the advisory and a ~~press release~~ public notification via social media and news release to notify the public of the risks of swimming in the area.

~~(7) "Swimming alert" means a notification to the public by media contact including a press release to warn the public of risks of swimming in an area that exceeds bacteriological swimming area levels.~~

~~(8)~~(10) "Swimming area" means a coastal recreation area that is used for primary contact located within waters classified by the Division of Water ~~Quality~~ Resources as ~~SA, SB, or SC.~~ SC, SA, or SB as set forth in 15A NCAC 02B .0220-.0222, and is hereby incorporated by reference including subsequent amendments and editions.

~~(9)~~(11) "Swimming season" means from April 1 through October 31 of each year.

~~(10)~~(12) "Tier I swimming area" means a swimming area used daily during the swimming season, ~~including any public access swimming area and any other swimming area where people use the~~

~~water for primary contact,~~ including all oceanfront ~~beaches.~~ beaches that are monitored by the Division.

~~(11)~~(13) "Tier II swimming area" means a swimming area ~~used an average of three days a week~~ that is not used daily during the swimming season.

~~(12) "Tier III swimming area" means a swimming area used an average of four days a month during the swimming season.~~

~~(13)~~(14) "Winter season" means from November 1 through March 31 of each year.

Authority G.S. ~~130A-233.1;~~ 113-134; 113-182; 113-221.3; 143B-289.52.

15A NCAC 18A .3402 BACTERIOLOGICAL LIMITS FOR SWIMMING AREAS

(a) The enterococcus level in a Tier I swimming area shall not equal or exceed either:

(1) ~~A~~ a geometric mean of 35 enterococci per 100 ~~milliliter~~ milliliters of ~~water,~~ water; ~~that includes a minimum of at least five samples collected within 30 days;~~ or

(2) ~~A~~ a single sample of 104 enterococci per 100 ~~milliliter~~ milliliters of water.

(b) The enterococcus level in a Tier II swimming area shall not equal or exceed a single sample of ~~276~~ 104 enterococci per 100 ~~milliliter~~ milliliters of water.

~~(c) The enterococcus level in a Tier III swimming area shall not exceed two consecutive samples of 500 enterococci per 100 milliliter of water.~~

Authority G.S. ~~130A-233.1;~~ 113-134; 113-182; 113-221.3; 143B-289.52.

15A NCAC 18A .3403 PUBLIC NOTICE OF INCREASED HEALTH RISKS IN SWIMMING AREAS

(a) Tier I Swimming areas:

~~(1) A swimming advisory shall be issued by the Division when samples of water from a swimming area exceeds a geometric mean of 35 enterococci per 100 milliliter during the swimming season.~~

~~(2) A swimming alert shall be issued by the Division when a single sample of water from a swimming area exceeds 104 enterococci per 100 milliliter and does not exceed 500 enterococci per 100 milliliter during the swimming season.~~

~~(3) A swimming advisory shall be issued by the Division when a sample of water from a swimming area exceeds a single sample of 500 enterococci per 100 milliliter during the swimming season.~~

~~(4) A swimming advisory shall be issued by the Division when at least two of three concurrent water samples collected at a swimming area exceeds 104 enterococci per 100 milliliter during the swimming season.~~

(1) A pending swimming advisory shall be issued by the Division of Marine Fisheries if a water sample from a swimming area is equal to or exceeds the bacteriological limit set forth in Rule .3402(a)(2) of this Section, during the swimming season.

(2) A swimming advisory shall be issued by the Division if either of the following standards are exceeded during the swimming season:

(A) Both the initial water sample and resample collected from a swimming area is equal to or exceeds the bacteriological limit set forth in Rule .3402(a)(2) of this Section; or

(B) The most recent five water samples collected within a 30-day period from a swimming area is equal to or exceeds the bacteriological limit set forth in Rule .3402(a)(1) of this Section.

(b) Tier II swimming areas:

~~(1) A swimming alert shall be issued by the Division when a single sample of water from a swimming area exceeds 276 enterococci per 100 milliliter and does not exceed 500 enterococci per 100 milliliter during the swimming season.~~

(1) A pending swimming advisory shall be issued by the Division if a water sample from a swimming area is equal to or exceeds the bacteriological limit set forth in Rule .3402(a)(2) of this Section during the swimming season.

(2) A swimming advisory shall be issued by the Division ~~when a single sample~~ if both the initial water sample and resample collected ~~of water~~ from a swimming area is equal to or exceeds ~~500 enterococci per 100 milliliter~~ the bacteriological limit set forth in Rule .3402(a)(2) of this Section during the swimming season.

~~(c) A Tier III swimming area with a water sample result of 500 enterococci per 100 milliliter or higher on the first sample shall be resampled the following day. If the laboratory results of the second sample exceed 500 enterococci per 100 milliliter a swimming advisory shall be issued by the Division.~~

~~(d)~~(c) Signs posted pursuant to this Section shall be placed or erected in open view where the public may see the ~~sign(s)~~ sign prior to entering the water.

~~(e)~~(d) Signs shall ~~convey~~ state the following:

ATTENTION: SWIMMING IN THIS AREA IS NOT RECOMMENDED. BACTERIA TESTING INDICATES LEVELS OF CONTAMINATION THAT MAY BE HAZARDOUS TO YOUR HEALTH. THIS ADVISORY AFFECTS WATERS WITHIN 200' OF THIS SIGN. OFFICE OF THE STATE HEALTH DIRECTOR.

Authority G.S. ~~130A-233.1;~~ 113-134; 113-182; 113-221.3; 143B-289.52.

15A NCAC 18A .3404 SWIMMING ADVISORIES FOR POINT SOURCE DISCHARGES INTO SWIMMING AREAS

(a) A wastewater treatment plant that discharges into swimming waters shall be posted by the Division of Marine Fisheries with at least one sign until the discharge is removed. The ~~sign(s)~~ sign for a wastewater treatment plant discharge shall ~~convey~~ state the following:

~~ATTENTION: THESE WATERS MAY BE CONTAMINATED BY HUMAN OR ANIMAL WASTE. SWIMMING IS NOT ADVISED IN THESE WATERS BECAUSE OF THE INCREASED RISK OF ILLNESS. OFFICE OF THE STATE HEALTH DIRECTOR.~~

WARNING! SEWAGE TREATMENT EFFLUENT DISCHARGE SITE. SWIMMING IS NOT ADVISED IN THESE WATERS BECAUSE OF THE INCREASED RISK OF ILLNESS. OFFICE OF THE STATE HEALTH DIRECTOR.

(b) A swimming advisory shall be issued by the Division and at least one sign shall be posted at the public access to swimming waters that have been impacted by a wastewater system failure. The sign for waters impacted by a wastewater spill shall state the following:

WARNING! WASTEWATER SPILL. SWIMMING IS NOT ADVISED IN THESE WATERS BECAUSE OF THE INCREASED RISK OF ILLNESS. OFFICE OF THE STATE HEALTH DIRECTOR.

~~(b)~~(c) A swimming advisory shall be issued by the Division and at least ~~two signs~~ one sign shall be posted at a storm drain or storm water discharge that is ~~actively~~ discharging into a Tier 1 swimming area. ~~Signs~~ A sign shall be placed to advise the public as they enter the area impacted by the ~~drain.~~ storm drain or storm water discharge. For dry weather discharges, ~~The signs~~ the sign ~~for a storm drain or storm water discharge~~ shall ~~convey~~ state the following:

~~SWIMMING IS NOT RECOMMENDED BETWEEN SIGNS. WATERS MAY BE CONTAMINATED BY DISCHARGE FROM PIPE. OFFICE OF THE STATE HEALTH DIRECTOR.~~

WARNING! STORM WATER DISCHARGE AREA. SWIMMING WITHIN 200 YARDS OF THIS SIGN MAY INCREASE THE RISKS OF WATERBORNE ILLNESS. OFFICE OF THE STATE HEALTH DIRECTOR.

For wet weather discharges, the sign shall state the following:

WARNING! STORM WATER DISCHARGE AREA. WATERS MAY BE CONTAMINATED BY DISCHARGE FROM PIPE. SWIMMING IS NOT RECOMMENDED WITHIN 200 YARDS OF THIS SIGN DURING ACTIVE DISCHARGE. FOR MORE INFORMATION, CALL 252-726-6827. OFFICE OF THE STATE HEALTH DIRECTOR.

~~(c)~~(d) A swimming advisory shall be issued by the Division and at least two signs shall be posted at a storm drain where flood waters are being pumped into a swimming area. ~~The signs shall remain posted for at least 24 hours after the pumping of flood waters has ceased.~~ The signs shall ~~convey~~ state the following:

SWIMMING IS NOT RECOMMENDED BETWEEN SIGNS. WATERS MAY BE CONTAMINATED BY DISCHARGE FROM PIPE. OFFICE OF THE STATE HEALTH DIRECTOR.

~~(d)~~(e) A swimming advisory shall be issued by the Division and at least two signs shall be posted at an area receiving dredge material on a swimming beach ~~when~~ if the dredge material is being pumped from an area closed to shellfish harvesting. The signs shall ~~convey~~ state the following:

SWIMMING IS NOT RECOMMENDED BETWEEN SIGNS. WATERS MAY BE CONTAMINATED BY DISCHARGE FROM PIPE. OFFICE OF THE STATE HEALTH DIRECTOR.

Authority G.S. ~~130A-233.1;~~ 113-134; 113-182; 113-221.3; 143B-289.52.

15A NCAC 18A .3405 RESCINDING A PENDING SWIMMING ADVISORY OR SWIMMING ~~ALERT~~ ADVISORY

(a) A pending swimming advisory shall be rescinded by the Division of Marine Fisheries via social media release when the resample collected meets the bacteriological limit set forth in Rule .3402(a)(2) of this Section.

~~(a)~~(b) A Tier I swimming area advisory shall be rescinded by the Division via social media and news release, including the removal of signs, when ~~two consecutive weekly water samples and the geometric mean meet the bacteriological limits in Rule 18A .3402(a) of this Section. A swimming alert shall be rescinded within 24 hours of compliance with Rule 18A .3402(a)(2) of this Section.~~ both of the following conditions are met:

(1) The geometric mean has met the bacteriological limit set forth in Rule .3402(a)(1) of this Section.

(2) Two consecutive weekly water samples meet the bacteriological limit set forth in Rule .3402(a)(2) of this Section.

~~(b)~~(c) A Tier II ~~or Tier III~~ swimming area advisory ~~or alert~~ shall be rescinded by the Division via social media and news release, including the removal of signs, after water samples meet the bacteriological ~~standard in Rule 18A .3402(b) or (c) of this Section.~~ limit set forth in Rule .3402(b) of this Section.

~~(c)~~(d) A swimming advisory resulting from a ~~point source~~ flood water discharge or the discharge of dredge material shall be rescinded by the Division via social media and news release 24 hours after the discharge has ~~ceased.~~ ceased, to allow for tidal dispersion.

(e) A swimming advisory resulting from a wastewater system failure shall be rescinded by the Division via social media and news release, including the removal of signs, when failure has been corrected and water samples collected meet the bacteriological limit set forth in Rule .3402(a)(2) of this Section.
~~(d) When a swimming advisory or alert has been rescinded, the Division shall issue a press release to announce the lifting of the advisory or the alert and the sign(s) shall be removed immediately by the Division.~~

Authority G.S. ~~130A-233.1;~~ 113-134; 113-182; 113-221.3; 143B-289.52.

15A NCAC 18A .3406 DESTRUCTION OF SIGNS
~~A person shall not mutilate, deface, pull down, destroy, hide, or steal any sign posted pursuant to this Section.~~

Authority G.S. 130A-233.1.

15A NCAC 18A .3407 APPLICABILITY OF RULES
~~The rules of this Section shall apply to all marine recreational waters in coastal North Carolina.~~

Authority G.S. 130A-233.1.

RULEMAKING UPDATE

PACKAGE B

2020-2021 ANNUAL RULEMAKING CYCLE TABLE

FISCAL IMPACT ANALYSIS OF PROPOSED RULE AMENDMENTS FOR CLASSIFICATION OF SHELLFISH GROWING WATERS

RULE IMPACT ANALYSIS FOR READOPTION OF 15 A NCAC 18 A RULE PACKAGE

FISCAL IMPACT ANALYSIS OF PROPOSED RULE AMENDMENTS TO SHELLFISH LEASING REGULATIONS

RULE IMPACT ANALYSIS FOR READOPTION OF 15 A NCAC 30Q.0100

FISCAL IMPACT ANALYSIS OF PROPOSED SPECIAL SECONDARY NURSERY AREAS

FISCAL IMPACT ANALYSIS OF PROPOSED OYSTER SANCTUARY RULE AMENDMENTS

N.C. Marine Fisheries Commission
2020-2021 Annual Rulemaking Cycle
Package B

August 2020

Time of Year	Action
February-July 2020	Fiscal analysis of rules prepared by DMF staff and approved by Office of State Budget and Management
August 2020	MFC approves Notice of Text for Rulemaking
October 2020	Publication of proposed rules in the *North Carolina Register*
October-December 2020	Public comment period held
October 2020	Public hearing held (details to be determined)
February 2021	MFC considers approval of permanent rules
April 2021	Rules reviewed by Office of Administrative Hearings/ Rules Review Commission
April 15, 2021	Commercial license sales begin
May 1, 2021 *or* TBD	Proposed effective date of rules; some rules are subject to legislative review per S.L. 2019-198 and G.S. 14-4.1.
May 1, 2021	Rulebook supplement available online

Fiscal Impact Analysis of Proposed Rule Amendments for Classification of Shellfish Growing Waters

Rule Amendments: 15A NCAC 18A .0431, .0704, .0901-.0910, .0913, .0914

Name of Commission: N.C. Marine Fisheries Commission

Agency Contact: David Dietz, Fisheries Economics Program Manager
N.C. Division of Marine Fisheries
3441 Arendell Street
Morehead City, NC 28557
919-707-8573
David.Dietz@ncdenr.gov

Impact Summary: State government: Yes
Local government: No
Federal government: No
Substantial impact: No

Authority:

North Carolina General Statutes

G.S. 113-134.	Rules.
G.S. 113-182.	Regulation of fishing and fisheries.
G.S. 113-221.2.	Additional rules to establish sanitation requirements for scallops, shellfish, and crustacea; permits and permit fees authorized.
G.S 143B-289.52.	Marine Fisheries Commission - powers and duties.
G.S. 150B-21.3A	Periodic review and expiration of existing rules.

Necessity: General Statute 150B-21.3A requires state agencies to review their existing rules every 10 years to determine which rules are still necessary, and to either readopt or repeal each rule as appropriate. The proposed amendments readopt and repeal through readoption 14 rules in 15A NCAC 18A pursuant to this requirement. Additionally, proposed amendments to rules will comply with minimum standards for the National Shellfish Sanitation Program (NSSP) Guide for the Control of Molluscan Shellfish (Guide). North Carolina must meet these minimum standards in order for N.C. shellfish to be able to be sold through interstate commerce.

I. Summary

Proposed amendments seek to conform a variety of shellfish sanitation regulations with existing federal standards in order to maintain interstate commerce, as well as update rule language to be more concise, consistent, and homogenized (see Appendix I). Rule language is also proposed to formalize the use of conditionally approved shellfish areas to increase the overall flow of shellfish from the state; the use of conditional areas has been in place in North Carolina for over 20 years. In short, none of the proposed rule changes lead to any substantive changes in the ongoing operations of the Division, but rather conform language to these practices and

requirements. This will lead to a small flow of benefits to the state due to increased efficiencies, with no costs incurred as all action will fold into ongoing activities.

Overall, the proposed readoptions do not result in a significant economic impact to the regulated community, state government, or other parties; no new costs to enforcement are estimated from these proposed rule changes as well.

II. Introduction and Purpose of Rule Changes

Session Law 2011-145 abolished the Division of Environmental Health and transferred the Shellfish Sanitation and Recreational Water Quality section to the Division of Marine Fisheries under a Type I transfer. As a result, G.S. 130A-230 was repealed and the authority for rulemaking for the sanitation requirements for harvesting, processing and handling of scallops, shellfish and crustacea was transferred to the Marine Fisheries Commission, which is now contained in G.S. 113-221.2.

The purpose of the Marine Fisheries Commission (MFC) is to manage, restore, develop, cultivate, conserve, protect, and regulate the marine and estuarine resources within its jurisdiction, as described in G.S. 113-132, including commercial and recreational fisheries resources (Chapter 143B, Article 7, Part 5D). For the protection of public health, the MFC is also required to adopt rules establishing sanitation requirements for the harvesting, processing, and handling of scallops, shellfish, and crustacea of in-state origin. The rules of the MFC may also regulate scallops, shellfish, and crustacea shipped into North Carolina (G.S. 113-221.2).

North Carolina is part of the NSSP, which is a federal/state cooperative program designed to "promote and improve the sanitation of shellfish (oysters, clams, mussels, and scallops) moving in interstate commerce". Division of Marine Fisheries staff work together with representatives from other states, the federal government, and industry through the Interstate Shellfish Sanitation Conference to develop guidelines for all state shellfish programs that are summarized in the Guide. By adopting the proposed rule amendments, North Carolina would maintain full compliance with federal minimum standards included in this Guide and would maintain full eligibility of the sale of shellfish products through interstate commerce.

Since **15A NCAC 18A .0704 and .0914** were originally adopted, the national requirements for laboratories or laboratory methods used to support state shellfish sanitation programs have changed significantly. These changes have been made in order to assure that shellfish sanitation laboratories across the country will meet consistent minimum quality standards, and that they are using laboratory methods that have been specifically evaluated for appropriate use within the program. The amended language included in these rules will bring North Carolina standards into agreement with those national standards. Additionally, a number of new laboratory methods have been approved for use within the program since these rules were originally adopted, so these modifications will provide the State with additional flexibility to adapt the laboratory testing program as necessary in order to best continue to meet national requirements.

The next rule with proposed changes is **15A NCAC 18A .0902**, which sets requirements for classification of shellfish growing waters. Within the 15A NCAC 18A .0900 rules, the terms "shellfish growing waters" and "shellfish growing areas" are sometimes used interchangeably.

However, these terms have different definitions. Specifically, “shellfish growing waters” are defined in Rule 15A NCAC 18A .0901 as “waters which support or could support shellfish life”, while “shellfish growing areas” are units of management that have been created by the Division.

As currently written, .0902 could be interpreted to mean that each “growing area” could only include one classification type, which is not the case. The proposed changes to this rule are intended to clear up this confusion by eliminating the interchangeable use of those terms within this rule, and to only use the term “shellfish growing waters” instead. Shellfish growing areas are addressed more directly in Rule 15A NCAC 18A .0903.

The Division maintains maps of these classifications in multiple different locations, so a specific reference location is not provided in the rule. Public facing maps showing which areas are open or closed to harvest are available on the Division website or can be provided in paper form from the office. More detailed maps showing all classification types are maintained internally on web maps and in GIS, and are available to the public through the DEQ Online GIS Data Portal.

Proposed amendments to **15A NCAC 18A .0903** attempt to ensure that the Sanitary Survey requirements in North Carolina meet the minimum standards laid out in the Guide, and it also seeks to provide additional detail and clarity versus what was originally put into rule. Specifically, proposed changes:

1) Clarify that the Sanitary Survey Report is a written document.
2) Clarify that the sanitary surveys need to be completed *at least* every three years (can be done more frequently), and that they are required for any growing area not fully classified as Prohibited. Also, the language from Rule 15A NCAC .0910 (proposed for repeal) is encompassed to indicate what is required to change a classification.
3) Update the language on what needs to be included in the Sanitary Survey Report, and update the bacteriological water quality sampling requirements to reflect the national standards.
4) Add the requirement that an annual evaluation be completed for each growing area each year when that growing area is not evaluated with a Sanitary Survey, and specify the required contents of the annual evaluations.

When **15A NCAC 18A .0904** was originally adopted, it was written to conform to the standards included in the version of the Guide that was in effect at that time. The Guide has undergone several revisions since that time in order to reflect the best available science, however, and the standards that .0904 describe are no longer “considered sufficient to protect public health when shellfish are taken from growing areas waters adversely affected by known meteorological or hydrological events that occur intermittently and are shown to degrade water quality” (National Shellfish Sanitation Program Guide for the Control of Molluscan Shellfish – 2017 Revision – Guidance Documents, Chapter 2, pg. 252).

The current standards, based on a statistical method described as the estimated 90th percentile, “will protect against the potential public health problems that may result when shellfish are consumed from growing waters that are adversely affected by intermittent pollution events…” (National Shellfish Sanitation Program Guide for the Control of Molluscan Shellfish – 2017 Revision – Guidance Documents, Chapter 2, pg. 252). The amended rule as presented here

describes the current minimum standards necessary for classifying a shellfish growing area as approved for harvest, and will bring North Carolina standards into agreement with the national requirements.

Additionally, the original .0904 rule was written when only one type of laboratory testing method for measuring fecal coliform bacteria in shellfish growing waters had been approved for use by the national program, and the language of the rule was tailored specifically towards the standards associated with that lab method. Since that time, additional lab methods have been developed and approved for use within the program, and this amended rule is written to include the standards associated with results generated by these different lab methods. The ability to classify shellfishing waters using results generated by these additional methods will provide the North Carolina program with additional flexibility to adapt the laboratory testing program as necessary in order to best continue to meet national requirements.

The next rule with proposed changes is **15A NCAC 18A .0905**, which sets requirements for conditionally approved waters. The conditionally approved classification was added to the Guide to "offer the Authority an alternative to placing the area in the…prohibited classification year round when, during certain times of the year or under certain conditions, the shellstock from the growing area may be safely harvested" (National Shellfish Sanitation Program Guide for the Control of Molluscan Shellfish – 2017 Revision – Guidance Documents, Chapter 2, pg. 233). "Use of the conditionally approved…classification by the Authority is optional" (National Shellfish Sanitation Program Guide for the Control of Molluscan Shellfish – 2017 Revision – Guidance Documents, Chapter 2, pg. 233), but when used, provides harvesters with access to a shellfish resource that would otherwise be completely unavailable for harvest. As it is optional for the Division to work within the conditional classification, there is no federal requirement to initiate the program. However, once action is taken by the Division, there are minimum federal standards defined in 15A NCAC 18A .0905, such as monitoring and surveys, necessary to maintain in order to remain compliant and participate in shellfish harvest from conditional waters.

Use of the conditionally approved classification also requires extra work on the part of the Division, however, as management plans need to be developed and extra sampling needs to occur in order to meet the requirements of the plan. For example, in an area that is conditionally approved with a management plan based off of the impacts from rainfall/storm water runoff, staff must first conduct a study to determine the amount of rainfall that will cause bacteria levels in that area to exceed the standards for safe harvest. Staff must then monitor rainfall totals in that area on a daily basis to see if the threshold established by the study has been exceeded, and when it is, they must issue a proclamation temporarily closing that area to harvest. Once the area has been temporarily closed, staff must then follow up with direct sampling of select stations within the growing area to determine when bacteria levels have once again begun to meet the standards for safe harvest. Only then can another proclamation be issued, reopening the area to harvest.

The proposed amendments to (a)(1) and (a)(2) of this rule seek to more clearly define the conditions necessary for an area to be classified as conditionally approved. It is important to retain the "known and predictable" language in this part of the rule because if the conditions when these areas will meet approved waters classification criteria are not both "known" and

"predictable", then it will be impossible to develop the required management plan for that area. Because of the extra workload associated with use of the conditionally approved classification, the agency is cautious in proposing amendments so as to not put in place requirements to use the classification anywhere that the criteria spelled out in (a)(1) and (a)(2) are met. Subparagraphs (a)(3) and (a)(4) were added to provide flexibility to the agency so if there is not harvestable resource in an area or if the staffing necessary to properly meet the requirements of a management plan is not available, to instead use only the Approved and Prohibited classifications for a Growing Area.

The proposed amendments to paragraph (b) of this rule aim to combine the contents of old paragraphs (c) and (d) into one place and to more clearly state that a written management plan must be developed for all conditionally approved areas that defines the conditions under which a conditionally approved area may be open to harvest. Newly developed paragraph (c) adds in the requirement that each plan be re-evaluated on an annual basis, and that a written report summarizing the findings of those re-evaluations must be prepared. The added or restated requirements in paragraphs (b) and (c) of this rule are both necessary to ensure that North Carolina meets the minimum national standards for any state using the conditionally approved classification.

Additionally, the agency name was updated to the Division of Marine Fisheries throughout the rule. This rule was originally written when the Shellfish Sanitation Section was part of the Division of Environmental Health, and had to make recommendations to the Division of Marine Fisheries when areas should be closed or opened to harvest. In 2011, the Division of Environmental Health was abolished by the legislature and the Shellfish Sanitation Section was moved to the Division of Marine Fisheries. Any language reflective of the original separation of the two divisions has been struck from this amended rule and all sections have been revised to indicate that all requirements and authority described in this rule apply to the Division of Marine Fisheries alone.

The next rule with proposed changes is **15A NCAC 18A .0906**, which sets requirements for restricted areas. The restricted classification is another optional classification type included in the Guide that may be used to indicate that an area is only suitable for harvest if the shellfish taken from those waters are then subjected to additional treatment that will render them safe for human consumption. Specifically, "this option may be used when the sanitary survey for the growing area indicates that the levels of fecal material or poisonous or deleterious substances in the growing area are such that additional treatment through depuration or relay can render the shellstock safe for human consumption" (National Shellfish Sanitation Program Guide for the Control of Molluscan Shellfish – 2017 Revision – Guidance Documents, Chapter 2, pg. 234). The proposed amendments to paragraph (a) of this rule are intended to eliminate vague language and to update the requirements that need to be met in order to classify an area as restricted so that they match the requirements included in the Guide.

Rule references have been updated in paragraphs (b) and (c) of this rule. When this rule was originally written, the Shellfish Sanitation Section was part of the Division of Environmental Health, and had a distinct set of rules and requirements for relay and depuration from what was included in the Division of Marine Fisheries rules. In 2011, the Division of Environmental

Health was abolished and the Shellfish Sanitation Section was moved to the Division of Marine Fisheries, so the proposed rule changes reflect the fact that current Division of Marine Fisheries requirements for relay and depuration are included in separate sections of rules.

Paragraph (d) of this rule has been added to include specific bacteriological standards from the Guide that need to be met in order for any shellfish growing waters to be classified as restricted and used as a source of shellstock for depuration. These standards were not included in the original text of the rule, and have not been necessary so far, as North Carolina does not currently have any permitted depuration facilities. However, the agency wants to take this opportunity to include these standards so that the rules accurately reflect the national requirements in case anyone does decide to pursue a permit to operate a depuration plant in the future.

Rules **15A NCAC 18A .0907, .0908, and .0909** address related requirements. This set of rules is intended to define the requirements surrounding shellfish growing waters that are classified as prohibited. During review of the rules it was determined that the requirements contained in .0908 were redundant with and better suited for inclusion in Rule .0907, so .0908 is proposed for repeal.

The proposed amendments to Rule .0907 are intended to ensure that the language used in the rules to define when an area must be prohibited will match the national requirements as described in the Guide. The proposed amendments to Rule .0909 are designed to more clearly define how prohibited buffer zones will be established and to more comprehensively include all instances where a buffer zone is necessary, including the reference to Rule .0911 (marinas) that was not included in the original rule text.

The proposed amendments to **15A NCAC 18A .0913** update the process for making a closure due to a public health emergency to better reflect the current structure of the Division of Marine Fisheries, as previously described for rules .0905 and .0906.

Proposed amendments to Rule **15A NCAC 18A .0901** update definitions to conform with proposed changes to the other rules in 15A NCAC 18A .0900.

Rule **15A NCAC 18A .0431** is proposed for repeal through readoption. The rule is redundant with 15A NCAC .0904. For Rule **15A NCAC 18A .0908**, the agency determined that the requirements contained in .0908 were redundant with and better suited for inclusion in Rule 15A NCAC 18A .0907, so .0908 is proposed for repeal through readoption. Finally, Rule **15A NCAC 18A .0910** is also proposed for repeal through readoption, with the requirements of the rule being added to Rule 15A NCAC 18A .0903 instead, for improved clarity and organization.

III. Fiscal Impact Analysis

While these proposed rule amendments lead to substantive changes to a variety of shellfish sanitation and harvest requirements, the new actions do not actually result in significant changes to the operations of the Division or the supply of shellfish products within or outside of North Carolina. Rather, the overarching effect of these proposed rule amendments is to conform rule language with updated state practices and federal requirements in order to remain compliant and continue participating in interstate commerce. Because of this, the fiscal impacts overall from

these proposed rule amendments are low, only resulting in a variety of benefits to the state in terms of heightened efficiency.

Summary of Potential Benefits

The primary and most substantial benefit from the proposed rule amendments is the shift in rule language to conform with the current federal minimum standards for shellfish harvest and sale. While the Division has already been following these standards and complying in practice, North Carolina rule language had not yet been updated to match these standards. By approving the proposed rule amendments, the state will reduce inefficiencies in terms of meeting federal requirements for interstate commerce, and will be able to maintain shellfish trade without the need to reconcile different state and federal standards. While this benefit is not expected to be significant, it does provide a small gain to the state as the interstate trade of shellfish becomes more streamlined.

Beyond the efficiencies gained from adopting federal minimum requirements, the proposed rule changes also look to conform, consolidate, and re-define much of the rule language around shellfish sanitation. The primary benefit to the state will be from a reduced time-cost of administration, as much of the proposed rule language is now more concise and homogenized. By streamlining rule language and generating more concrete definitions for many common practices within shellfish sanitation, the Division will be able to conduct this business more efficiently, generating a small economic benefit to the state over time. With this, the repeal of rules that contain duplicative language leads to a small administrative benefit to the state as well, as rule language is now more concise, more efficient, and no longer at risk to contradict itself in the future if any additional rule changes are proposed.

Additionally, the proposed updated rule language around access to sanitation testing will generate more economic benefits to the state moving forward. The proposed language would grant the Division a more flexible range of options for water and shellfish testing, which creates a faster, more efficient monitoring program. While these options have been available to Division staff, they have not been written in rule. By formalizing this more flexible approach, the proposed rule changes would guarantee a more efficient and dynamic workflow for monitoring, resulting in a small flow of economic benefit to the state moving forward.

Lastly, the proposed rule language surrounding conditionally approved waters also reflects an ongoing management practice of the division that would generate future benefits to the state by formalizing into rule. The inclusion of the proposed language around conditionally approved shellfish areas allows the Division to increase the overall flow of shellfish products to market by allowing access to at-risk harvest sites when environmental conditions allow. This practice has been allowed within the state since the 1990’s, and harvesters have been extracting shellfish from these sites as permitted since that time. Therefore, while there is no expected increase in overall shellfish supply by codifying the proposed rule language around conditional sites, putting the practice in rule will again generate a more efficient process for approving harvest from these areas. By formalizing the usage of conditional shellfish sites long-term, a more stable market and supply chain for shellfish from these areas can be established, leading to a small flow of economic benefits to the state.

Summary of Potential Costs

As discussed, all of the proposed rule changes in this fiscal note aim to formalize the language and requirements of actions already being conducted by the Division. While some of these proposed changes aim to homogenize language and definitions, others aim to conform monitoring requirements and procedures with federal standards. If the Division were not already meeting all of the criteria laid out in these proposed rule changes, a flow of costs to the state would occur immediately as the Division works to implement all of the new practices. However, as no structural changes to Division practices would occur under the proposed rule changes, no costs to the state are anticipated.

With this, while the proposed rule changes to conditional shellfish areas do require the addition of formalized language into management plans, this language has already been prepared through ongoing work with these sites. No additional costs to the state will be incurred as the management language of conditional areas has already been included in the Sanitary Survey Reports developed by the Division as part of ongoing work functions. It is also important to note that from a federal perspective the conditional shellfish area program is a completely optional undertaking in order to increase a state's flow of shellfish products. Therefore, there are no additional costs to maintain, initiate, or terminate the program at the federal level. The only costs come from maintaining the minimum monitoring requirements outlined in 15A NCAC 18A .0905, which occur as part of the Division's ongoing monitoring activities and therefore generate no new costs to the state.

Lastly, as all of these proposed activities are already occurring, and occur as part of ongoing work of the Division's Shellfish Sanitation program, there are no additional costs to enforcement expected.

Appendix I Proposed Rule Changes:

15A NCAC 18A .0431 is proposed for repeal through readoption as follows:

15A NCAC 18A .0431 STANDARDS FOR AN APPROVED SHELLFISH GROWING AREA

~~In order that an area be approved for shellfish harvesting for direct market purposes the following criteria must be satisfied as indicated by sanitary survey:~~

~~(1) the shoreline survey has indicated that there is no significant point source contamination;~~

~~(2) the area is not so contaminated with fecal material that consumption of the shellfish might be hazardous;~~

~~(3) the area is not so contaminated with radionuclides or industrial wastes that consumption of the shellfish might be hazardous; and~~

~~(4) the median fecal coliform Most Probable Number (MPN) or the geometric mean MPN of water shall not exceed 14 per 100 milliliters, and not more than 10 percent of the samples shall exceed a fecal coliform MPN of 43 per 100 milliliters (per five tube decimal dilution) in those portions of areas most probably exposed to fecal contamination during most unfavorable hydrographic conditions.~~

History Note: *Authority G.S. 130A-230;*
Eff. February 1, 1987;
Repealed Eff. May 1, 2021.

15A NCAC 18A .0704 is proposed for readoption with substantive changes as follows:

15A NCAC 18A .0704 LABORATORY PROCEDURES

(a) ~~The laboratory and the laboratory operator shall be approved by the Division.~~ All laboratory analyses used to evaluate the effectiveness of the depuration process shall be performed by a laboratory found to conform or provisionally conform to the requirements established under the National Shellfish Sanitation Program (NSSP), as determined by a Food and Drug Administration (FDA) Shellfish Laboratory Evaluation Officer or by an FDA certified State Shellfish Laboratory Evaluation Officer.

~~(b) The laboratory shall conduct routine bacterial examinations of process water and shellfish, and special examinations when necessary or required in accordance with Rule. 0706 of this Subchapter.~~

~~(c)~~(b) ~~Bacterial examinations of shellfish and sea water shall be made in accordance with "Recommended Procedures for Examination of Sea Water and Shellfish", American Public Health Association, Inc., which is adopted by reference in accordance with G.S. 150B-14(c), or other methods approved by the Division. A copy of this publication is available for inspection at the Shellfish Sanitation Office, Marine Fisheries Building, Arendell Street, Morehead City, North Carolina 28557.~~All methods for the analysis of depuration process water and shellfish that are used to evaluate the effectiveness of the depuration process shall be cited in the latest approved edition of the NSSP Guide for the Control of Molluscan Shellfish, Section IV: Guidance Documents, subsection Approved NSSP Laboratory Tests or validated for use by the NSSP under the Constitution, Bylaws and Procedures of the Interstate Shellfish Sanitation Conference. If there is an immediate or ongoing critical need for a method and no method approved for use within the NSSP exists, the following may be used:

(1) a validated Association of Analytical Communities, Bacteriological Analysis Manual, or Environmental Protection Agency method; or

(2) an Emergency Use Method as set forth in the latest approved edition of the NSSP Guide for the Control of Molluscan Shellfish.

(c) The laboratory shall conduct examinations of depuration process water and shellfish and conduct special examinations if necessary or required, in accordance with Rules .0706-.0709 of this Section.

~~(d) All other physical, chemical, or biological tests shall be conducted according to "Standard Methods for the Examination of Water and Waste Water", prepared and published by American Public Health Association, American Water Works Association, and Water Pollution Control Federation, which is adopted by reference in accordance with G.S. 150B-14(c), or other methods approved by the Division. A copy of this publication is available for inspection at the Shellfish Sanitation Office, Fisheries Building, Arendell Street, Morehead City, North Carolina 28557.~~

History Note: *Authority G.S. ~~130A-230;~~ 113-134; 113-182; 113-221.2; 143B-289.52;*
Eff. February 1, 1987;
Amended Eff. September 1, 1991; September 1, 1990;
Readopted Eff. May 1, 2021.

15A NCAC 18A .0901 is proposed for readoption with substantive changes as follows:

15A NCAC 18A .0901 DEFINITIONS

The following definitions shall apply throughout this Section.

(1) ~~"Approved area"~~ "Approved" means ~~an area~~ shellfish growing waters determined suitable for the harvesting of shellfish for direct market purposes.

(2) "Closed-system marina" means a marina constructed in canals, basins, tributaries or any other area with restricted tidal flow.

(3) "Colony forming unit" means an estimate of the number of viable bacteria cells in a sample as determined by a plate count.

~~(3)~~(4) "Commercial marina" means ~~marinas~~ a marina that ~~offer~~ offers one or more of the following services: fuel, transient dockage, haul-out facilities, or repair services.

~~(4)~~(5) "Conditionally ~~approved area"~~ approved" means ~~an area~~ shellfish growing waters that are subject to predictable intermittent pollution but that may be used for harvesting shellfish for direct market purposes when management plan criteria are met.

~~(5) "Depuration" means mechanical purification or the removal of adulteration from live shellstock by any artificially controlled method.~~

(6) "Division" means the Division of ~~Environmental Health~~ Marine Fisheries or its authorized agent.

(7) "Estimated 90th percentile" means a statistic that measures the variability in a sample set that shall be calculated by:

(a) calculating the arithmetic mean and standard deviation of the sample result logarithms (base 10);

(b) multiplying the standard deviation in Sub-Item (a) of this Item by 1.28;

(c) adding the product from Sub-Item (b) of this Item to the arithmetic mean; and

(d) taking the antilog (base 10) of the results from Sub-Item (c) of this Item to determine the estimated 90th percentile.

~~(7)~~(8) "Fecal coliform" means bacteria of the coliform group ~~which~~ that will produce gas from lactose in a multiple tube procedure liquid medium (EC or A-1) within 24 plus or minus two hours at 44.5°C plus or minus 0.2°C in a water bath.

(9) "Geometric mean" means the antilog (base 10) of the arithmetic mean of the sample result logarithm.

~~(8) "Growing waters" means waters which support or could support shellfish life.~~

~~(9)~~(10) "Marina" means any water area with a structure (dock, basin, floating dock, etc.) ~~which~~ that is utilized for docking or otherwise mooring vessels and constructed to provide temporary or permanent docking space for more than 10 boats.

~~(10)~~(11) "Marine biotoxins" means ~~a poisonous substance accumulated by shellfish feeding upon dinoflagellates containing toxins.~~any poisonous compound produced by marine microorganisms and accumulated by shellstock.

(12) "Median" means the middle number in a given sequence of numbers, taken as the average of the two middle numbers when the sequence has an even number of numbers.

~~(11)~~(13) "Most probable number (MPN)" means a statistical estimate of the number of bacteria per unit volume and is determined from the number of positive results in a series of fermentation tubes.

(14) "National Shellfish Sanitation Program (NSSP)" means the cooperative federal-state-industry program for the sanitary control of shellfish that is adequate to ensure that the shellfish produced in accordance with the NSSP Guide For The Control Of Molluscan Shellfish will be safe and sanitary.

~~(12)~~(15) "Open-system marina" means a marina constructed in an area where tidal currents have not been impeded by natural or man-made barriers.

~~(13)~~(16) "Private marina" means any marina that is not a commercial marina as defined in this Rule.

~~(14)~~(17) ~~"Prohibited area"~~ "Prohibited" means ~~an area~~ shellfish growing waters unsuitable for the harvesting of shellfish for direct market purposes.

~~(15)~~(18) "Public health emergency" means any condition that may immediately cause shellfish waters to be unsafe for the harvest of shellfish for human consumption.

~~(16) "Relaying" means the act of removing shellfish from one growing area or shellfish grounds to another area or ground for any purpose.~~

~~(17)~~(19) ~~"Restricted area"~~ "Restricted" means ~~an area~~ shellfish growing waters from which shellfish may be harvested only by permit and are subjected to ~~an approved depuration process or relayed to an approved area.~~a suitable and effective treatment process through relaying or depuration.

~~(18)~~(20) "Sanitary survey" means the written evaluation of factors that affect the sanitary quality of a shellfish growing area including sources of pollution, the effects of wind, tides and currents in the distribution and dilution of polluting materials, and the bacteriological quality of water.

~~(19)~~(21) "Shellfish" means ~~oysters, mussels, scallops and all varieties of clams. However~~ "shellfish" as defined in General Statute 113-229, except the term shall not include scallops when the final product is the shucked adductor muscle only.

(22) "Shellfish growing area" means a management unit that defines the boundaries of a sanitary survey and that is used to track the location where shellfish are harvested.

(23) "Shellfish growing waters" means marine or estuarine waters that support or could support shellfish life.

(24) "Shellstock" means live molluscan shellfish in the shell.

~~(20)~~(25) "Shoreline survey" means ~~a visual inspection of the environmental factors that affect the sanitary quality of a growing area and identifies sources of pollution when possible.~~an in-field inspection to identify and evaluate any potential or actual pollution sources or other environmental factors that may impact the sanitary quality of a shellfish growing area.

(26) "Systematic random sampling strategy" means a sampling strategy designed to assess the bacteriological water quality of shellfish growing waters impacted by non-point sources of pollution

and scheduled sufficiently far in advance to support random collection with respect to environmental conditions.

History Note: *Authority G.S. ~~130A-230;~~ 113-134; 113-182; 113-221.2; ~~143B-289.52;~~*
Eff. June 1, 1989;
Amended Eff. August 1, 1998; February 1, 1997; September 1, 1990;
Readopted Eff. May 1, 2021.

15A NCAC 18A .0902 is proposed for readoption with substantive changes as follows:

15A NCAC 18A .0902 CLASSIFICATION OF SHELLFISH GROWING WATERS

(a) All ~~actual and potential~~ shellfish growing ~~areas~~ waters shall be classified by the Division of Marine Fisheries as to their suitability for shellfish harvesting. ~~Growing~~ Shellfish growing waters shall be designated with one of the following classifications:

(1) ~~Approved area,~~approved;

(2) ~~Conditionally approved area,~~conditionally approved;

(3) ~~Restricted area,~~ restricted; or

(4) ~~Prohibited area.~~prohibited.

(b) Maps showing the ~~boundaries and~~ classification of shellfish growing ~~areas~~ waters shall be maintained by the Division.

History Note: *Authority G.S. ~~130A-230;~~ 113-134; 113-182; 113-221.2; 143B-289.52;*
Eff. June 1, 1989;
Readopted Eff. May 1, 2021.

15A NCAC 18A .0903 is proposed for readoption with substantive changes as follows:

15A NCAC 18A .0903 SANITARY SURVEY

(a) ~~Growing~~ Shellfish growing waters shall be divided into growing areas by the ~~Division.~~Division of Marine Fisheries. Maps showing the boundaries of these shellfish growing areas shall be maintained by the Division and can be found at: http://portal.ncdenr.org/web/mf/shellfish-closure-maps.

(b) Except in shellfish growing areas where all shellfish growing waters are classified as prohibited, the Division shall complete a ~~A~~ sanitary survey report ~~shall be conducted~~ for each shellfish growing area at least once every three ~~years~~ years.~~except growing areas that are totally prohibited, and~~

(c) A sanitary survey report shall include the following:

(1) ~~A~~ a shoreline survey.~~survey to evaluate pollution sources that may affect the area.~~

(2) ~~A hydrographic survey to evaluate meteorological and hydrographic~~ an evaluation of meteorological, hydrodynamic, and geographic factors that may affect distribution of pollutants.

(3) a ~~bacteriological~~ microbiological survey to assess water quality. A ~~bacteriological~~ microbiological survey shall include the collection of ~~growing area~~ water samples and their analysis for fecal coliforms. The number and location of sampling stations shall be selected to produce the data necessary to effectively evaluate all point and non-point pollution ~~sources.~~ sources identified during the shoreline survey. A minimum of ~~15~~ six samples shall be collected annually from each designated sampling station.~~sets of samples shall be collected from growing areas during the three year evaluation period. Areas without a shoreline may be sampled less frequently.~~

(4) a determination of the appropriate classification for all shellfish growing waters within the shellfish growing area in accordance with Rule .0902 of this Section.

(d) A written sanitary survey report shall be required to designate any portion of a shellfish growing area with a classification other than prohibited, or for a reclassification from:

(1) prohibited to any other classification;

(2) restricted to conditionally approved or approved; or

(3) conditionally approved to approved.

All other reclassifications may be made without a sanitary survey.

(e) In each calendar year that a shellfish growing area is not evaluated with a sanitary survey, a written annual evaluation report shall be completed by the Division and shall include the following:

(1) a microbiological survey to assess water quality as set forth in Subparagraph (c)(3) of this Rule.

(2) an evaluation of changes in pollution source impacts that may affect the classifications of the shellfish growing area.

If the annual evaluation determines conditions have changed and a classification for shellfish growing waters is incorrect, the Division shall initiate action to reclassify the shellfish growing waters in accordance with Rule .0902 of this Section.

~~(c) Sanitary survey reports shall be prepared every three years.~~

~~(d)~~(f) ~~All sanitary~~ Sanitary survey reports and annual evaluation reports shall be maintained by the Division.

History Note: *Authority G.S. ~~130A-230;~~ 113-134; 113-182; 113-221.2; 143B-289.52;*
Eff. June 1, 1989;
Readopted Eff. May 1, 2021.

15A NCAC 18A .0904 is proposed for readoption with substantive changes as follows:

15A NCAC 18A .0904 APPROVED ~~AREAS~~ WATERS

~~An area~~ Shellfish growing waters classified as approved for shellfish harvesting ~~for direct market purposes, must satisfy~~ shall meet the following criteria as indicated by a sanitary ~~survey:~~survey, as set forth in Rule .0903 of this Section:

(1) the shoreline survey ~~has indicated that there is no significant point source contamination;~~indicates there are no significant point sources of pollution;

(2) the area is not contaminated with fecal material, pathogenic microorganisms, poisonous ~~and~~ or deleterious substances, or marine biotoxins that may render consumption of the shellfish hazardous; and

~~(3) the median fecal coliform Most Probable Number (MPN) or the geometric mean MPN of water shall not exceed 14 per 100 milliliters, and not more than ten percent of the samples shall exceed a fecal coliform MPN of 43 per 100 milliliters (per five tube decimal dilution) in those portions of areas most probably exposed to fecal contamination during adverse pollution conditions.~~

(3) the microbiological survey, as set forth in Rule .0903 (b)(3) of this Section, indicates the bacteriological water quality does not exceed the following standards based on results generated using the systematic random sampling strategy:

(a) a median fecal coliform most probable number (MPN) or geometric mean MPN of 14 per 100 milliliters;

(b) a median fecal coliform colony-forming units (CFU) or geometric mean CFU of 14 per 100 milliliters;

(c) an estimated 90th percentile of 43 MPN per 100 milliliters for a five-tube decimal dilution test; or

(d) an estimated 90th percentile of 31 CFU per 100 milliliters for a membrane filter membrane-Thermotolerant *Escherichia coli* (mTEC) test.

History Note: *Authority G.S. ~~130A-230;~~ 113-134; 113-182; 113-221.2; 143B-289.52;*
Eff. June 1, 1989;
Readopted Eff. May 1, 2021.

15A NCAC 18A .0905 is proposed for readoption with substantive changes as follows:

15A NCAC 18A .0905 CONDITIONALLY APPROVED ~~AREAS~~ WATERS

(a) ~~An area~~ Shellfish growing waters may be classified as conditionally approved if the Division determines the following:

(1) the sanitary survey indicates the ~~area~~ shellfish growing waters will not meet the approved ~~area~~ waters classification criteria as set forth in Rule .0904 of this Section under all conditions, ~~for a reasonable period of time and the factors determining these periods are known and predictable.~~but will meet those criteria under certain conditions;

(2) the conditions when the shellfish growing waters will meet the approved waters classification criteria are known and predictable;

(3) the public bottom within those shellfish growing waters support a population of harvestable shellfish; and

(4) staff are available to carry out the requirements defined in the management plan, as set forth in Paragraph (b) of this Rule.

(b) A written management plan shall be developed by the Division for conditionally approved areas. This plan shall define the conditions under which the shellfish growing waters may be open to the harvest of shellfish. If the conditions defined in the management plan are not met, the Division shall immediately close the shellfish growing waters to shellfish harvesting.

~~(c) When management plan criteria are met the Division may recommend to the Division of Marine Fisheries the area may be opened to shellfish harvesting on a temporary basis.~~

~~(d) When management plan criteria are no longer met or public health appears to be jeopardized, the Division will recommend to the Division of Marine Fisheries immediate closure of the area to shellfish harvesting.~~

(c) All conditionally approved growing waters shall be re-evaluated on an annual basis. A written report summarizing this re-evaluation shall be produced and shall include the following:

(1) an evaluation of compliance with management plan criteria;

(2) a review of the cooperation of all persons involved;

(3) an evaluation of bacteriological water quality in the growing waters with respect to the standards for the classification; and

(4) an evaluation of critical pollution sources.

History Note: *Authority G.S. ~~130A-230;~~ 113-134; 113-182; 113-221.2; 143B-289.52;*
Eff. June 1, 1989;
Readopted Eff. May 1, 2021.

15A NCAC 18A .0906 is proposed for readoption with substantive changes as follows:

15A NCAC 18A .0906 RESTRICTED AREAS

(a) ~~An area~~ Shellfish growing waters may be classified as ~~restricted~~ restricted if:~~when a sanitary survey indicates a limited degree of pollution and the area is not contaminated to the extent that indicates that consumption of shellfish could be hazardous after controlled depuration or relaying.~~

(1) a sanitary survey indicates there are no significant point sources of pollution.

(2) levels of fecal pollution, human pathogens, or poisonous or deleterious substances are at such levels that shellstock can be made safe for human consumption by either relaying or depuration.

(b) Relaying of shellfish shall be conducted in accordance with all applicable rules, including 15A NCAC 03K and 15A NCAC ~~18A,~~ 18A .0300.~~Rules Governing the Sanitation of Shellfish.~~

(c) Depuration of shellfish shall be conducted in accordance with all applicable rules, including 15A NCAC 03K and 15A NCAC ~~18A,~~ 18A .0300 and .0700.~~Rules Governing the Sanitation of Shellfish.~~

(d) For shellfish growing waters classified as restricted and used as a source of shellstock for depuration, the microbiological survey, as set forth in Rule .0903 (b)(3) of this Section, indicates the bacteriological water quality does not exceed the following standards based on results generated using the systematic random sampling strategy:

(1) a median fecal coliform most probable number (MPN) or geometric mean MPN of 88 per 100 milliliters;

(2) a median fecal coliform colony-forming units (CFU) or geometric mean CFU of 88 per 100 milliliters;

(3) an estimated 90th percentile of 260 MPN per 100 milliliters for a five-tube decimal dilution test; or

(4) an estimated 90th percentile of 163 CFU per 100 milliliters for a membrane filter membrane-Thermotolerant *Escherichia coli* (mTEC) test.

History Note: *Authority G.S. ~~130A-230;~~ 113-134; 113-182; 113-221.2; 143B-289.52;*
Eff. June 1, 1989;
Readopted Eff. May 1, 2021.

15A NCAC 18A .0907 is proposed for readoption with substantive changes as follows:

15A NCAC 18A .0907 PROHIBITED ~~AREAS~~ WATERS

~~A growing area shall be classified prohibited if there is no current sanitary survey or if the sanitary survey or other monitoring program data indicate that the area does not meet the criteria as specified in approved, conditionally approved or restricted classifications. The taking of shellfish for any human food purposes from such areas shall be prohibited.~~

Shellfish growing waters shall be classified as prohibited if:

(1) no current sanitary survey, as set forth in Rule .0903 of this Section, exists for the growing area; or

(2) the sanitary survey determines:

(a) the shellfish growing waters are adjacent to a sewage treatment plant outfall or other point source outfall with public health significance.

(b) the shellfish growing waters are contaminated with fecal material, pathogenic microorganisms, poisonous or deleterious substances, or marine biotoxins that render consumption of shellfish from those growing waters hazardous.

History Note: *Authority G.S. ~~130A-230;~~ 113-134; 113-182; 113-221.2; 143B-289.52;*
Eff. June 1, 1989;
Readopted Eff. May 1, 2021.

15A NCAC 18A .0908 is proposed for repeal through readoption as follows:

15A NCAC 18A .0908 UNSURVEYED AREAS

~~Growing areas which have not been subjected to a sanitary survey shall be classified as prohibited.~~

History Note: *Authority G.S. 130A-230;*
Eff. June 1, 1989;
Repealed Eff. May 1, 2021.

15A NCAC 18A .0909 is proposed for readoption with substantive changes as follows:

15A NCAC 18A .0909 BUFFER ~~ZONE~~ZONES

~~A prohibited area shall be established as a buffer zone around each wastewater treatment plant outfall.~~

(a) The Division of Marine Fisheries shall establish a buffer zone around the following:

(1) marinas, in accordance with Rule .0911 of this Section.

(2) wastewater treatment plant outfalls or other point source outfalls determined to be of public health significance, in accordance with the latest approved edition of the National Shellfish Sanitation Program Guide for the Control of Molluscan Shellfish, Section II: Model Ordinance, Chapter IV: Shellstock Growing Areas.

(b) Buffer zones shall be classified as prohibited.

History Note: *Authority G.S. ~~130A-230;~~ 113-134; 113-182; 113-221.2; 143B-289.52;*
Eff. June 1, 1989;
Readopted Eff. May 1, 2021.

15A NCAC 18A .0910 is proposed for repeal through readoption as follows:

15A NCAC 18A .0910 RECLASSIFICATION

~~(a) Any upward revision of an area classification shall be supported by a sanitary survey and documented in the sanitary survey report.~~

~~(b) A downward revision of an area classification may be made without a sanitary survey.~~

~~(c) When growing waters are reclassified, appropriate recommendations shall be made to the Division of Marine Fisheries regarding the opening and closure of the waters for the harvest of shellfish for human consumption.~~

History Note: *Authority G.S. 130A-230;*
Eff. June 1, 1989;
Repealed Eff. May 1, 2021.

15A NCAC 18A .0913 is proposed for readoption with substantive changes as follows:

15A NCAC 18A .0913 PUBLIC HEALTH EMERGENCY

(a) The Division shall ~~recommend to the Division of Marine Fisheries immediate closure of~~ immediately close any potentially impacted shellfish growing waters to the harvesting of shellfish in the event of a public health emergency.

(b) The Division ~~shall recommend to the Division of Marine Fisheries re-opening~~ may re-open shellfish growing waters ~~when~~ if the condition causing the public health emergency no longer exists and shellfish have had sufficient time to purify naturally from possible contamination.

History Note: *Authority G.S. ~~130A-230;~~ 113-134; 113-182; 113-221.2; 143B-289.52;*
Eff. June 1, 1989;
Readopted Eff. May 1, 2021.

15A NCAC 18A .0914 is proposed for readoption with substantive changes as follows:

15A NCAC 18A .0914 LABORATORY PROCEDURES

~~All laboratory examinations for water and shellfish used for the evaluation of growing areas shall be made in accordance with the latest approved edition by the Food and Drug Administration of "Recommended Procedures for Examination of Sea Water and Shellfish", American Public Health Association, Inc., which is adopted by reference in accordance with G.S. 150B-14(c). A copy of this publication is available for inspection at the Shellfish Sanitation Office, Marine Fisheries Building, Arendell Street, Morehead City, North Carolina 28557.~~

(a) All laboratory analyses used for the evaluation of shellfish growing areas shall be performed by a laboratory found to conform or provisionally conform to the requirements established under the National Shellfish Sanitation Program (NSSP), as determined by a Food and Drug Administration (FDA) Shellfish Laboratory Evaluation Officer or by an FDA certified State Shellfish Laboratory Evaluation Officer.

(b) All methods for the analysis of shellfish and shellfish growing waters that are used for the evaluation of shellfish growing areas shall be cited in the latest approved edition of the NSSP Guide for the Control of Molluscan Shellfish, Section IV: Guidance Documents, subsection Approved NSSP Laboratory Tests or validated for use by the NSSP under the Constitution, Bylaws and Procedures of the Interstate Shellfish Sanitation Conference. If there is an immediate or ongoing critical need for a method and no method approved for use within the NSSP exists, the following may be used:

(1) a validated Association of Analytical Communities, Bacteriological Analysis Manual, or Environmental Protection Agency method; or

(2) an Emergency Use Method as set forth in the latest approved edition of the NSSP Guide for the Control of Molluscan Shellfish.

History Note: *Authority G.S. ~~130A-230;~~ 113-134; 113-182; 113-221.2; 143B-289.52;*
Eff. June 1, 1989;
Amended Eff. September 1, 1991; September 1, 1990;
Readopted Eff. May 1, 2021.

Rule Impact Analysis for Readoption of 15A NCAC 18A Rule Package
Pursuant to G.S. 150B-21.3A

Rule Amendments: 15A NCAC 18A .0140-.0143, .0146, .0150, .0154, .0155, .0159, .0160, .0163, .0167, .0169-.0172, .0179, .0180, .0188-.0190

Name of Commission: N.C. Marine Fisheries Commission

Agency Contact: David Dietz, Fisheries Economics Program Manager
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Impact Summary: State government: No
Local government: No
Federal government: No
Substantial impact: No

Authority:

North Carolina General Statutes

G.S. 113-134.	Rules.
G.S. 113-182.	Regulation of fishing and fisheries.
G.S. 113-221.2.	Additional rules to establish sanitation requirements for scallops, shellfish, and crustacea; permits and permit fees authorized.
G.S 143B-289.52.	Marine Fisheries Commission - powers and duties.
G.S. 150B-21.3A	Periodic review and expiration of existing rules.

I. Necessity:

General Statute 150B-21.3A requires state agencies to review their existing rules every 10 years to determine which rules are still necessary, and to either readopt or repeal each rule as appropriate. The proposed amendments readopt 21 rules in 15A NCAC 18A pursuant to this requirement.

II. Summary

These rules have been reviewed to conform to the requirements of G.S. 150B-21.3A, Periodic Review and Expiration of Existing Rules. The proposed readoptions consist of amendments that are of an administrative nature to update the rules, and contain no structural changes to these 21 rules or their fiscal impact on the state or its citizens. Overall, the proposed readoptions do not result in a significant economic impact to the regulated community, state government, or other parties.

III. Introduction and Purpose of Rule Changes

Session Law 2011-145 abolished the Division of Environmental Health and transferred the Shellfish Sanitation and Recreational Water Quality sections to the Division of Marine Fisheries under a Type I transfer. As a result, G.S. 130A-230 was repealed and the authority for rulemaking for the sanitation requirements for harvesting, processing and handling of scallops, shellfish and crustaceans was transferred to the Marine Fisheries Commission which is now contained in G.S. 113-221.2.

The purpose of the Marine Fisheries Commission (MFC) is to manage, restore, develop, cultivate, conserve, protect, and regulate the marine and estuarine resources within its jurisdiction, as described in G.S. 113-132, including commercial and recreational fisheries resources (Chapter 143B, Article 7, Part 5D). For the protection of public health, the MFC is also required to adopt rules establishing sanitation requirements for the harvesting, processing, and handling of scallops, shellfish, and crustacea of in-state origin. The rules of the MFC may also regulate scallops, shellfish, and crustacea shipped into North Carolina (G.S. 113-221.2).

These 21 rules all relate to standards for commercial shellfish sanitation and processing procedures. Of these, 13 rules have minor changes proposed, such as updates to punctuation, agency names, capitalization, acronym introduction, and a missing degree symbol for a temperature provided; the changes conform the rules to current standards for rulemaking. The remaining eight rules are proposed for readoption with no changes. In all, the packet of 21 rules are proposed for readoption with no procedural changes that would result in fiscal impact.

IV. Fiscal Impact Analysis:

As these 21 rules are being proposed for readoption with no procedural changes, there will be no changes to the economic benefits and costs of the rules. As such, no fiscal impact will be observed from this proposed readoption package.

V. Appendix:

Proposed Rules for Readoption

15A NCAC 18A .0140 is proposed for readoption without substantive changes as follows:

15A NCAC 18A .0140 FLOORS

Floors shall be of concrete or other equally impervious material, constructed so that they may be easily cleaned and shall be sloped so that water drains.

History Note: *Authority G.S. ~~130A-230;~~113-134; 113-182; 113-221.2; 143B-289.52.*
Eff. October 1, 1992;
Readopted Eff. May 1, 2021.

15A NCAC 18A .0141 is proposed for readoption without substantive changes as follows:

15A NCAC 18A .0141 WALLS AND CEILINGS

(a) Walls and ceilings shall be constructed of smooth, easily cleanable, non-corrosive, impervious material.

(b) Insulation on cooked crustacea cooler walls shall be covered to the ceiling with a smooth, easily cleanable, non-corrosive, impervious material.

(c) Doors and windows shall be properly fitted and maintained in good repair.

History Note: *Authority G.S. ~~130A-230;~~113-134; 113-182; 113-221.2; 143B-289.52.*
Eff. October 1, 1992;
Readopted Eff. May 1, 2021.

15A NCAC 18A .0142 is proposed for readoption without substantive changes as follows:

15A NCAC 18A .0142 LIGHTING

(a) Natural or artificial lighting shall be provided in all parts of the facility. Minimum lighting intensities shall be as follows:

(1) 50 foot-candles on working surfaces in the picking and packing rooms and areas.

(2) 10 foot-candles measured at a height of 30 inches above the floor throughout the rest of the processing portion of the facility.

(b) Light bulbs within the processing portion of the facility shall be shatterproof or shielded to prevent product contamination in case of breakage.

History Note: *Authority G.S. ~~130A-230;~~113-134; 113-182; 113-221.2; 143B-289.52.*
Eff. October 1, 1992;
Readopted Eff. May 1, 2021.

15A NCAC 18A .0143 is proposed for readoption without substantive changes as follows:

15A NCAC 18A .0143 VENTILATION

All rooms and areas shall be ventilated.

History Note: *Authority G.S. ~~130A-230;~~113-134; 113-182; 113-221.2; 143B-289.52.*
Eff. October 1, 1992;
Readopted Eff. May 1, 2021.

15A NCAC 18A .0146 is proposed for readoption with substantive changes as follows:

15A NCAC 18A .0146 PREMISES

(a) Premises under the control of the owner shall be kept clean at all times. Waste materials, rubbish, other ~~articles~~ articles, or litter shall not be permitted to accumulate on the premises. Other items shall be properly stored.

(b) Measures shall be taken to prevent the harborage and breeding of insects, ~~rodents~~ rodents, and other vermin on premises.

History Note: *Authority G.S. ~~130A-230;~~113-134; 113-182; 113-221.2; 143B-289.52.*
Eff. October 1, 1992;
Readopted Eff. May 1, 2021.

15A NCAC 18A .0150 is proposed for readoption with substantive changes as follows:

15A NCAC 18A .0150 SEWAGE DISPOSAL

All sewage and other liquid wastes shall be disposed of in a public sewer system or in the absence of a public sewer system, by an on-site method approved by the Division of Marine Fisheries or the Department of ~~Environment, Health, and Natural Resources.~~ Environmental Quality.

History Note: *Authority G.S. ~~130A-230;~~113-134; 113-182; 113-221.2; 143B-289.52.*
Eff. October 1, 1992;
Readopted Eff. May 1, 2021.

15A NCAC 18A .0154 is proposed for readoption with substantive changes as follows:

15A NCAC 18A .0154 EMPLOYEES' PERSONAL ARTICLES

Employees' street clothing, aprons, ~~gloves~~ gloves, and personal articles shall not be stored in rooms or areas described in Rule .0159(b) of this Section.

History Note: *Authority G.S. ~~130A-230;~~113-134; 113-182; 113-221.2; 143B-289.52.*
Eff. October 1, 1992;
Readopted Eff. May 1, 2021.

15A NCAC 18A .0155 is proposed for readoption with substantive changes as follows:

15A NCAC 18A .0155 SUPPLY STORAGE

Shipping containers, ~~boxes~~ boxes, and other supplies shall be stored in a storage room or area. The storage room or area shall be kept clean.

History Note: *Authority G.S. ~~130A-230;~~113-134; 113-182; 113-221.2; 143B-289.52.*
Eff. October 1, 1992;
Readopted Eff. May 1, 2021.

15A NCAC 18A .0159 is proposed for readoption with substantive changes as follows:

15A NCAC 18A .0159 SEPARATION OF OPERATIONS

(a) Facility design shall provide for continuous flow of raw materials and product to prevent contamination by exposure to areas involved in earlier processing steps, ~~refuse~~ refuse, or other areas subject to contamination.

(b) The following processes shall be carried out in separate rooms or areas:

(1) ~~Raw~~ raw crustacea receiving or ~~refrigeration.~~refrigeration;

(2) ~~Crustacea cooking.~~crustacea cooking;

(3) ~~Cooked~~ cooked crustacea ~~air cool.~~air-cool;

(4) ~~Cooked~~ cooked crustacea ~~refrigeration.~~refrigeration;

(5) ~~Picking.~~picking;

(6) ~~Packing.~~packing;

(7) ~~Picked~~ picked crustacea meat ~~refrigeration.~~refrigeration;

(8) ~~Pasteurizing/thermal processing.~~pasteurizing or thermal processing;

(9) ~~Machine picking.~~machine picking;

(10) ~~Repacking.~~repacking; and

(11) ~~Other~~ other processes when carried out in conjunction with the cooking of crustacea or crustacea meat.

History Note: *Authority G.S. ~~130A-230;~~113-134; 113-182; 113-221.2; 143B-289.52.*
Eff. October 1, 1992;
Amended Eff. April 1, 1997;
Readopted Eff. May 1, 2021.

15A NCAC 18A .0160 is proposed for readoption with substantive changes as follows:

15A NCAC 18A .0160 RAW CRUSTACEA RECEIVING AND REFRIGERATION

(a) Only fresh crustacea shall be accepted for processing.

(b) Within two hours of receipt at the facility, crustacea shall be cooked or placed in a refrigerated area maintaining a temperature of 50° F ~~(10~~ (10° C) or below.

History Note: *Authority G.S. ~~130A-230;~~113-134; 113-182; 113-221.2; 143B-289.52.*
Eff. October 1, 1992;
Readopted Eff. May 1, 2021.

15A NCAC 18A .0163 is proposed for readoption without substantive changes as follows:

15A NCAC 18A .0163 COOKED CRUSTACEA REFRIGERATION

(a) The cooked crustacea cooler shall be large enough to store all cooked crustacea and maintain a minimum temperature of 40° F (4.4° C). The cooler shall open directly into the picking room or into a clean, enclosed area leading into the picking room.

(b) Cooked crustacea shall be stored at a temperature between 33° F (0.5° C) and 40° F (4.4° C) ambient air temperature if not immediately processed. The cooler shall be equipped with an accurate, operating thermometer.

History Note: *Authority G.S. ~~130A-230;~~113-134; 113-182; 113-221.2; 143B-289.52.*
Eff. October 1, 1992;
Readopted Eff. May 1, 2021.

15A NCAC 18A .0167 is proposed for readoption with substantive changes as follows:

15A NCAC 18A .0167 DELIVERY WINDOW OR SHELF

A delivery window or a non-corrosive shelf shall be provided between the picking room and packing room or area. The delivery window shall be equipped with a shelf completely covered with smooth, non-corrosive metal or other material approved by the Division of Marine Fisheries and sloped to drain towards the picking room.

History Note: *Authority G.S. ~~130A-230;~~113-134; 113-182; 113-221.2; 143B-289.52.*
Eff. October 1, 1992;
Readopted Eff. May 1, 2021.

15A NCAC 18A .0169 is proposed for readoption without substantive changes as follows:

15A NCAC 18A .0169 FREEZING

(a) If crustacea or crustacea meat is to be frozen, the code date shall be followed by the letter "F."

(b) Frozen crustacea or crustacea meat shall be stored at a temperature of 0° F (-18° C) or less.

(c) The frozen storage rooms shall be equipped with an accurate, operating thermometer.

History Note: *Authority G.S. ~~130A-230;~~113-134; 113-182; 113-221.2; 143B-289.52.*
Eff. October 1, 1992;
Amended Eff. August 1, 2002; April 1, 1997;
Readopted Eff. May 1, 2021.

15A NCAC 18A .0170 is proposed for readoption without substantive changes as follows:

15A NCAC 18A .0170 SHIPPING

Cooked crustacea and crustacea meat shall be shipped between 33° F (0.5° C) and 40° F (4.4° C). Frozen crustacea products shall be shipped at 0° F (-18° C) or below.

History Note: *Authority G.S. ~~130A-230;~~113-134; 113-182; 113-221.2; 143B-289.52.*
Eff. October 1, 1992;
Readopted Eff. May 1, 2021.

15A NCAC 18A .0171 is proposed for readoption with substantive changes as follows:

15A NCAC 18A .0171 WHOLE CRUSTACEA OR CRUSTACEA PRODUCTS

Whole crustacea, ~~claws~~ claws, or any other crustacea products shall be prepared, ~~packaged~~ packaged, and labeled in accordance with the rules of this Section.

History Note: *Authority G.S. ~~130A-230;~~113-134; 113-182; 113-221.2; 143B-289.52.*
Eff. October 1, 1992;
Readopted Eff. May 1, 2021.

15A NCAC 18A .0172 is proposed for readoption with substantive changes as follows:

15A NCAC 18A .0172 COOKED CLAW SHIPPING CONDITIONS

(a) Vehicles used to transport cooked claws shall be mechanically refrigerated, enclosed, tightly constructed, kept ~~clean~~ clean, and equipped with an operating thermometer.

(b) Cooked crab claws shall be stored and transported between 33° F (0.5° C) and 40° F (4.4° C) ambient air temperature.

(c) All vehicles shall be approved by the Division of Marine Fisheries prior to use.

(d) Cooked claw shipping containers shall be marked for intended use, ~~cleaned~~ cleaned, and sanitized prior to use and approved by the Division.

History Note: *Authority G.S. ~~130A-230;~~113-134; 113-182; 113-221.2; 143B-289.52.*
Eff. October 1, 1992;
Readopted Eff. May 1, 2021.

15A NCAC 18A .0179 is proposed for readoption with substantive changes as follows:

15A NCAC 18A .0179 RECALL PROCEDURE

Each owner of a cooked crustacea or crustacea meat facility or repacker facility shall keep on file a written product recall procedure. A copy of this recall procedure shall be provided to the ~~Division.~~Division of Marine Fisheries.

History Note: *Authority G.S. ~~130A-230;~~113-134~~;~~ 113-182; 113-221.2; 143B-289.52.*
Eff. October 1, 1992;
Readopted Eff. May 1, 2021.

15A NCAC 18A .0180 is proposed for readoption with substantive changes as follows:

15A NCAC 18A .0180 SAMPLING AND TESTING

Samples of cooked crustacea or crustacea meat may be taken and examined by the Division of Marine Fisheries at any time or place. Samples of cooked crustacea or crustacea meat shall be furnished by the owner or operator of facilities, trucks, carriers, stores, ~~restaurants~~ restaurants, and other places where cooked crustacea or crustacea meat are sold.

History Note: *Authority G.S. ~~130A-230;~~113-134; 113-182; 113-221.2; 143B-289.52.*
Eff. October 1, 1992;
Readopted Eff. May 1, 2021.

15A NCAC 18A .0188 is proposed for readoption without substantive changes as follows:

15A NCAC 18A .0188 HAZARD ANALYSIS

Each dealer shall conduct a hazard analysis to determine the food safety hazards that are reasonably likely to occur for each kind of crustacea or crustacea meat product processed by that dealer and to identify the preventative measures that the dealer can apply to control those hazards.

History Note: *Authority G.S. ~~130A-230;~~113-134; 113-182; 113-221.2; 143B-289.52.*
Eff. August 1, 2000;
Readopted Eff. May 1, 2021.

15A NCAC 18A .0189 is proposed for readoption with substantive changes as follows:

15A NCAC 18A .0189 HACCP PLAN

Each dealer shall have and implement a written ~~HACCP~~ Hazard Analysis and Critical Control Points (HACCP) Plan. The owner or authorized designee shall sign the plan when implemented and after any modification. The plan shall be reviewed and updated, if necessary, at least annually. The plan shall, at a minimum:

(1) ~~List~~ list the food safety hazards that are reasonably likely to occur;

(2) ~~List~~ list the critical control points for each of the food safety hazards;

(3) ~~List~~ list the critical limits that must be met for each of the critical control points;

(4) ~~List~~ list the procedures, and frequency thereof, that will be used to monitor each of the critical control points to ensure compliance with the critical limits;

(5) ~~List~~ list any corrective action plans to be followed in response to deviations from critical limits at critical control points;

(6) ~~Provide~~ provide a record keeping system that documents critical control point monitoring; and

(7) ~~List~~ list the verification procedures, and frequency thereof, that the dealer will use.

History Note: *Authority G.S. ~~130A-230;~~113-134; 113-182; 113-221.2; 143B-289.52.*
Eff. August 1, 2000;
Readopted Eff. May 1, 2021.

15A NCAC 18A .0190 is proposed for readoption with substantive changes as follows:

15A NCAC 18A .0190 SANITATION MONITORING REQUIREMENTS

Each dealer shall monitor, at a minimum, the following sanitation items:

(1) ~~Safety~~ safety of water;

(2) ~~Condition~~ condition and cleanliness of food contact surfaces;

(3) ~~Prevention~~ prevention of cross contamination;

(4) ~~Maintenance~~ maintenance of hand washing, hand ~~sanitizing~~ sanitizing, and toilet facilities;

(5) ~~Protection~~ protection of crustacea or crustacea meat, crustacea or crustacea meat packaging ~~materials~~ materials, and food contact surfaces from adulteration;

(6) ~~Proper~~ proper labeling, ~~storage~~ storage, and use of toxic compounds;

(7) ~~Control~~ control of employees with adverse health conditions; and

(8) ~~Exclusion~~ exclusion of pests from the facility.

History Note: *Authority G.S. ~~130A-230;~~113-134; 113-182; 113-221.2; 143B-289.52.*
Eff. August 1, 2000;
Readopted Eff. May 1, 2021.

Fiscal Impact Analysis of Proposed Rule Amendments to Shellfish Leasing Regulations

Rule Amendments: 15A NCAC 03O .0201
15A NCAC 03O .0202
15A NCAC 03O .0204

Name of Commission: N.C. Marine Fisheries Commission

Agency Contact: David Dietz, Fisheries Economics Program Manager
N.C. Division of Marine Fisheries
3441 Arendell Street
Morehead City, NC 28557
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Impact Summary:

State government:	Yes
Local government:	Yes
Federal government:	No
Substantial impact:	No

Authority:

North Carolina General Statutes
§ 76-40. Navigable waters; certain practices regulated.
§ 113-134. Rules
§ 113-182. Regulation of fishing and fisheries.
§ 113-201. Legislative findings and declaration of policy; authority of Marine Fisheries Commission.
§ 113-202. New and renewal leases for shellfish cultivation; termination of leases issued prior to January 1, 1966.
§ 113-202.1. Water column leases for aquaculture.
§ 113-202.2. Water column leases for aquaculture for perpetual franchises.
§ 113-205. Registration of grants in navigable waters; exercise of private fishery rights.
§ 113-206. Chart of grants, leases and fishery rights; overlapping leases and rights; contest or condemnation of claims; damages for taking of property.
§ 143B-289.52. Marine Fisheries Commission - powers and duties.

Necessity: General Statute 150B-21.3A requires state agencies to review their existing rules every 10 years to determine which rules are still necessary, and to either readopt or repeal each rule as appropriate. Three rules in 15A NCAC 03O .0200 are proposed for readoption pursuant to this requirement. Additionally, Session Law 2019-37 was passed with the explicit goal of providing increased support to the state's shellfish aquaculture industry. Central to this was the goal of understanding user conflict issues of shellfish leasing and amending state regulations based on these findings. Proposed rule amendments are based on these results and aim to reduce user conflict issues while supporting a productive shellfish aquaculture industry.

I. Summary

Proposed rule amendments to shellfish aquaculture leasing aim to address user conflict issues through a variety of measures. Specifically, the amendments proposed would increase setback limits from developed shorelines for new shellfish leases, limit the allowable number of corners for demarcating shellfish leases to simplify polygon shape, set new criteria for shellfish lease stakes and signage to alleviate navigation concerns, and initiate a new leaseholder training program that emphasizes user conflict reduction strategies. In all, this collection of proposed rule amendments will incur a variety of administrative and procurement costs, as well as a reduction in potential future earnings due to a reduction in available shellfish lease space. However, as these rules seek to address user conflict issues, there are a number of non-quantifiable benefits to the state, as user conflict will decline due to decreases in both visual and direct interaction with shellfish leases in the state. In all, the fiscal impacts in terms of both costs and benefits to the state are not expected to be significant; no new costs to enforcement are estimated from these proposed rule changes as well.

II. Introduction and Purpose of Rule Changes

The North Carolina General Assembly passed Session Law (S.L.) 2019-37 effective July 1, 2019. The General Assembly noted that the purpose of the bill is "to provide further support to the shellfish aquaculture industry in the State of North Carolina." Section 9 of the bill requires the North Carolina Department of Environmental Quality (NCDEQ), Division of Marine Fisheries (DMF) and North Carolina Marine Fisheries Commission (MFC) to study how to reduce user conflict related to shellfish cultivation leases, and to adopt rules and reform internal operating procedures consistent with the findings of the study.

The increase in coastal populations coupled with the growth of the shellfish aquaculture industry, particularly with respect to utilizing floating gear, has led to user conflicts regarding the use of coastal and estuarine waters. User conflicts are generally described as disagreements that arise between multiple users of areas leased for private shellfish cultivation purposes, commonly referred to as shellfish aquaculture or shellfish leases. DMF and MFC address topics pertinent to user conflicts in the shellfish aquaculture industry in the User Conflict Study. The study also discusses the existing regulatory framework governing shellfish leases in North Carolina (Appendix III).

The User Conflict Study recommends a multifaceted approach to address user conflict issues related to shellfish leases in North Carolina. This approach envisions regulatory reform, program evaluation, collaboration, and resource assessment. To accomplish this, existing shellfish lease rules require amending to affect execution of the recommendations in the study. Recommendations for amending shellfish lease rules to begin addressing user conflict issues were made in the User Conflict Study. These recommendations were translated into the proposed rule amendments discussed here and cover a broad suite of approaches in order to simultaneously maintain a strong focus on shellfish aquaculture production, while also reducing user conflict between growers and the surrounding community.

Firstly, 15A NCAC 03O .0201 proposes to modify the setback requirement for shellfish leases from a developed shoreline. Currently, shellfish leases must be 100 feet from a developed shoreline, but the proposed rule extends that to 250 feet from a developed shoreline or a water-dependent shore-based structure to help alleviate user conflict with riparian owners. The MFC

voted to include “shore based structure” at its February 2020 business meeting, following submission of the User Conflict Study in November 2019. After review by DEQ legal counsel, it was determined that additional language was needed to define “shore-based structure”. Proposed language was added to the rule consistent with water-dependent uses described by the Coastal Resources Commission at 15A NCAC 07H .0208(a)(1), which says: “Uses that are water dependent include: utility crossings, wind energy facilities, docks, wharves, boat ramps, dredging, bridges and bridge approaches, revetments, bulkheads, culverts, groins, navigational aids, mooring pilings, navigational channels, access channels and drainage ditches.”

The amendments to the rule also propose a 250-foot setback requirement between any new shellfish leases and existing shellfish leases. Currently, there is no setback requirement between shellfish leases. Lastly, this rule is proposed to be amended to add cumulative language, implementing the MFC’s authority to limit the number of acres leased in any area that may be granted as shellfish leases as set forth in G.S. 113-201. The intention of this proposed rule change is to allow flexibility to ensure shellfish leases do not impose on navigation or existing, traditional uses of the area and to assure the public that some waters will remain open and free from shellfish cultivation activities.

Next, 15A NCAC 03O .0202 proposes two amendments to further reduce user conflicts. The rule modifies marking requirements for shellfish leases and franchises to limit the allowable number of corners for defining the area to be leased to eight, to simplify polygon shape. Also, proposed changes require the shellfish lease applicant to be responsible for ensuring the sign that the applicant is currently required to attach to each corner stake with details about the shellfish lease remains in place until the application process is completed. This signage is provided by the DMF. The need for more noticeable shellfish lease markings has been a safety concern. The proposed change to a maximum of eight corners is being made in consultation with the Division of Coastal Management (DCM) to improve navigation, increase safety, and make managing shellfish leases more efficient. This rule also proposes an amendment to modify training requirements for shellfish lease applicants to include information about user conflicts and the public trust.

Currently, North Carolina requires shellfish lease applicants to complete an examination scoring a minimum of 70 percent based on an educational package provided by the DMF. The DMF established the examination to demonstrate the applicant’s knowledge of the: shellfish lease application process, shellfish lease planting and production requirements, shellfish lease marking requirements, shellfish lease fees, shellfish harvest area closures due to pollution, safe handling practices, shellfish lease contracts and renewals, shellfish lease termination criteria, and shellfish cultivation techniques. Many states have cooperative extension programs which provide classes and training that introduce potential applicants to the fundamentals of shellfish aquaculture and the regulatory process. This amendment will create the Shellfish Aquaculture Education Program, adding to the body of information provided by the DMF on shellfish aquaculture to shellfish lease applicants. Additional topics include aquaculture permits, best management practices, and shellfish lease user conflict avoidance.

Lastly, 15A NCAC 03O .0204 follows suit on the proposed rule language for shellfish lease stakes and adds new requirements for the size and markings of stakes for public safety. Structurally, rule amendments propose that corner stakes must be between three and 12 inches in diameter and must extend at least four feet above the mean high water mark. Currently, corner stakes must be greater than three inches per MFC rule but no more than four inches per DCM

policy. Working with DCM, it was established that a wide range of diameters for corner stakes would complement the proposed eight-corner maximum, as it would assure greater stake visibility when fewer stakes are allowed. If a shellfish leaseholder would like corner stakes over 12 inches they would need a CAMA major permit before their shellfish lease application would be processed. Finally, this rule also proposes amendments to require each corner stake to have yellow light reflective tape or yellow light reflective devices, while each water column shellfish lease must have additional signage on each corner stake providing caution to improve navigational and visibility concerns.

These changes were made in consultation with DCM to improve navigation, increase safety, and make managing shellfish leases more efficient. Included is language to point a stakeholder to the need for additional CAMA permits and the associated CAMA statute references. These include G.S. 113A-118, which requires a CAMA permit if development is proposed, and the Dredge and Fill Law at G.S. 113-229, which requires a permit for any proposed dredging or filling in coastal wetlands or estuarine waters of the state.

III. Fiscal Analysis

This package of proposed rule amendments seeks to institute a number of structural changes to how shellfish leases are designed and operate, and will therefore incur an offsetting balance of costs to the state to implement, as well as benefits in the form of a more efficient and public-friendly shellfish aquaculture industry. Additionally, while the new proposed requirements for 15A NCAC 03O .0204 regarding corner stakes would affect marking requirements for both existing and all future shellfish leaseholders, existing shellfish leaseholders would not be affected by the other proposed amendments, including setback requirements, training, and corner marker limits. The only exception to this is that existing shellfish leaseholders who do not meet production requirements will also need to fulfill the new proposed training requirements, though this has historically been an extremely rare occurrence.

With this, it is then helpful to understand the current characteristics of active shellfish leases in North Carolina to see the extent to which new and existing shellfish leases would be affected by the proposed rule changes. Specifically, for those rules only affecting new shellfish leases, it is beneficial to know how many existing shellfish leases would be out of compliance under these new rules to see how great this regulatory burden would be on applicants.

Considering setbacks, a transition from 100 to 250 feet from developed shorelines would result in a tangible loss of available acreage for shellfish leasing moving forward. However, DMF has determined that the exact amount of acreage lost cannot be accurately quantified at this time. Despite this, given the amount of available leasing space still within North Carolina's waters, this reduction is not expected to create a significant loss in available production for the future. Additionally, DMF estimates that 145 current shellfish leases reside at least partially within 250 feet of shore. With 304 active shellfish leases in North Carolina, this represents roughly 48% of all active shellfish leases. However, this estimate comes from a measurement of all shoreline, not just those defined as developed. Therefore, the number of shellfish leases that are actually within the proposed setback may be slightly lower than the 145 estimated. Additionally, the number of shellfish leases that are currently positioned less than 250 feet from another shellfish lease cannot be accurately quantified, but in terms of available acres of potential leasing, it is not considered to be a significant economic cost to the state or existing shellfish leaseholders.

Regarding the new proposed rules for shellfish lease stakes, there are estimated to be 40 active shellfish leases with more than eight corners at this time. With 304 total active shellfish leases, this represents roughly 13% of all shellfish leases in the state, suggesting this proposed rule change would not be overly burdensome on future applicants. Additionally, while the exact number is not known at this time, the DMF has found that historically, roughly 80% of shellfish leases lack the appropriate signage and reflective taping needed to be in compliance with the proposed rule change. Lastly, as the mean high-water mark is variable throughout the state's waterbodies, the DMF is not able to accurately quantify the number of active shellfish leases with stakes less than four feet above the mean high-water mark. However, this is again not expected to incur any significant impacts to North Carolina. With all of this baseline information, it is now possible to better understand the fiscal impacts of these proposed rule changes to both future and existing shellfish leaseholders.

a. Summary of Potential Economic Benefits

Overall, this collection of proposed rule changes will have meaningful economic benefits to the state and coastal communities of North Carolina through a reduction in overall user conflict. The first mechanism through which this will occur is a reduction in physical interaction between the public and shellfish leases by increasing the developed shoreline setback distance. By increasing future shellfish leases' distance from developed shorelines by 150%, the visual impact on the public from these operations will be reduced, as well as the likelihood of interacting with both the shellfish lease site and its operators from the shoreline. In tandem, this will lead to a non-quantifiable benefit to the state as overall interactions between shellfish aquaculture and the public will decrease, which will improve the overall utility of the shoreline and waters close to shore. Additionally, this setback may have a corresponding positive effect on local house prices, which would improve tax revenues to the state, as well as the local community. However, the exact economic impact of this setback on house prices cannot be quantified but is not expected to be significant. Lastly, while it is unknown how many active shellfish leases operate within 250 feet of another shellfish lease, by establishing that setback distance for all future operations, there will also be benefits in terms of a reduction in user conflict between abutting shellfish lease operations. This setback distance will likely create more efficient shellfish aquaculture operations, as there will be a decrease in interaction between shellfish leases.

In addition to the benefits from proposed setback requirements, there will also be decreases in user conflicts from the proposed rule changes to stakes and signage. By limiting the number of corner stakes, increasing stake diameter, mandating minimum stake height, and adding more reflective tape and signage, there will be economic benefits to the state in terms of improved navigation efficiency and public safety. These rule changes are all proposed with the intention of making it easier for individuals on the water to identify and properly navigate around shellfish leases. This can have the resulting effects of faster and more efficient navigation, as well as reduced likelihood of navigating through shellfish leases which can harm vessels, individuals, and the shellfish products within the shellfish leases.

These changes will all generate tangible economic benefits, as less physical damage will occur, navigation will be more efficient, and shellfish leases will be able to operate more efficiently as the public is not interacting with them as frequently. On top of this, the state will also generate a lasting flow of economic benefits in terms of simplified administration. By putting a cap on the number of corner stakes any shellfish lease can have, the planning and permitting process will be more focused and streamlined, allowing the state to review, approve, and process shellfish lease

applications more quickly, thereby reducing the time-cost of administration to the state, and reducing the time potential shellfish leases spend waiting to begin operations. However, the exact degree to which these efficiencies will occur is unknown, and therefore the value of this benefit cannot be quantified.

Lastly, beyond the economic benefits resulting from the structural changes proposed to shellfish lease sites, there will also be long-term reductions in user conflicts from the updated training program. While a training program has already been in place to assure operators understand the components of running a shellfish lease site, the proposed changes would incorporate additional elements focusing on permitting, best management practices, and user conflict avoidance. These particular subjects were selected based on the results of the User Conflict Study (Appendix III), as well as in consultation with Carteret Community College (CCC) and the N.C. Sea Grant, to most effectively reduce the likelihood of user conflict issues by shellfish leaseholders. By instilling these concepts into new shellfish leaseholders before their operations even commence, the state will likely see even more economic benefits from user conflict reduction year over year, and will likely reduce the need for future changes to shellfish lease site regulations, as users will be better informed on how to prevent user conflicts from the start. Lastly, it is also important to note that this updated curriculum is being developed through a grant awarded to CCC and N.C. Sea Grant in the amount of approximately $100,000. Thus, there is no cost to the state to update the training program proposed in this rule change.

b. Summary of Potential Economic Costs

In assessing the economic costs to the state from these proposed rule changes, the impacts fall into two discrete categories: loss of available shellfish lease acreage, which can impact future production capacity, and costs to the state to implement the new proposed stake and signage regulations.

While the proposed setback requirements would generate a flow of economic benefits to the state from user conflict reductions, the tradeoff is the reduction in physical space available for shellfish leases. As setback requirements are increased throughout the state, total available acreage for future shellfish leasing is reduced, though the exact amount cannot be accurately quantified at this time. However, as much of the available leasing acreage in the state is still unused, this reduction should not have a significant impact on production capacity for the state and should not incur any significant costs. Despite this, it is important to note that this proposed rule change would have a greater effect on coastal areas of the state with narrow waterbodies, such as tidal rivers and creeks, which may become wholly inaccessible to shellfish leasing under a 250-foot setback. This will have a greater impact on the southern region of the state where there are more narrow waterbodies throughout. While this proposed rule change is not overly restrictive, as there is still a large expanse of area available to shellfish leasing, it does limit the overall output potential for the state in the long term, with variable effects across the state depending on shoreline shape. While these costs will affect maximum oyster production potential, the total value cannot be accurately quantified, but is not expected to be a significant impact to the state.

The other cost impacts to North Carolina from these proposed rule changes are the administrative and physical costs related to changes to shellfish lease stakes and signage. From a hard-cost perspective, the only economic burden placed on the state comes from the proposed

changes to 15A NCAC 03O .0202 that would require each shellfish lease corner stake to have signage attached describing the shellfish lease. While leaseholders are responsible for generating the permanent signage for their stakes once leases are approved, DMF provides signage for proposed shellfish lease sites during the application process. With this, the cost per temporary sign does not generate a significant cost to the state and will not generate any significant fiscal impacts.

Aside from this one procurement impact to the state, all other costs related to the physical design of shellfish leases will fall on the operators and will primarily affect new applicants. The proposed rule changes to setbacks and limits to corner stake totals will only affect new applicants, and will therefore only affect new shellfish leaseholders, lowering the overall economic strain on this group. Additionally, no existing shellfish leaseholders are out of compliance with the proposed rule changes to corner stake diameter, significantly lowering the overall burden of this regulation as well. Lastly, while roughly 80% of existing shellfish leases lack the appropriate signage and reflective tape under the proposed rule changes, these costs are expected to be low, and will not be overly burdensome on new and existing shellfish leases. In all, while these hard-cost impacts are not falling on the state, and therefore not a required component of this fiscal analysis, it is helpful to note that the proposed rule changes to shellfish lease designs would not create an undue economic burden on these stakeholders.

With that, it is important to consider the costs the state may incur from administering these proposed rule changes. As these new guidelines would impact both existing shellfish leases and the criteria for new shellfish lease applications, there will likely be an increased time-cost to the state in the near-term as it adjusts to the new regulations and shellfish leasing criteria. Additionally, there may be an additional burden on the state under the new setback requirements, as it may take more time to establish areas acceptable for shellfish leasing. However, these costs are not expected to continue long into the future, and are not expected to bear a significant impact onto the state.

Lastly, as the DMF is charged with regularly monitoring and inspecting shellfish leases throughout the state, there is not expected to be any additional cost of enforcement due to these proposed rule changes.

Appendix I: Supporting Data

Table 1. Number of existing shellfish bottom leases and proposed shellfish leases that are partially within the proposed 250-foot setback.

County	Shellfish Lease		Total
	Existing	Proposed	
Beaufort	1	0	1
Carteret	53	7	60
Dare	0	0	0
Hyde	13	1	14
New Hanover	3	0	3
Onslow	28	9	37
Pamlico	3	0	3
Pender	44	8	52
Total	145	25	170

Appendix II Proposed Rule Changes:

15A NCAC 03O .0201 is proposed for readoption with substantive changes as follows:

15A NCAC 03O .0201 STANDARDS AND REQUIREMENTS FOR SHELLFISH BOTTOM LEASES AND FRANCHISES AND WATER COLUMN LEASES

(a) All areas of the public bottom underlying Coastal Fishing Waters shall meet the following standards and requirements, in addition to the standards in G.S. 113-202, in order to be deemed suitable for leasing for shellfish cultivation purposes:

(1) the proposed lease area shall not contain a "natural shellfish bed," as defined in G.S. 113-201.1, or have 10 bushels or more of shellfish per acre;

(2) the proposed lease area shall not be closer than ~~100~~ 250 feet ~~to~~ from a developed ~~shoreline,~~ shoreline or a water-dependent shore-based structure, except no minimum setback is required when the area to be leased borders the applicant's property, the property of "riparian owners" as defined in G.S. 113-201.1 who have consented in a notarized statement, or is in an area bordered by undeveloped ~~shoreline; and~~ shoreline. For the purposes of this Rule, a water-dependent shore-based structure shall include docks, wharves, boat ramps, bridges, bulkheads, and groins;

(3) the proposed lease area shall not be closer than 250 feet to an existing shellfish lease;

(4) the proposed lease area, either alone or when considered cumulatively with existing shellfish leases in the area, shall not interfere with navigation or with existing, traditional uses of the area; and

~~(3)~~(5) the proposed lease area shall not be less than one-half acre and shall not exceed 10 acres.

(b) To be suitable for leasing for aquaculture purposes, water columns superjacent to leased bottom shall meet the standards in G.S. 113-202.1 and water columns superjacent to franchises recognized pursuant to G.S. 113-206 shall meet the standards in G.S. 113-202.2.

(c) Franchises recognized pursuant to G.S. 113-206 and shellfish bottom leases shall be terminated unless they meet the following requirements, in addition to the standards in and as allowed by G.S. 113-202:

(1) they produce and market 10 bushels of shellfish per acre per year; and

(2) they are planted with 25 bushels of seed shellfish per acre per year or 50 bushels of cultch per acre per year, or a combination of cultch and seed shellfish where the percentage of required cultch planted and the percentage of required seed shellfish planted totals at least 100 percent.

(d) Water column leases shall be terminated unless they meet the following requirements, in addition to the standards in and as allowed by G.S. 113-202.1 and 113-202.2:

(1) they produce and market 40 bushels of shellfish per acre per year; or

(2) the underlying bottom is planted with 100 bushels of cultch or seed shellfish per acre per year.

(e) The following standards shall be applied to determine compliance with Paragraphs (c) and (d) of this Rule:

(1) Only shellfish marketed, planted, or produced as defined in 15A NCAC 03I .0101 as the fishing activities "shellfish marketing from leases and franchises," "shellfish planting effort on leases and franchises," or "shellfish production on leases and franchises" shall be included in the lease and franchise reports required by Rule .0207 of this Section.

(2) If more than one lease or franchise is used in the production of shellfish, one of the leases or franchises used in the production of the shellfish shall be designated as the producing lease or franchise for those shellfish. Each bushel of shellfish shall be produced by only one lease or franchise. Shellfish transplanted between leases or franchises shall be credited as planting effort on only one lease or franchise.

(3) Production and marketing information and planting effort information shall be compiled and averaged separately to assess compliance with the requirements of this Rule. The lease or franchise shall meet both the production requirement and the planting effort requirement within the dates set forth in G.S. 113-202.1 and G.S. 202.2 to be deemed in compliance for shellfish bottom leases. The lease or franchise shall meet either the production requirement or the planting effort requirement within the dates set forth in G.S. 113-202.1 and G.S. 202.2 to be deemed in compliance for water column leases.

(4) All bushel measurements shall be in standard U.S. bushels.

(5) In determining production and marketing averages and planting effort averages for information not reported in bushel measurements, the following conversion factors shall be used:

(A) 300 oysters, 400 clams, or 400 scallops equal one bushel; and

(B) 40 pounds of scallop shell, 60 pounds of oyster shell, 75 pounds of clam shell, or 90 pounds of fossil stone equal one bushel.

(6) Production and marketing rate averages shall be computed irrespective of transfer of the lease or franchise. The production and marketing rates shall be averaged for the following situations using the time periods described:

(A) for an initial bottom lease or franchise, over the consecutive full calendar years remaining on the bottom lease or franchise contract after December 31 following the second anniversary of the initial bottom lease or franchise;

(B) for a renewal bottom lease or franchise, over the consecutive full calendar years beginning January 1 of the final year of the previous bottom lease or franchise term and ending December 31 of the final year of the current bottom lease or franchise contract;

(C) for a water column lease, over the first five-year period for an initial water column lease and over the most recent five-year period thereafter for a renewal water column lease; or

(D) for a bottom lease or franchise issued an extension period under Rule .0208 of this Section, over the most recent five-year period.

(7) In the event that a portion of an existing lease or franchise is obtained by a new owner, the production history for the portion obtained shall be a percentage of the originating lease or franchise production equal to the percentage of the area of lease or franchise site obtained to the area of the originating lease or franchise.

(f) Persons holding five or more acres under all shellfish bottom leases and franchises combined shall meet the requirements established in Paragraph (c) of this Rule before submitting an application for additional shellfish lease acreage to the Division of Marine Fisheries.

History Note: *Authority G.S. 113-134; 113-182; 113-201; 113-202; 113-202.1; 113-202.2; 113-206; 143B-289.52;*
Eff. January 1, 1991;
Amended Eff. May 1, 1997; March 1, 1995; March 1, 1994; September 1, 1991;
Temporary Amendment Eff. October 1, 2001;
Amended Eff. May 1, 2017; October 1, 2008; April 1, 2003;
Readopted Eff. May 1, 2021.

15A NCAC 03O .0202 is proposed for readoption with substantive changes as follows:

15A NCAC 03O .0202 SHELLFISH BOTTOM AND WATER COLUMN LEASE APPLICATIONS

(a) Application forms are available from the ~~Division's office headquarters at~~ Division of Marine Fisheries, 3441 Arendell Street, Morehead City, NC 28557 for persons desiring to apply for shellfish bottom and water column leases. Each application shall be accompanied by a map or diagram prepared at the applicant's expense including an inset vicinity map showing the location of the proposed lease with detail sufficient to permit on-site identification and ~~must~~ shall meet the information requirements pursuant to G.S. 113-202(d).

(b) As a part of the application, the applicant shall submit a ~~management plan~~ Shellfish Lease Management Plan for the area to be leased on a form provided by the Division ~~which meets the following standards:~~ that shall:

(1) ~~States~~ state the methods through which the applicant will cultivate and produce shellfish consistent with the minimum requirements ~~set forth in 15A NCAC 03O .0201;~~ in accordance with Rule .0201 of this Section;

(2) ~~States~~ state the time intervals during which various phases of the cultivation and production plan will be achieved;

(3) ~~States~~ state the materials and techniques that will be utilized in management of the lease;

(4) ~~Forecasts~~ forecast the results expected to be achieved by the management activities; ~~and~~

(5) ~~Describes~~ describe the productivity of any other leases or franchises held by the ~~applicant.~~ applicant; and

(6) state the locations of each corner defining the area to be leased with no more than eight corners.

(c) The completed application, map or diagram, and ~~management plan~~ Shellfish Lease Management Plan for the requested lease shall be accompanied by the non-refundable filing fee set forth in G.S. 113-202(d1). An incomplete application shall be returned and not considered further until re-submitted complete with all required information.

(d) Applicants and transferees not currently holding a shellfish cultivation lease, and applicants and transferees holding one or more shellfish cultivation leases which are not meeting production requirements, shall complete ~~and submit an examination, with a minimum of 70 percent correct answers, based on an educational package~~ the Shellfish Aquaculture Education Program provided by the ~~Division of Marine Fisheries.~~ Division. The ~~examination~~ Shellfish Aquaculture Education Program shall ~~demonstrate the applicant's knowledge of:~~ provide the applicant information on shellfish aquaculture including:

~~(1) the shellfish lease application process;~~

~~(2) shellfish lease planting and production requirements;~~

~~(3) lease marking requirements;~~

~~(4) lease fees;~~

~~(5) shellfish harvest area closures due to pollution;~~

~~(6) safe handling practices;~~

~~(7) lease contracts and renewals;~~

~~(8) lease termination criteria; and~~

~~(9) shellfish cultivation techniques.~~

(1) shellfish lease application process;

(2) shellfish lease requirements and techniques;

(3) shellfish sanitation and National Shellfish Sanitation Program requirements;

(4) shellfish harvest requirements;

(5) aquaculture permits;

(6) best management practices; and

(7) shellfish lease user conflict avoidance.

(e) After an application is deemed to have met all requirements and is accepted by the Division, the applicant shall identify the area for which a lease is requested with stakes at each corner in accordance with ~~15A NCAC 03O .0204(a)(1)(A).~~ Rule .0204(a)(1)(A) of this Section. The applicant shall attach to each stake a sign, provided by the Division containing the name of the applicant, the date the application was filed, and the estimated acres. The applicant shall be responsible for ensuring the sign remains in place until the lease application process is completed.

History Note: *Authority G.S. 113-134; 113-182; 113-201; 113-202; 143B-289.52;*
Eff. January 1, 1991;
Amended Eff. April 1, 2011; September 1, 2005; May 1, 1997; September 1, 1991;
Readopted Eff. May 1, 2021.

Fiscal Impact Analysis of Proposed Rules 15A NCAC 03O .0201, .0202, .0204

15A NCAC 03O .0204 is proposed for readoption with substantive changes as follows:

15A NCAC 03O .0204 MARKING SHELLFISH LEASES AND WATER COLUMN LEASES AND FRANCHISES

(a) All shellfish bottom leases, franchises, and water column leases shall be marked by the leaseholder or franchise holder as follows:

(1) Shellfish bottom leases and franchises shall be marked by:

(A) ~~Stakes~~ stakes of wood or plastic material ~~at least three inches in diameter~~ no less than three inches in diameter and no more than 12 inches in diameter at the ~~water level~~ mean high water mark and extending at least four feet above the mean high water ~~mark.~~mark for each corner, except stakes more than 12 inches in diameter approved as part of a Coastal Area Management Act Permit issued in accordance with G.S. 113A-118 and G.S. 113-229 shall be allowed. The stakes shall be firmly jetted or driven into the bottom at each ~~corner.~~corner as set forth in Rule .0202(b)(6) of this Section.

(B) ~~Signs~~ signs displaying the number of the lease or franchise and the name of the owner printed in letters at least three inches high must be firmly attached to each corner stake.

(C) yellow light reflective tape or yellow light reflective devices on each corner stake. The yellow light reflective tape or yellow light reflective devices shall be affixed to each corner stake, shall cover a vertical distance of not less than 12 inches, and shall be visible from all directions.

~~(C)~~(D) ~~Supplementary~~ supplementary stakes of wood or plastic ~~material,~~ material no less than three inches in diameter and no more than four inches in diameter, not farther apart than ~~50 yards~~ 150 feet or closer together than 50 feet and extending at least four feet above the mean high water mark, ~~must~~ shall be placed along each boundary, except ~~when such would interfere~~ if doing so interferes with the use of traditional navigation channels.

(2) ~~Water~~ Shellfish water column leases shall be marked ~~by anchoring two yellow buoys, meeting the material and minimum size requirements specified in 15A NCAC 3J .0103(b)~~ at each corner of the area ~~or by larger buoys, posts and~~ by signs giving notice and providing caution in addition to the required signs as identified and approved by the Secretary in the ~~Management Plan.~~ management plan.

(b) Stakes marking areas of management within shellfish bottom leases or franchises, as approved in the management plan, ~~must~~ shall conform to ~~Subparagraph (a)(1)(C)~~ Part (a)(1)(D) of this Rule and may not exceed one for each 1,200 square feet. Marking at concentrations of stakes greater than one for each 1,200 square feet constitutes use of the water column and a water column lease is required in accordance with G.S. 113-202.1 or G.S. 113-202.2.

(c) All areas claimed in filings made pursuant to G.S. 113-205 as deeded bottoms through oyster grants issued by the county clerk of court or as private bottoms through perpetual franchises issued by the Shellfish Commission shall be marked in accordance with Paragraph (a) of this Rule, except the sign shall include the number of the franchise rather than the number of the lease. However, claimed areas not being managed and cultivated shall not be marked.

~~(d) It is unlawful to fail to remove all stakes, signs, and markers within 30 days of receipt of notice from the Secretary pursuant to Departmental Rule 15A NCAC 1G .0207 that a G.S. 113-205 claim to a marked area has been denied.~~

~~(e)~~(d) It ~~is~~ shall be unlawful to exclude or attempt to exclude the public from allowable public trust use of navigable waters on shellfish leases and franchises including, but not limited to, fishing, hunting, swimming, ~~wading~~ wading, and navigation.

~~(f)~~(e) The Division has no duty to protect any shellfish bottom lease, franchise, or water column lease not marked in accordance with Paragraph (a) of this Rule.

History Note: *Authority G.S. 76-40; 113-134; 113-182; 113-201; 113-202; 113-202.1; 113-202.2; 113-205; 143B-289.52;*
Eff. January 1, 1991;
Amended Eff. September 1, 1997; March 1, 1994; October 1, 1992; September 1, 1991;
Readopted Eff. May 1, 2021.

Appendix III: Shellfish Aquaculture User Conflict Study

Study On How to Reduce User Conflict Related to Shellfish Cultivation Leases

N.C. Department of Environmental Quality, Division of Marine Fisheries
and
N.C. Marine Fisheries Commission

November 8, 2019

Fiscal Impact Analysis of Proposed Rules 15A NCAC 03O .0201, .0202, .0204

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I. Introduction

The North Carolina General Assembly passed Session Law ("S.L.") 2019-37 effective July 1, 2019. The General Assembly noted that the purpose of the bill is "to provide further support to the shellfish aquaculture industry in the State of North Carolina."[1] Section 9 of the bill requires the North Carolina Department of Environmental Quality ("NCDEQ"), Division of Marine Fisheries ("DMF") and the North Carolina Marine Fisheries Commission ("MFC") to study how to reduce user conflict related to shellfish cultivation leases, and to adopt rules and reform internal operating procedures consistent with the findings of the study.

[1] https://www.ncleg.gov/EnactedLegislation/SessionLaws/PDF/2019-2020/SL2019-37.pdf

User conflicts are generally described as disagreements that arise between multiple users of areas leased for private shellfish cultivation purposes, commonly referred to as shellfish aquaculture or shellfish leases. Individuals use public trust waters in a variety of ways including navigating, swimming, hunting, fishing, and other recreational activities. The increase in coastal populations coupled with the growth of the shellfish aquaculture industry, particularly with respect to utilizing floating gear, has led to user conflicts regarding the use of coastal and estuarine waters.[2]

DMF and MFC address topics pertinent to user conflicts in the shellfish aquaculture industry in this study. The study also discusses the existing regulatory framework governing shellfish leases in North Carolina. DMF anticipates future amendments to shellfish lease regulations and internal changes to improve operating procedures with the objective of reducing user conflict issues. Efforts are also made to identify challenges and inefficiencies in the existing Shellfish Lease Program with suggested measures to remedy these deficiencies. The deadline for completing this study is January 1, 2020. The deadline to adopt new rules is March 1, 2021.

Some of the recommendations in this study will likely be included in future studies and directives mandated by S.L. 2019-37. These studies include:

- Shellfish Aquaculture Enterprise Areas ("SEA") (Section 1.(a) – 1.(c));
- SEAs: Moratorium Areas (Section 1.(d));
- Pamlico Sound Shellfish Aquaculture Pilot Project (Section 2);
- Administrative Remedy for Shellfish Leasing Appeals (Sections 6.(a), 6.(b)).

DMF staff compiled information for this report from its own ongoing work, stakeholder groups, shellfish and aquaculture experts, shellfish growers, non-governmental organizations, and internal DMF shellfish staff with expertise in this area. DMF also drew upon the findings and recommendations from previous legislative studies related to shellfish leases and aquaculture. Cumulatively, the recommendations listed in this study include the provisions mandated in S.L. 2019-37, as well as considerations for enhancing existing procedures for managing the shellfish aquaculture industry and the resulting user conflicts.

The success of shellfish aquaculture operations and the high-demand for new shellfish leases exceeds traditional DMF permitting and site selection capabilities. Achieving and sustaining a successful shellfish aquaculture industry will depend on, among other things, resolution of these user conflicts. DMF envisions approaching and addressing these issues in collaboration with multiple user groups to provide outreach and feedback to ensure shellfish aquaculture operations are consistent with sound science, public trust uses, business planning, marketing, and training. The DMF Shellfish Lease Program may not be sufficiently staffed or funded to accomplish the recommendations made in this study.

[2] Overcoming Impediments to Shellfish Aquaculture through Legal Research and Outreach: Case Studies (National Oceanic and Atmospheric Administration, U.S. Department of Commerce), 2019
http://nsglc.olemiss.edu/projects/shellfishaquaculture/index.html

II. Background

A. North Carolina's Shellfish Lease Program

DMF administers the Shellfish Lease Program through its Habitat and Enhancement Section. Shellfish leases using public trust bottom areas for shellfish aquaculture (in brackish and higher salinity waters) have existed in North Carolina for over 150 years. Shellfish leases are divided into two types: bottom and water column. You must have a bottom lease to have a water column lease. The water column lease can be granted over the entire footprint of a bottom lease, or on a portion of the lease. A shellfish franchise is similar to a bottom lease except that they are recognized submerged lands claims. Shellfish growers traditionally employed cultch on bottom leases or bed clams under netting. In 1989, the General Assembly expanded traditionally based growing methods by authorizing the leasing of the water column for shellfish aquaculture for areas above a shellfish bottom lease which allow for intensive gear to be used. Extensive shellfish culture means shellfish grown on the bottom without the use of cages, racks, bags, or floats. Intensive shellfish culture means shellfish grown on the bottom or in the water column using cages, racks, bags, or floats. The General Assembly amended the shellfish leasing statutes to allow the use of gear up to 18 inches off the bottom for bottom leases in 2015.[3]

While shellfish water column leases have been authorized since 1989, their use has only recently increased in popularity. The large growth in shellfish water column leases has increased the use of intensive gear leading to a rise in user conflicts. DMF has observed a substantial growth in submission of shellfish lease applications in the past several years with the caveat of a slight decrease in 2018 due to Hurricane Florence and Tropical Storm Michael (Table 1; Figure 1). There are eight coastal counties which have shellfish leases (Figures 2 - 4). As of October 8, 2019, there were 50 shellfish franchises, 224 shellfish bottom leases, and 88 shellfish water column leases in North Carolina covering 1,736 acres (Table 2; Figure 5). Carteret County has 127 shellfish leases, the largest of any North Carolina county (Table 2; Figure 5). Onslow County has the most acres covered by shellfish leases at 527 acres (Table 2; Figure 5). The number of shellfish lease applications in North Carolina has increased exponentially (1,491 percent) from the period of 2005 to 2011 (22 lease applications) compared to the period of 2012 to 2019 (350 lease applications). This is an increase from 2011 (two lease applications) to 2019 (106 lease applications) of 5,200 percent (Table 1; Figure 4).

By way of comparison, the Commonwealth of Virginia has a much larger shellfish lease industry, with 5,400 leases covering 122,000 acres. Currently, Virginia has hundreds of pending applications with a staff capability to process approximately 100 applications per year.

[3] N.C.G.S. § 113-202(r)

Table 1. Total shellfish lease applications for bottom leases and water column leases from 2005 through 2019.

	Applications	
Year	Bottom Lease	Water Column
2005	3	1
2006	5	1
2007	3	0
2008	5	0
2009	0	0
2010	1	1
2011	1	1
2012	8	6
2013	6	10
2014	8	7
2015	9	2
2016	10	11
2017	52	46
2018	36	33
2019	58	48
Total	205	167

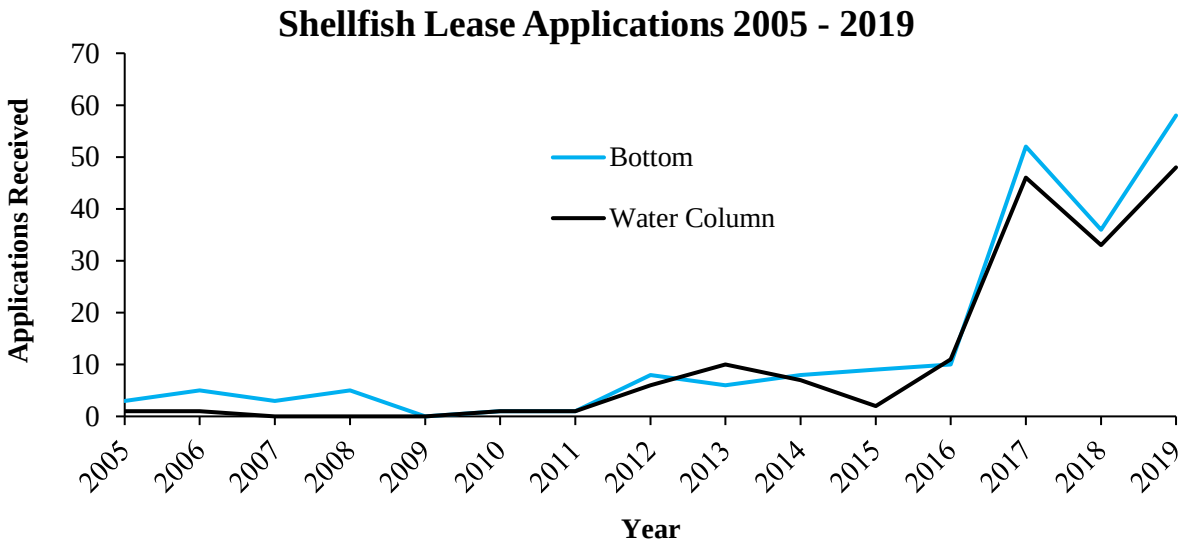

Figure 1. Total shellfish lease applications for bottom leases and water column leases from 2005 through 2019.

Table 2. Total number and acres of shellfish aquaculture leases per county and lease type sorted by total number of leases (highest to lowest).

	Bottom		Water Column		Franchise		Total	
County [1]	Number	Acres	Number	Acres	Number	Acres	Number	Acres [2]
Carteret	87	318	38	98	2	2	127	417
Onslow	43	323	11	29	28	204	82	556
Pender	43	225	9	10	0	0	52	236
Hyde	26	255	11	40	9	236	46	531
Pamlico	9	52	8	48	10	71	27	171
N. Hanover	7	17	5	12	1	3	13	33
Dare	7	24	5	18	0	0	12	42
Beaufort	2	6	1	1	0	0	3	6
Total	224	1,219	88	255	50	517	362	1,736

[1] Current as of October 8, 2019

[2] Total only includes bottom and franchise because water column leases are over bottom lease

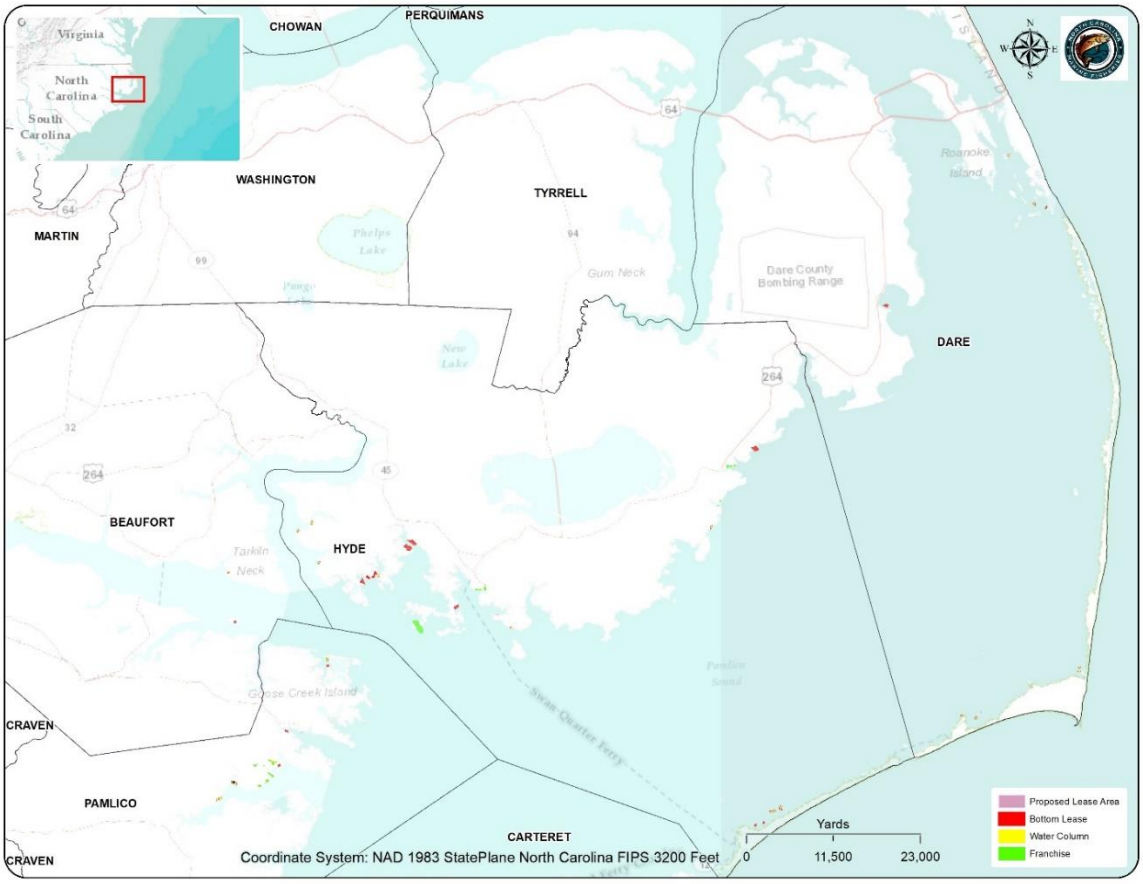

Figure 2. Active and proposed shellfish leases (bottom, water column, and franchise) in the northern region of the state.

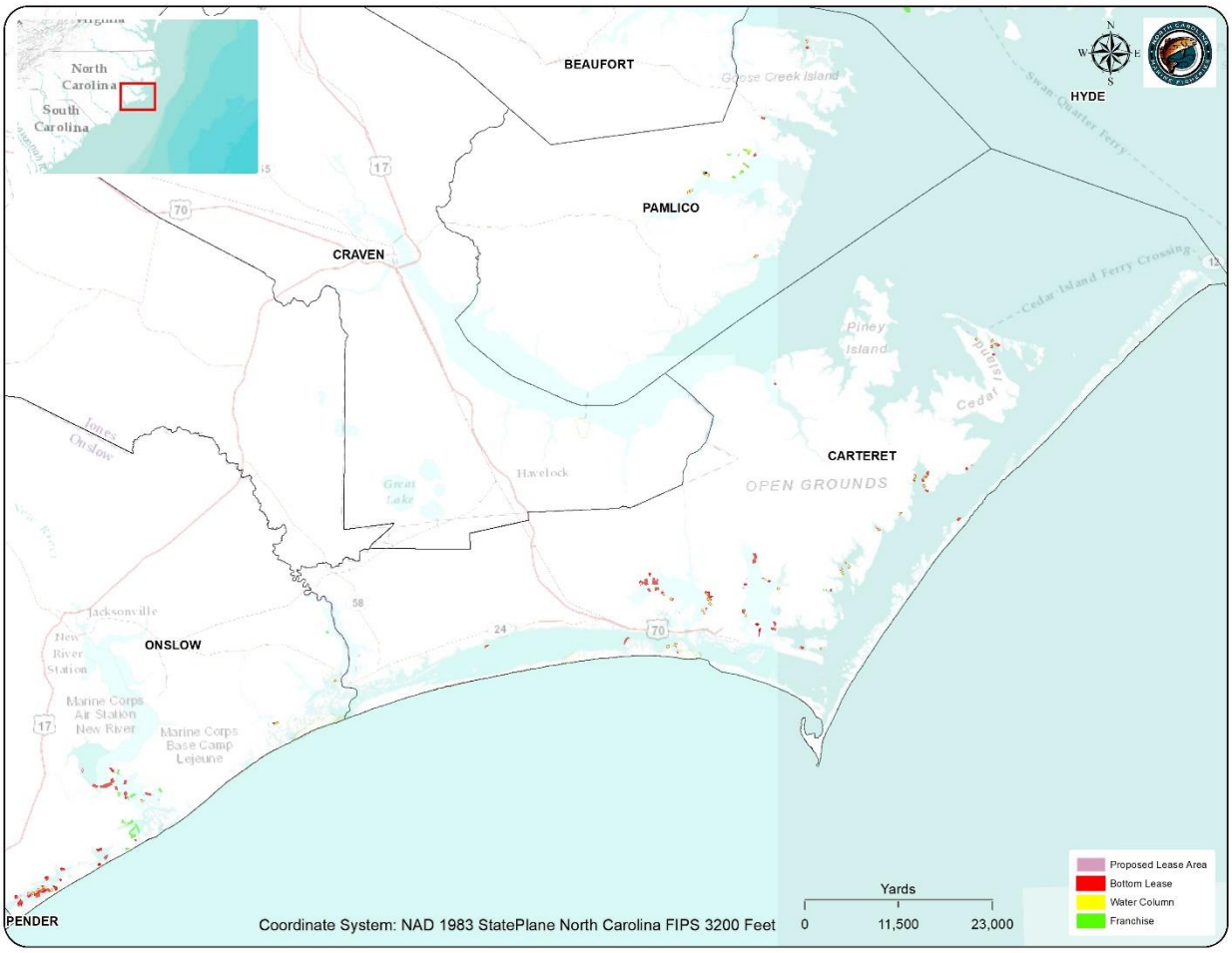

Figure 3. Active and proposed shellfish leases (bottom, water column, and franchise) in the central region of the state.

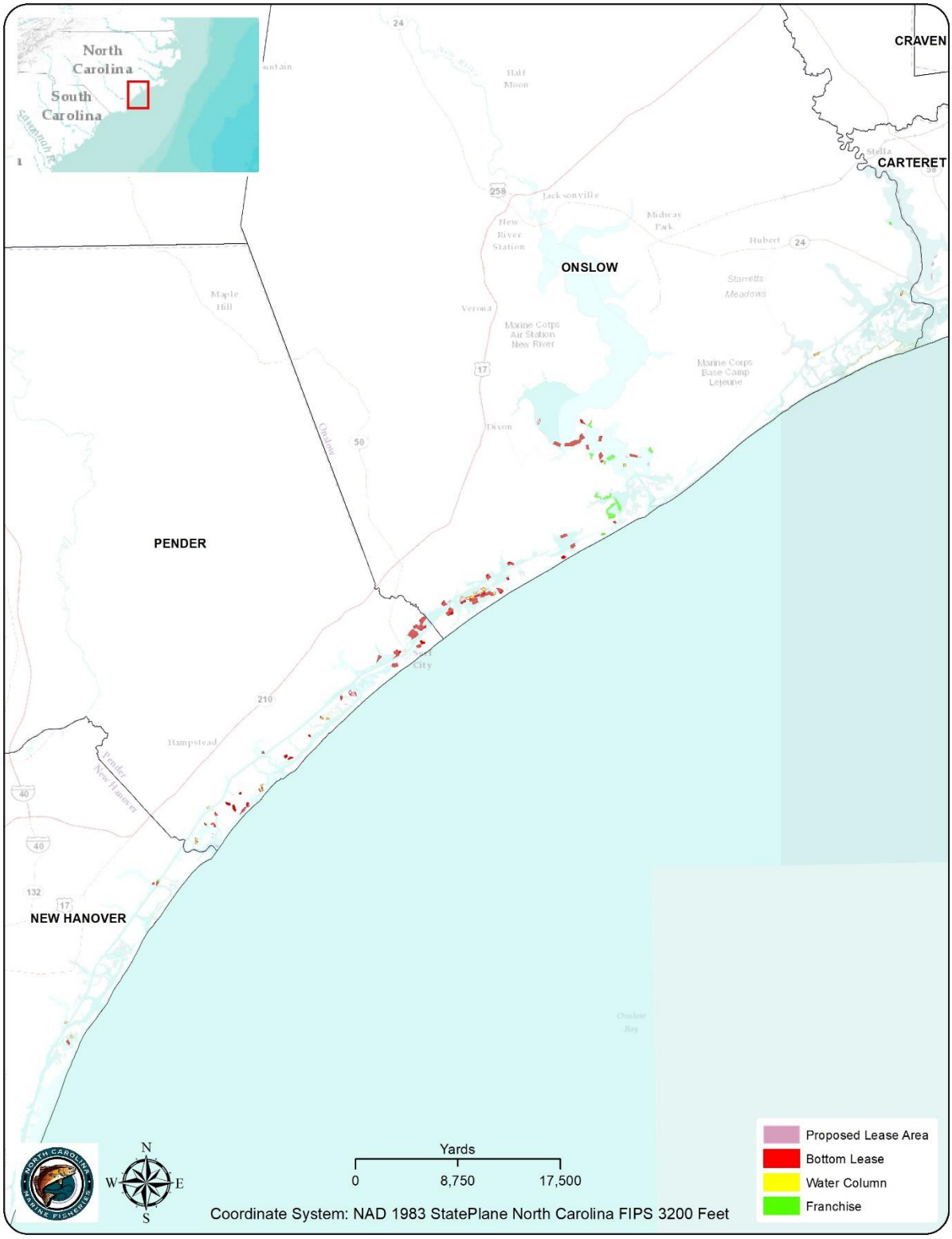

Figure 4. Active and proposed shellfish leases (bottom, water column, and franchise) in the southern region of the state.

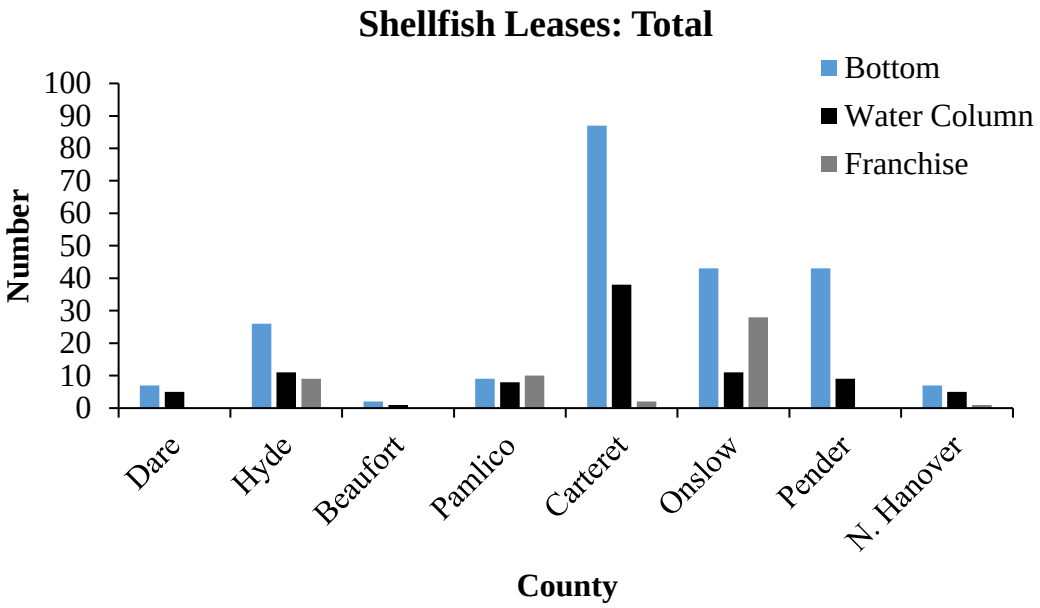

Figure 5. Total shellfish leases (bottom, water column, franchise) in North Carolina by county (north to south) and lease type.

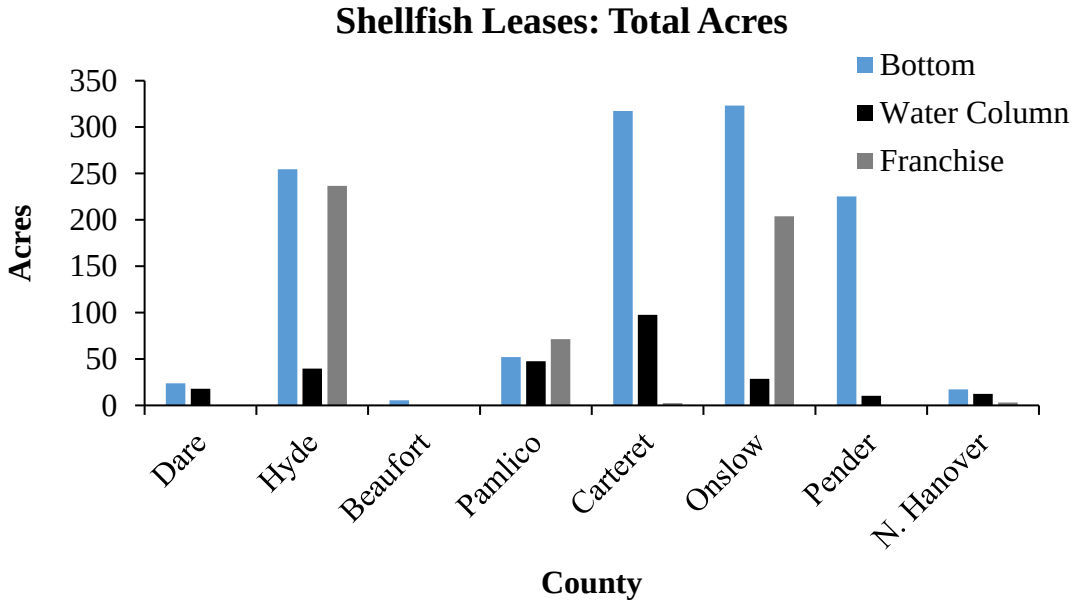

Figure 6. Total shellfish lease acres (bottom, water column, franchise) in North Carolina by county (north to south) and lease type.

DMF grants shellfish aquaculture leases in North Carolina in public trust waters. Public trust resources are land and water areas, whether publicly or privately owned, which are subject to Public Trust Rights as defined under North Carolina law. Public Trust Rights are held in trust by the state for the use and benefit of all citizens of North Carolina in common. Public Trust Rights include, but are not limited to, the right to "navigate, swim, hunt, fish, and enjoy all recreational activities in" North Carolina waters.[4] Public Trust Rights cannot be conveyed in a manner that adversely affects public trust uses. The General Assembly charged NCDEQ with the stewardship of the public trust marine and estuarine resources of the state. The NCDEQ Secretary may delegate that authority to the DMF Director.[5]

B. Federal Permitting - U.S. Army Corps of Engineers' Nationwide Permit 48

Permitting for shellfish aquaculture leasing is accomplished both by statute, in part under N.C.G.S. § 113-202, and through the U.S. Army Corps of Engineers' ("USACE") Nationwide Permit 48 ("NWP 48") process - Commercial Shellfish Aquaculture Activities.[6] The USACE re-issued NWP 48 in 2017. NWP 48 encompasses activities related to commercial shellfish aquaculture in waters of the United States. A recent federal court decision in the State of Washington could have an impact on future use of NWP 48 in North Carolina.[7] NCDEQ's Office of the General Counsel will continue to monitor the potential impacts of this decision and any related case law.

C. Increased Review of Shellfish Lease Applications and Resulting User Conflicts

A substantial increase in the number of user conflicts coincides with the recent expansion of the shellfish aquaculture industry and its use of intensive gear in water column leases (Table 2; Figure 1). The General Assembly promulgated several legislative changes affecting the Shellfish Lease Program in recent years in order to help address these conflicts.[8] The MFC in 2018 also attempted to impose a moratorium for shellfish leases to pause processing of applications long enough to address user conflict issues related to navigation, waterbody carrying capacity, hunting, waterfront development, and applicant experience. Additionally, DMF increased its staff review of shellfish aquaculture lease applications, enlarged notice processes for public hearings on proposed leases, and directed more focus on possible conflicting uses in proposed lease areas. These efforts have resulted in more quality information, both in terms of technical facts and stakeholder opposition, reaching the DMF Director to better inform a decision on whether to grant a shellfish lease application.

The General Assembly's legislative findings and declaration of policy for cultivation of shellfish in North Carolina states that "shellfish cultivation provides increased seafood production and long-term economic and employment opportunities" and "provides increased ecological benefits to the estuarine environment . . ."[9] Further, to enhance shellfish cultivation, the policy of the State is to encourage the development of private, commercial shellfish cultivation in ways that are compatible with other public

[4] N.C.G.S. § 1-45.1

[5] N.C.G.S. § 113-131(b)

[6] Nationwide Permit 48 - Commercial Shellfish Aquaculture Activities Effective Date: March 19, 2017; Expiration Date: March 18, 2022 (NWP Final Notice, 82 FR 1860)

[7] The Coalition to Protect Puget Sound Habitat v. U.S. Army Corps of Engineers et al., No. 17-1209RSL, 2019 WL 5103309 (W.D. Wash. Oct. 10, 2019)

[8] S.L. 2015-263; S.L. 2017-190; S.L. 2019-37

[9] N.C.G.S. § 113-201(a)

uses of marine and estuarine resources such as navigation, fishing, and recreation.[10] Enhancing private shellfish cultivation includes granting shellfish cultivation leases that benefit the public interest.[11] Minimum standards for compatibility are provided to discern suitable areas for shellfish cultivation based on numerous factors, including but not limited to water quality, ability to cultivate shellfish, existing shellfish resources on the proposed lease, and other public trust uses in the area.[12] Shellfish aquaculture leases can often conflict with public trust uses, which makes balancing these issues and determining compatibility challenging and somewhat subjective.

D. Recent Increase in Legal Challenges to DMF's Shellfish Lease Decisions

User conflict issues have resulted in an increase in contested cases filed by potentially aggrieved petitioners in the N.C. Office of Administrative Hearings ("OAH"), as well as other legal challenges. The N.C. Department of Justice represents DMF in defending DMF's shellfish leasing decisions. Many user conflict cases brought by riparian owners adjacent to lease locations seem to be driven by a concern for impairment of view, also known as "viewshed." Viewshed generally means the natural environment that can be seen from nearby riparian property. Viewshed is not a public trust right traditionally acknowledged under North Carolina common law. Discussion of several recent cases may be helpful in understanding user conflict concerns.

In 2016, a petitioner in Pender County challenged DMF's denial of a bottom lease and associated water column lease based on findings by DMF that public trust user conflicts would result.[13] The Administrative Law Judge's ("ALJ") decision states:

> At issue in this particular contested case is whether or not the proposed shellfish lease is 'compatible' with the other uses of the area for navigation, fishing and recreation. Neither the general statutes nor associated Marine Fisheries Commission regulations define or indicate how much use within a proposed lease site must be present in order for the lease to warrant denial as being incompatible with those public uses. There is no definition to define what constitutes the area of the lease, or how it might actually impact navigation, fishing or recreational use. The evidence shows that certain areas close to the proposed site are more heavily used than the exact footprint of the proposed lease site. Fact that there is heavy traffic nearby the proposed lease does NOT necessarily make that area inappropriate for leasing . . . The law does not require an area to be traffic free to be approvable because it would not make any sense and would be an almost impossible requirement to meet. It is the policy of the State of North Carolina to encourage the development of private and commercial shellfish cultivation so long as it is done in a manner compatible with other public uses of the marine and estuarine resources.[14]

Ultimately, the ALJ overturned DMF's denial of the lease application. DMF contemplated appealing the decision to Superior Court, but after further consideration simply decided to issue the lease.

[10] N.C.G.S. § 1-45.1
[11] N.C.G.S. § 113-202(a)
[12] Id.
[13] Ronald Sheffield v. NCDEQ/DMF, 16 EHR 02397 (Pender County)
[14] Ronald Sheffield v. NCDEQ/DMF, 16 EHR 02397 (Pender County)

A second contested case was filed in 2018 by a Homeowner's Association ("HOA") located along a nearby shoreline. The appeal challenged DMF's issuance of a shellfish bottom lease and associated water column lease. The HOA alleged public trust user conflicts, though much of the witness testimony indicated that "viewshed" was the significant concern for the HOA's members. The ALJ noted that "[o]ne minimum statutory criteria of particular relevance to this case is that '[c]ultivation of shellfish in the leased area will be compatible with lawful utilization by the public of other marine and estuarine resources.' "[15] The ALJ went on to state that:

> [t]he proper interpretation of a law or rule is a question of law, and an agency interpretation of a statute or rule is not binding on the undersigned. Nevertheless: It is a tenet of statutory construction that a reviewing court should defer to the agency's interpretation of a statute it administers 'so [ ] long as the agency's interpretation is reasonable and based on a permissible construction of the statute. The phrase 'compatible with' under N.C.G.S. § 113-202(a)(3) is not further defined by statute or regulation.' DMF does not interpret this standard to mean there can be no impact to other public uses. Instead, DMF interprets this minimum standard to mean that existing uses must be able to exist along with the shellfish lease within the general area at the same time.

Ultimately, in upholding DMF's granting of the shellfish lease, the ALJ stated "that DMF's interpretation of the phrase 'compatible with' is reasonable, is consistent with, and supported by the plain language of the statute and statutory framework." The ALJ then went further, finding that "[e]ven in the absence of deference, the undersigned independently adopts DMF's interpretation of this minimum standard. The DMF does not consider impacts on viewshed as a basis for denying a shellfish lease, as this is not a criterion in the relevant statutes or rules pertaining to shellfish leases."[16]

A group of riparian owners brought suit in OAH challenging a shellfish bottom lease and water column lease granted in Myrtle Grove Sound in 2018. The owners claimed the action was brought to "protect the right to a view they are entitled to as a result of their riparian property ownership."[17] The complaint stated, among other things, that "[o]peration of the commercial shellfish cultivation in the area . . . also has caused significant deterioration in Plaintiffs' water views, resulting in substantial devaluation of Plaintiffs' properties."[18] Ultimately, the dispute was resolved based on an unrelated submerged lands claim issue. As part of the case disposition, the grantee of the previously approved shellfish lease moved his operation to a newly approved lease area in Pender County.

Three additional petitions for contested cases were filed challenging the approval of two shellfish bottom leases and associated water column leases located near each other in Myrtle Grove Sound in 2019. The Petitioners claimed "the leases are incompatible with lawful utilization by the public of other marine and estuarine resources" and that "the right of the public to utilize marine and estuarine resources includes

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[15] 8.5 Marina Village John F Matthews VP v. NCDEQ and Samuel G. Boyd, 17 EHR 01382 (Carteret County)

[16] Id.

[17] Hormoze Goudarzi and wife, Suzanne Gourdarzi, Oak Forest Properties, LLC, Billy King and Barbara King v. NCDEQ et al., 18 CVS 1470 (New Hanover Superior Court)

[18] Hormoze Goudarzi and wife, Suzanne Gourdarzi, Oak Forest Properties, LLC, Billy King and Barbara King v. NCDEQ et al., 18 CVS 1470 (New Hanover Superior Court)

the right to view and enjoy species . . . whose habitat Petitioners believe may be threatened by operation of the shellfish leases."[19] These cases were resolved by virtue of the New Hanover moratorium area established by S.L. 2019-37, Section 7, that went into effect July 1, 2019.

E. DMF's Shellfish Lease Program is Under-Resourced

North Carolina's shellfish aquaculture leasing program is implemented by DMF's Shellfish Lease Program which is currently staff and resources limited. A significantly increasing volume of work may require additional resources. By comparison, other states shellfish aquaculture programs have significant staff and operation funds for administration.

Virginia's shellfish lease program is staffed by eight dedicated employees, including two managers, one mapper and draftsman, one clerical position and four surveyors. The State of Maine has substantially fewer shellfish leases and acreage than North Carolina but has over six full time positions dedicated to administering its shellfish lease program. The State of Maryland has eight full time positions dedicated to administering its program. DMF believes the Shellfish Lease Program's small staff and low budget significantly inhibits the industry by increasing the time needed to evaluate whether to grant a lease or defend lease decision appeals. DMF staff believes this delay will be further exacerbated by the mandated but unfunded future studies and directives from the General Assembly in S.L. 2019-37.

III. Sources of Information Concerning User Conflicts

A. Previous Legislative Studies

There have been previous legislative studies concerning shellfish aquaculture over the past few years in North Carolina. Each study has included recommendations for increased resources and positions, regulatory reform, program evaluations, and collaboration. While previous recommendations have been considered, many have not yet been adopted. Details of each report are outlined below.

1. 2016 - Shellfish Aquaculture Plan Report[20]

The legislatively mandated 2016 Shellfish Aquaculture Plan Report recommended funding four full-time positions and recurring resources to adequately operate the Shellfish Lease Program. The report also included recommendations to form a taskforce comprised of diverse stakeholder and experts from industry, academia, and state agencies in order to develop a comprehensive North Carolina Shellfish Aquaculture Plan. Other recommendations from the report included:

[19] Masonboro Island Club and Gary W. Ahlberg v. NCDEQ/DMF, 19 EHR 00991; Sandra A. Fisher v. NCDEQ/DMF, 19 EHR 00983; John A. Marriott v. NCDEQ/DMF, 19 EHR 01057; The Tides Homeowners Association, Inc. v. NCDEQ/DMF, 19 EHR 01055 (New Hanover County)

[20] https://ncseagrant.ncsu.edu/ncseagrant_docs/oysters/DEQ%202016%20Shellfish%20Aquaculture%20Plan%20Report.pdf

- In partnership with N.C. Sea Grant ("NCSG"), develop a detailed proposal for a Shellfish Propagation and Aquaculture Training Program to be enacted with NCSG;
- Modify the initial shellfish bottom lease application fee from $200 to $400, which is non-refundable, to help offset the cost of lease administration, mapping and marking;
- Change statutes to allow rent, renewal and production notices to be mailed to lease holders in mid-April to allow previous year production reporting in the division trip ticket program to be finalized. Allow older leases expiring in April to be extended until June 30 to bring all shellfish leases into the same renewal period;
- To simplify the application process for shellfish growers, develop one application and combine the aquaculture permits and package with a shellfish lease;
- Strengthen statutes to increase the penalties for theft on shellfish leases;
- Policy and statutory changes needed to support the recommendations.

2. 2018 - N.C. Strategic Plan for Shellfish Mariculture: A Vision to 2030[21]

The North Carolina Policy Collaboratory ("Collaboratory") was directed to convene stakeholder meetings in 2016 aimed at advancing efforts to bolster and promote North Carolina's shellfish industry.[22] Legislation was amended, adding a mandate for the Collaboratory to prepare a Shellfish Aquaculture Plan by December 31, 2018.[23] To fulfill the mandates laid out in Senate Bill 257, the Collaboratory formed the Shellfish Mariculture Advisory Committee ("SMAC") to generate a report of findings and recommendations to the General Assembly. The final report was submitted on December 30, 2018.[24]

The SMAC's principal goal was to leverage a broad base of expertise to create a comprehensive plan for the shellfish aquaculture industry while balancing the needs of other citizens of North Carolina who utilize the public trust resources of the coast. The recommendations generated were intended to inform the General Assembly on possible legislative actions that could address many of the current user conflict issues in the industry. The report detailed 21 recommendations including, among others:

- Vision for industry development - Achieve $100 million annual shellfish mariculture value ($33 million dockside sales) by 2030;
- Appropriate recurring funding to establish a new section, the Shellfish Leasing Section, at the DMF. Defraying costs of Shellfish Leasing Section: Increase non-refundable shellfish lease application filing fee to $500 dollars; establish a fee schedule for lease surveys payable to the DMF; shift financial responsibility for advertising for public scoping from agency to the applicant; and increase annual rent;
- Statutory changes - Amend North Carolina General Statute §113-202 to afford the Secretary of the NCDEQ substantial discretion in balancing public trust uses;
- The DMF should designate appropriate tracts as SEAs containing multiple, connected parcels available for shellfish mariculture and managed by the DMF;
- In Pamlico Sound, the Secretary of the NCDEQ should be granted discretion to grant up to three (total) 50-acre (each contiguous) water column or bottom leases, each obtained by a single lease application. These lease tracts must be separated from each other, and from shore, by at least 250 yards. Otherwise, current lease size maximums, including overall acreage possession limits for

[21] https://collaboratory.unc.edu/files/2019/01/NC-Strategic-Plan-for-Shellfish-Mariculture-Final-2018.pdf

[22] S.L. 2016-94, Section 14.11.(d)

[23] Senate Bill 257, Section 13.13.(b)

[24] North Carolina Strategic Plan for Shellfish Mariculture: A Vision to 2030 (Drs. Joel Fodrie, Charles Peterson, Christine Voss, and Christopher Baillie on behalf of the North Carolina Shellfish Mariculture Advisory Committee)

any single entity, should be retained throughout the state, and no more than three large water column or bottom leases may be established in Pamlico Sound until 2025;
- Increase utilization requirement and strictly monitor and enforce "use it or lose it" policy for shellfish leases;
- Institute higher minimum fines and mandatory restitution for those convicted of stealing or damaging property on shellfish leases. Elevate charges for theft from any contained culture (e.g. cages, bags) or free-on-bottom operation (including clams under netting) to a felony with a minimum fine of $2,500 and mandatory restitution to the property owner. For those convicted who hold a commercial license, first offenses will result in a one-year loss of license, and second offenses will result in a permanent loss of license;
- Amend North Carolina General Statute §113-203 to allow nursery of shellfish in waters classified as prohibited.

The report addressed the need for further understanding of the ecological and societal implications of shellfish aquaculture which hinder the ability of government agencies to determine where shellfish aquaculture is most suitable. The report explains the need for regionally specific information on social carrying capacity of shellfish aquaculture and other tools to minimize user conflict. While research into the social effects of the expanding shellfish aquaculture industry cannot ensure there will be no user conflict issues, these inquiries can facilitate a better understanding of user conflicts and stakeholder perceptions which ultimately inform lawmakers on future legislation and policy.

Research efforts can help identify social sustainability and conflict resolution approaches that will be important to developing an overall understanding of the relationship of the shellfish aquaculture industry and the surrounding coastal communities. Social carrying capacity is inherently location specific and the amount of shellfish aquaculture that is socially acceptable within an area will vary among regions of the coast.

Another recommendation from the report included appropriate funding and positions for the Shellfish Lease Program. The report recommended recurring funding for three additional full-time equivalent positions for the Shellfish Lease Program. Additionally, the recommendation included increased recurring appropriations to the DMF for the purposes of administering shellfish leasing. The report concluded that additional positions will provide much needed assistance with field operations (e.g. mapping, sampling, and marking leases), a need that will continue to increase as the industry grows and as DMF develops and manages SEAs.

B. Collaboration and Public Outreach

DMF staff has collaborated closely with local stakeholders to help identify and address user conflicts, most recently through the 2018 SMAC process discussed above. DMF has also been working to address user conflict issues with the National Ocean and Atmospheric Administration - National Centers for Coastal Ocean Science specifically on the Bogue Sound Pilot Study which was completed this year. The result of this partnership was a spatial analysis tool and random sampling grids tool used for shellfish lease siting. The Shellfish Lease Program meets with internal DMF reviewers to ensure the lease review process is thorough and efficient. In 2015, DMF also began coordinating with the North Carolina Division of Coastal Management ("DCM") as a review and commenting agency for shellfish lease

applications, based on their expertise with user conflicts in coastal development. Finally, DMF collaborated with the USACE on the 2017 update of the NWP 48.[25]

The University of North Carolina Wilmington ("UNCW") created a tool in 2014 to assist new or current shellfish growers in siting areas for shellfish leases.[26] The online tool maintained by UNCW is designed as an interactive decision-support tool to provide information on site suitability when determining potential areas for shellfish leases. The data provided by the tool include salinity, depth, shellfish growing area classifications, boat access areas, surrounding land cover, and current shellfish aquaculture operations.

Public outreach takes place in a variety of ways including numerous presentations to local municipalities, educational institutions, and professional conferences to better inform stakeholder groups and interested parties about the Shellfish Lease Program. For example, DMF is currently collaborating with NCSG and the North Carolina Shellfish Growers Association on regional shellfish aquaculture workshops scheduled for December 3-5, 2019. These workshops are intended to solicit input from shellfish growers about their experiences including user conflicts issues.

DMF staff have also been working on new web-based solutions to more widely inform the public, shellfish growers, potential shellfish lease applicants, and other stakeholders about pending shellfish lease applications to allow for a more robust notification and comment process. DMF staff implemented new temporary marking requirements for proposed shellfish leases to increase visibility to ensure better notification to other area public trust users. DMF staff found that notification efforts beyond those required by the shellfish lease law were helpful in getting more information regarding objections and concerns to property owners and user groups near a proposed lease. Feedback, in turn, provides additional information for the DMF Director to consider as part of a shellfish lease decision.

C. User Conflict Information from Other States

Although the concept of public trust waters somewhat differs among states, the larger user conflict issues created by shellfish aquaculture seems to remain constant. Like North Carolina, most other states which permit shellfish aquaculture require that those operations not unreasonably interfere with other public trust uses. The National Sea Grant College Program in 2019 produced several case studies concerning impediments to shellfish aquaculture across the country.[27] DMF looks forward to examining these recent studies to determine if there are approaches and lessons learned elsewhere that could be applied in North Carolina.

[25] Nationwide Permit 48 - Commercial Shellfish Aquaculture Activities. Effective Date: March 19, 2017; Expiration Date: March 18, 2022. (NWP Final Notice, 82 FR 1860)

[26] https://uncw.edu/benthic/sitingtool/

[27] Overcoming Impediments to Shellfish Aquaculture through Legal Research and Outreach: Case Studies (National Oceanic and Atmospheric Administration, U.S. Department of Commerce), 2019

1. Leasing Authorities

The leasing of public waters for aquaculture goes through an established public process in all states.[28] This public process ensures that concerned stakeholders receive both sufficient notification of proposed leases and an opportunity to raise and address their concerns publicly, though the specifics of these processes vary among states. There are various governmental frameworks among states created to manage the shellfish aquaculture industry. Some states have treated shellfish aquaculture as a form of agriculture, while other states include shellfish aquaculture in agencies managing natural resources.

Numerous states, including Florida, Maine, Maryland, New Jersey, and the Commonwealth of Virginia, have established aquaculture advisory councils which provide managers expert guidance through the council membership. In most states, shellfish applications are processed and decided by the same state-level agency, though Massachusetts and New York make lease decisions at the local level. For example, oyster aquaculture in New York is only approved on private lands or on submerged lands granted by the state to local municipalities which are then charged with developing and managing leasing programs. Similarly, in Massachusetts the city council or mayor of each municipality has authority to issue shellfish aquaculture licenses (or leases). While the aquaculture lease decisions in New York and Massachusetts are made by local municipalities, state and federal statutory requirements are still a large component in determining the policy affecting the industry participants.[29]

2. Siting Authorities

Siting authorities review proposed lease sites and are tasked with addressing and balancing potential conflicts during the shellfish aquaculture lease application review process.[30] Florida, Maryland, New Jersey, and Virginia manage siting bodies that, when reviewing applications, provide notice to applicants if potential issues are identified, and provide recommendations or set conditions on leases if issued. Some states, however, take a more proactive front-end approach, such as Maine and Rhode Island.

In Maine, the Department of Marine Resources mandates that applicants have a pre-application meeting to discuss proposed operations with the Department, harbormaster, and/or the municipal officers of the town in which the applicant wishes to apply. Similarly, in Rhode Island, the Coastal Resources Management Council requires applicants to complete a Preliminary Determination process which involves meeting with regulating agencies, town officials, and the Rhode Island Department of Environmental Management to discuss proposed plans. In both states, meetings allow officials who are familiar with competing uses in the area to advise applicants of potential user conflict issues to give them an opportunity to modify applications before submittal.

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[28] http://www.ct.gov/deep/cwp/view.asp?a=2705&q=431902&depNav_GID=1622; https://www.freshfromflorida.com/Divisions-Offices/Aquaculture; https://www.maine.gov/dmr/aquaculture; http://dnr.maryland.gov/fisheries/pages/aquaculture/index.aspx https://www.capecodextension.org/marine/semac/; https://www.nj.gov/dep/fgw/pdf/marine/shellfish_leasing_policy_atlantic.pdf; http://assembly.state.ny.us/leg/?default_fld=&bn=A07120&term=2011&Summary=Y&Actions=Y&Votes=Y&Memo=Y&Text=Y; http://www.shellfishri.com/ri-shellfish-initiative/; http://www.mrc.state.va.us/Shellfish_Aquaculture.shtm

[29] http://www.ct.gov/deep/cwp/view.asp?a=2705&q=431902&depNav_GID=1622; https://www.freshfromflorida.com/Divisions-Offices/Aquaculture; https://www.maine.gov/dmr/aquaculture; http://dnr.maryland.gov/fisheries/pages/aquaculture/index.aspx https://www.capecodextension.org/marine/semac/; https://www.nj.gov/dep/fgw/pdf/marine/shellfish_leasing_policy_atlantic.pdf; http://assembly.state.ny.us/leg/?default_fld=&bn=A07120&term=2011&Summary=Y&Actions=Y&Votes=Y&Memo=Y&Text=Y http://www.shellfishri.com/ri-shellfish-initiative/; http://www.mrc.state.va.us/Shellfish_Aquaculture.shtm

[30] Id.

3. The Permit Process

The permitting process for shellfish aquaculture leases can be complicated, lengthy and represent a considerable barrier to entry for some potential applicants.[31] Many states have been dealing with similar issues much longer then North Carolina. To streamline the process, reduce the cost of permitting, and mitigate user conflict issues, states such as Maryland, Florida, Delaware, Massachusetts, New Jersey, New York, and California have established SEAs where state agencies perform aquaculture lease siting, including environmental and public trust suitability review, as well as acquisition of necessary Federal permits. These states then sub-lease smaller parcels within the SEA to shellfish growers. This makes the process more efficient on the back-end, where states only have to verify the suitability of an applicant and issue a permit to operate within those pre-approved SEAs.

Streamlined permitting encourages industry development by shifting the approval burden to the state, eases the state's lease back-end application burden, and helps mitigate user conflict issues. This process also gives individual states greater authority to regulate the activities conducted within the designated area.

4. Shellfish Lease Size and Acre Caps

A common component in user conflicts with shellfish aquaculture revolves around the fear that shellfish aquaculture will eventually take over the majority of a waterbody.[32] In New York and Rhode Island, acreage caps have been used to curb fears in areas of high residency and water use. Suffolk County (New York) established an acreage cap of 60 acres that can be leased each year for new leases. In Rhode Island, a maximum of five percent of a coastal salt pond can be leased for shellfish aquaculture. In North Carolina, individual leases are restricted to 10 acres with no more than 50 acres held by an individual or corporation. Beyond size caps and residency requirements, leases are subject to a variety of parameters in different states that limit their expansion such as lease terms, physical restrictions, and other parameters.[33]

5. Education

In North Carolina, Carteret Community College offers the Aquaculture Technology Program which provides courses in shellfish aquaculture along with hands on experience working on shellfish farms.[34] Currently, North Carolina requires shellfish lease applicants to complete an examination scoring a minimum of 70 percent based on an educational package provided by the DMF. DMF established the examination to demonstrate the applicant's knowledge of:

- Shellfish lease application process;
- Shellfish lease planting and production requirements;
- Lease marking requirements;

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[31] Id.
[32] http://www.ct.gov/deep/cwp/view.asp?a=2705&q=431902&depNav_GID=1622; https://www.freshfromflorida.com/Divisions-Offices/Aquaculture; https://www.maine.gov/dmr/aquaculture; http://dnr.maryland.gov/fisheries/pages/aquaculture/index.aspx https://www.capecodextension.org/marine/semac/; https://www.nj.gov/dep/fgw/pdf/marine/shellfish_leasing_policy_atlantic.pdf; http://assembly.state.ny.us/leg/?default_fld=&bn=A07120&term=2011&Summary=Y&Actions=Y&Votes=Y&Memo=Y&Text=Y http://www.shellfishri.com/ri-shellfish-initiative/; http://www.mrc.state.va.us/Shellfish_Aquaculture.shtm
[33] Id.
[34] https://www.carteret.edu/programs/aquaculture-technology/

- Lease fees;
- Shellfish harvest area closures due to pollution;
- Safe handling practices;
- Lease contracts and renewals;
- Lease termination criteria;
- Shellfish cultivation techniques.

Many states have cooperative extension programs which provide classes and training that introduce potential applicants to the fundamentals of shellfish aquaculture.[35] The University of Florida IFAS Shellfish Aquaculture Extension Program, the University of Maryland Extension's Oyster Aquaculture and Education Program, and Southeastern Massachusetts' Aquaculture Center all offer online classes and/or in person workshops to educate potential applicants. These programs are federally funded through the Cooperative State Research, Education, and Extension Service and other federal agencies. Some states such as Virginia, Rhode Island, and Florida have developed mandatory training requirements. These requirements tend to focus on sanitation issues and harvest procedures as they help states comply with the National Shellfish Sanitation Program.[36]

D. Future Studies and Directives

Future studies and directives mandated by S.L. 2019-37 include: the development of SEAs, potential SEAs in moratorium areas, and a Pamlico Sound Shellfish Aquaculture Pilot Project for a few larger-size leases. These studies require the development and implementation of new methods and procedures for the shellfish lease process. DMF is currently exploring possible ways to complete large-scale shellfish lease investigations required by both the SEA and Pamlico Sound Pilot studies.

Currently, a large-scale shellfish lease investigation would require the effort of the entire Shellfish Lease Program staff for approximately three months leaving no time to review lease applications or perform other work of the program. DMF is exploring the use of drone technology to aid in the lease investigation process and exploring Habitat Suitability Index modeling as a tool for siting shellfish aquaculture leases. DMF is also evaluating various sampling techniques including dredge sampling and using the spatial analysis from the Bogue Sound Pilot Project.

[35] http://www.ct.gov/deep/cwp/view.asp?a=2705&q=431902&depNav_GID=1622; https://www.freshfromflorida.com/Divisions-Offices/Aquaculture; https://www.maine.gov/dmr/aquaculture; http://dnr.maryland.gov/fisheries/pages/aquaculture/index.aspx https://www.capecodextension.org/marine/semac/; https://www.nj.gov/dep/fgw/pdf/marine/shellfish_leasing_policy_atlantic.pdf; http://assembly.state.ny.us/leg/?default_fld=&bn=A07120&term=2011&Summary=Y&Actions=Y&Votes=Y&Memo=Y&Text=Y http://www.shellfishri.com/ri-shellfish-initiative/; http://www.mrc.state.va.us/Shellfish_Aquaculture.shtm

[36] Id.

IV. Recommendations

A multifaceted approach is required to address user conflict issues related to shellfish aquaculture leases in North Carolina. This approach envisions regulatory reform, program evaluation, collaboration, and resource assessment. Previous and current work should be built upon to avoid duplication and expending extra resources.

Existing shellfish lease and franchise statutes[37] and rules[38] require revisions to effect execution of the recommendations in this study. DMF is drafting suggested revisions to existing shellfish lease statutes and rules to address user conflict issues and incorporate mandated revisions from S.L. 2019-37. The deadline for adoption of rule revisions is March 1, 2021. In discussions with DCM and the North Carolina Coastal Resources Commission ("CRC") regarding potential user conflict concerns specific to shellfish lease gear and navigation impacts, DMF intends to develop rule language to address these concerns. Recommendations will be made regarding rule revisions based off the findings in this study. Additional recommendations for statute and rule revisions addressing user conflict issues will be developed through the additional studies and directives mandated by S.L. 2019-37.

DMF will evaluate the Shellfish Lease Program and Aquaculture Permitting Program to identify challenges and inefficiencies and recommend ways to improve existing programs. DMF staff believes this focus will result in further modification of internal operating procedures. Areas for further collaboration were identified in this study along with likely participating partners.

Other directives mandated by S.L. 2019-37 include the development and implementation of SEAs similar to those employed by other states. One of the obstacles North Carolina shellfish regulators face is a limited ability to stay informed regarding the aquaculture efforts of other states. DMF recommends collaborating with other states to facilitate a joint interstate discussion. This effort will be of mutual benefit to participating states in compiling and evaluating information relevant to each states' respective aquaculture regulation and permitting processes.

The Shellfish Lease Program is tasked with implementing the recommendations from this study. It is imperative that DMF have sufficient dedicated staff to manage the program. DMF may not be adequately funded or staffed to implement the recommendations in this study. The lack of funding and dedicated staff significantly inhibits the program's administrative support for lease holders, drastically increases the

[37] N.C.G.S. § 113-201 et seq.

[38] 15A NCAC 03O.0201.0211

time to acquire a lease, and impairs the DMF's ability to address user conflict issues efficiently and effectively. The additional legislative mandates put further burden on the already limited amount of staff and resources of the Shellfish Lease Program. DMF will evaluate current staff and funding levels of the Shellfish Lease Program to estimate the resources needed for the program to implement the recommendations of this study.

A. Recommendation #1: Regulatory Reform

- Incorporate riparian area owner notification standards to include certified mail notification (15A NCAC 03O.0201);
- Add language to include MFC's authority to limit total acres leased in a waterbody (15A NCAC 03O.0201);
- Add a 250 feet setback requirement between any shellfish leases (15A NCAC 03O.0201(a));
- Modify the setback requirement of 100 feet from a developed shoreline to 250 feet to help alleviate user conflict with riparian owners (15A NCAC 03O.0201(a)(3));
- Modify marking requirements for shellfish leases and franchises to include a maximum of eight corner lease corner markers and additional requirements to ensure visibility to alleviate navigation concerns. More noticeable shellfish lease markings have been a safety concern (15A NCAC 03O.0202(b); 15A NCAC 03O.0204);
- Modify training requirements for shellfish lease applicants to include information about user conflicts and the public trust (15A NCAC 03O.0202(d));
- Add administrative remedy language from statute (15A NCAC 03O.0206);
- Add clearance requirement of three feet between the top of the cage and the water level at mean low tide to the amended shellfish leasing statute allowing the use of gear up to 18 inches off of the bottom (N.C.G.S. § 113-202(r)).

B. Recommendation #2: Program Evaluation

- Best management practices for the industry should be practiced and publicized, best available science should be incorporated into the permitting process, and stakeholders should work together to collect data and analyze facts to reach shared decisions on the user conflict issues;
- Synchronize all reporting and renewal requirements for shellfish leases and aquaculture permits.

C. Recommendation #3: Collaboration

- Form an interstate aquaculture workgroup and have an in-person meeting;
- Create an inventory with aquaculture information from each state, including site selection, permitting, public trust issues, business planning and economics, seed and nursery options, grow out methods and equipment, consumer safety and marketing;
- Develop a standing interstate aquaculture workgroup in partnership with NCSG with adequate funding and support;
- In partnership with NCSG, continue developing a Shellfish Aquaculture Training Program.

D. Recommendation #4: Resource Assessment

- Evaluate the Shellfish Lease Program's staff and funding levels to determine whether they are adequate to administer the current and increasing volume and complexity to similar levels of other state's aquaculture programs.

Rule Impact Analysis for Readoption of 15A NCAC 03Q .0100
Pursuant to G.S. 150B-21.3A

Rule Amendments: 15A NCAC 03Q .0101-.0109

Name of Commission: N.C. Marine Fisheries Commission

Agency Contact: David Dietz, Fisheries Economics Program Manager
N.C. Division of Marine Fisheries
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919-707-8573
David.Dietz@ncdenr.gov

Impact Summary: State government: No
Local government: No
Federal government: No
Substantial impact: No

Authority:

North Carolina General Statutes

G.S. 113-132.	Jurisdiction of fisheries agencies.
G.S. 113-134.	Rules.
G.S. 113-182.	Regulation of fishing and fisheries.
G.S. 143B-289.52.	Marine Fisheries Commission - powers and duties.
G.S. 150B-21.3A	Periodic review and expiration of existing rules.

I. Necessity:

General Statute 150B-21.3A requires state agencies to review their existing rules every 10 years to determine which rules are still necessary, and to either readopt or repeal each rule as appropriate. The rules in 15A NCAC 03Q .0100 are proposed for readoption without substantive change pursuant to this requirement.

II. Summary

The nine rules in 15A NCAC 03Q .0100 have been reviewed to conform to the requirements of G.S. 150B-21.3A, Periodic Review and Expiration of Existing Rules. The proposed readoptions do not contain any changes to the rules. As these contain no changes to rule text, the proposed readoption package does not result in any fiscal impacts to the regulated community, state government, or other parties.

III. Introduction and Purpose of Rule Changes

The purpose of the Marine Fisheries Commission (MFC) is to manage, restore, develop, cultivate, conserve, protect, and regulate the marine and estuarine resources within its jurisdiction, as described in G.S. 113-132, including commercial and recreational fisheries resources (Chapter 143B, Article 7, Part 5D). Session Law 1965-957 amended Subchapter IV of Chapter 113 of the General Statutes of North Carolina to create G.S. 113-132, Jurisdiction of

fisheries agencies. This was done in part to clarify the conservation laws of the state and the authority and jurisdiction of what are now the MFC and the Wildlife Resources Commission (WRC). Paragraph (e) of this statute states that the "Marine Fisheries Commission and the Wildlife Resources Commission may make joint regulations governing the responsibilities of each agency and modifying the applicability of licensing and other regulatory provisions as may be necessary for rational and compatible management of the marine and estuarine and wildlife resources in joint fishing waters."

In accordance with G.S. 113-132, the nine rules in 15A NCAC 03Q .0100, subtitled "Jurisdiction of Agencies: Classification of Waters" were originally adopted jointly by the MFC and the WRC. As a result, both agencies must approve readoption of the rules.

IV. Fiscal Impact Analysis

As these nine rules are being proposed for readoption with no changes, there will be no new impacts to the economic benefits and costs of the rules. As such, no fiscal impact will be observed from this proposed readoption package.

V. Appendix

Proposed Rules for Readoption

15A NCAC 03Q .0101 is proposed for readoption without substantive changes as follows:

SUBCHAPTER 03Q - JURISDICTION OF AGENCIES: CLASSIFICATION OF WATERS

SECTION .0100 - GENERAL REGULATIONS: JOINT

15A NCAC 03Q .0101 SCOPE AND PURPOSE

The rules in this Section pertain to the classification of the waters of North Carolina as coastal fishing waters, inland fishing waters and joint fishing waters. These rules are adopted jointly by the Marine Fisheries Commission and the Wildlife Resources Commission. In addition to the classification of the waters of the state these joint rules set forth guidelines to determine which fishing activities in joint waters are regulated by the Marine Fisheries Commission and which are regulated by the Wildlife Resources Commission. Finally, the joint rules set forth special fishing regulations applicable in joint waters that can be enforced by officers of the Division of Marine Fisheries and the Wildlife Resources Commission. These regulations do not affect the jurisdiction of the Marine Fisheries Commission and the Wildlife Resources Commission in any matters other than those specifically set out.

History Note: *Authority G.S. 113-132; 113-134; 143B-289.52;*
Eff. January 1, 1991;
Readopted Eff. May 1, 2021.

15A NCAC 03Q .0102 is proposed for readoption without substantive changes as follows:

15A NCAC 03Q .0102 INLAND FISHING WATERS

Inland fishing waters are all inland waters except private ponds; and all waters connecting with or tributary to coastal sounds or the ocean extending inland from the dividing line between coastal fishing waters and inland fishing waters agreed upon by the Marine Fisheries Commission and the Wildlife Resources Commission. All waters which are tributary to inland fishing waters and which are not otherwise designated by agreement between the Marine Fisheries Commission and the Wildlife Resources Commission are inland fishing waters. The regulation and licensing of fishing in inland fishing waters is under the jurisdiction of the Wildlife Resources Commission. Regulations and laws administered by the Wildlife Resources Commission regarding fishing in inland fishing waters are enforced by wildlife enforcement officers.

History Note: *Authority G.S. 113-132; 113-134; 143B-289.52;*
Eff. January 1, 1991;
Readopted Eff. May 1, 2021.

15A NCAC 03Q .0103 is proposed for readoption without substantive changes as follows:

15A NCAC 03Q .0103 COASTAL FISHING WATERS

Coastal fishing waters are the Atlantic Ocean; the various coastal sounds; and estuarine waters up to the dividing line between coastal fishing waters and inland fishing waters agreed upon by the Marine Fisheries Commission and the Wildlife Resources Commission. All waters which are tributary to coastal fishing waters and which are not otherwise designated by agreement between the Marine Fisheries Commission and the Wildlife Resources Commission are coastal fishing waters. The regulations and licensing of fishing in coastal fishing waters is under the jurisdiction of the Marine Fisheries Commission; except that inland game fish (exclusive of spotted seatrout, weakfish, and striped bass) are subject to regulations by the Wildlife Resources Commission in coastal fishing waters. Regulations and laws administered by the Marine Fisheries Commission regarding fishing in coastal waters are enforced by fisheries enforcement officers. Regulations regarding inland game fish in coastal fishing waters are enforced by wildlife enforcement officers unless otherwise agreed to by the Wildlife Resources Commission.

History Note: *Authority G.S. 113-132; 113-134; 143B-289.52;*
Eff. January 1, 1991;
Readopted Eff. May 1, 2021.

15A NCAC 03Q .0104 is proposed for readoption without substantive changes as follows:

15A NCAC 03Q .0104 JOINT FISHING WATERS

Joint fishing waters are those coastal fishing waters, hereinafter set out, denominated by agreement of the Marine Fisheries Commission and the Wildlife Resources Commission pursuant to G.S. 113-132(e) as joint fishing waters. All waters which are tributary to joint fishing waters and which are not otherwise designated by agreement between the Marine Fisheries Commission and the Wildlife Resources Commission are classified as joint fishing waters. The regulation and licensing of fishing in joint waters shall be as stated in 15A NCAC 3Q .0106.

History Note: *Authority G.S. 113-132; 113-134; 143B-289.52;*
Eff. January 1, 1991;
Readopted Eff. May 1, 2021.

15A NCAC 03Q .0105 is proposed for readoption without substantive changes as follows:

15A NCAC 03Q .0105 POSTING DIVIDING LINES

The dividing lines of all major bodies of water and watercourses which are divided by the agreement of the Marine Fisheries Commission and the Wildlife Resources Commission so that portions of the same are constituted inland fishing waters, coastal fishing waters, or joint fishing waters shall be marked with signs in so far as may be practicable. Unmarked and undesignated tributaries shall have the same classification as the designated waters to which they connect or into which they flow. No unauthorized removal or relocation of any such marker shall have the effect of changing the classification of any body of water or portion thereof, nor shall any such unauthorized removal or relocation or the absence of any marker affect the applicability of any regulation pertaining to any such body of water or portion thereof.

History Note: *Authority G.S. 113-132; 113-134; 143B-289.52;*
Eff. January 1, 1991;
Readopted Eff. May 1, 2021.

15A NCAC 03Q .0106 is proposed for readoption without substantive changes as follows:

15A NCAC 03Q .0106 APPLICABILITY OF RULES: JOINT WATERS

(a) All coastal fishing laws and regulations administered by the Department of Environment and Natural Resources and the Marine Fisheries Commission apply to joint waters except as otherwise provided, and shall be enforced by fisheries enforcement officers.

(b) The following inland fishing laws and regulations administered by the Wildlife Resources Commission apply to joint waters and shall be enforced by wildlife enforcement officers:

(1) all laws and regulations pertaining to inland game fishes,

(2) all laws and regulations pertaining to inland fishing license requirements for hook and line fishing,

(3) all laws and regulations pertaining to hook and line fishing except as hereinafter provided.

History Note: *Authority G.S. 113-132; 113-134; 143B-289.52;*
Eff. January 1, 1991;
Amended Eff. July 1, 1999;
Readopted Eff. May 1, 2021.

15A NCAC 03Q .0107 is proposed for readoption without substantive changes as follows:

15A NCAC 03Q .0107 SPECIAL REGULATIONS: JOINT WATERS

In order to effectively manage all fisheries resources in joint waters and in order to confer enforcement powers on both fisheries enforcement officers and wildlife enforcement officers with respect to certain rules, the Marine Fisheries Commission and the Wildlife Resources Commission deem it necessary to adopt special rules for joint waters. Such rules supersede any inconsistent rules of the Marine Fisheries Commission or the Wildlife Resources Commission that would otherwise be applicable in joint waters under the provisions of 15A NCAC 03Q .0106:

(1) Striped Bass

(a) It is unlawful to possess any striped bass or striped bass hybrid that is less than 18 inches long (total length).

(b) It is unlawful to possess striped bass or striped bass hybrids between the lengths of 22 and 27 inches (total length) in joint fishing waters of the Central Southern Management Area as designated in 15A NCAC 03R .0201.

(c) It is unlawful to possess striped bass or striped bass hybrids May through September in the joint fishing waters of the Central Southern Management Area and the Albemarle Sound Management Area.

(d) It is unlawful to possess striped bass or striped bass hybrids taken from the joint fishing waters of the Cape Fear River.

(e) It is unlawful to possess more than one daily creel limit of striped bass or striped bass hybrids, in the aggregate, per person per day, regardless of the number of management areas fished.

(f) Possession of fish shall be assessed for the creel and size limits of the management area in which the individual is found to be fishing, regardless of the size or creel limits for other management areas visited by that individual in a given day.

(g) It is unlawful to engage in net fishing for striped bass or striped bass hybrids in joint waters except as authorized by rules of the Marine Fisheries Commission.

(2) Lake Mattamuskeet:

(a) It is unlawful to set or attempt to set any gill net in Lake Mattamuskeet canals designated as joint waters.

(b) It is unlawful to use or attempt to use any trawl net or seines in Lake Mattamuskeet canals designated as joint waters.

(3) Cape Fear River. It is unlawful to use or attempt to use any net, net stakes or electrical fishing device within 800 feet of the dam at Lock No.1 on the Cape Fear River.

(4) Shad: It is unlawful to possess more than 10 American shad or hickory shad, in the aggregate, per person per day taken by hook-and-line.

History Note: *Authority G.S. 113-132; 113-134; 143B-289.52;*
Eff. January 1, 1991;
Amended Eff. July 1, 1993; November 1, 1991;
Temporary Amendment Eff. May 1, 2000;
Amended Eff. July 1, 2008; September 1, 2005; April 1, 2001; August 1, 2000;
Readopted Eff. May 1, 2021.

15A NCAC 03Q .0108 is proposed for readoption without substantive changes as follows:

15A NCAC 03Q .0108 MANAGEMENT RESPONSIBILITY FOR ESTUARINE STRIPED BASS IN JOINT WATERS

(a) The management areas for estuarine striped bass fisheries in coastal North Carolina are designated in 15A NCAC 03R .0201.

(b) In order to effectively manage the recreational hook and line harvest in joint waters of the Albemarle Sound-Roanoke River stock of striped bass, the Marine Fisheries Commission and the Wildlife Resources Commission deem it necessary to establish two management areas; the Albemarle Sound Management Area and the Roanoke River Management Area as designated in 15A NCAC 03R .0201. The Wildlife Resources Commission shall have principal management responsibility for the stock when it is in the joint and inland fishing waters of the Roanoke River Management Area. The Marine Fisheries Commission shall have principal management responsibility for the stock in the coastal, joint and inland waters of the Albemarle Sound Management Area. The annual quota for recreational harvest of the Albemarle-Roanoke striped bass stock shall be divided equally between the two management areas. Each commission shall implement management actions for recreational harvest within their respective management areas that will be consistent with the North Carolina Estuarine Striped Bass Fishery Management Plan.

History Note: *Authority G.S. 113-132; 113-134; 143B-289.52;*
Eff. January 1, 1991;
Amended Eff. October 1, 2004; September 1, 1991;
Readopted Eff. May 1, 2021.

15A NCAC 03Q .0109 is proposed for readoption without substantive changes as follows:

15A NCAC 03Q .0109 IMPLEMENTATION OF ESTUARINE STRIPED BASS MANAGEMENT PLANS: RECREATIONAL FISHING

The Marine Fisheries and Wildlife Resources Commissions shall implement their respective striped bass management actions for recreational fishing pursuant to their respective rule-making powers. To preserve jurisdictional authority of each Commission, the following means are established through which management measures can be implemented by a single instrument in the following management areas:

(1) In the Roanoke River Management Area, the exclusive authority to open and close seasons and areas, and establish size and creel limits whether inland or joint fishing waters shall be vested in the Wildlife Resources Commission. An instrument closing any management area in joint waters shall operate as and shall be a jointly issued instrument opening or closing seasons or areas to harvest in the Roanoke River management area.

(2) In the Albemarle Sound Management Area, the exclusive authority to open and close seasons and areas and establish size and creel limits, whether coastal or joint fishing waters shall be vested in the Marine Fisheries Commission. The season shall close by proclamation if the quota is about to be exceeded. In the Albemarle Sound Management Area administered by the Marine Fisheries Commission, a proclamation affecting the harvest in joint and coastal waters, excluding the Roanoke River Management Area, shall automatically be implemented and effective as a Wildlife Resources Commission action in the inland waters and tributaries to the waters affected.

History Note: *Authority G.S. 113-132; 113-134; 113-182; 143B-289.52;*
Eff. January 1, 1991;
Amended Eff. October 1, 2004; September 1, 1991;
Readopted Eff. May 1, 2021.

Fiscal Impact Analysis of Proposed Special Secondary Nursery Areas Rule Amendments

Rule Amendments: 15A NCAC 03R .0104
15A NCAC 03R .0105

Name of Commission: N.C. Marine Fisheries Commission

Agency Contact: David Dietz, Fisheries Economics Program Manager
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Impact Summary:

State government:	Yes
Local government:	No
Federal government:	No
Substantial impact:	No

Authority:

North Carolina Marine Fisheries Commission Rules
15 NCAC 03J .0103 Gill nets, seines, identification, restrictions
15 NCAC 03N .0105 Prohibited gear, secondary nursery areas

North Carolina General Statutes
§ 113-134. Rules
§ 113-173. Recreational Commercial Gear License
§ 113-182. Regulation of fishing and fisheries
§ 113-182.1 Fishery Management Plans
§ 113-221.1 Proclamations; emergency review
§ 143B-289.52 Marine Fisheries Commission - powers and duties

Necessity: Within North Carolina's state marine and estuarine waters, there are several Special Secondary Nursery Areas (SSNAs) that are functioning and being managed as permanent Secondary Nursery Areas (SNAs), which offer slightly higher protections to the water body and corresponding bottom. This proposed rule change would not impact the ongoing management of these sites, as these SNA designations would not lead to any increased cost of enforcement to the state. By formally changing the designation of these SSNAs to SNAs, the state would achieve more efficient management of nursery areas moving forward.

I. Summary

Rule amendments are proposed to reclassify nine current SSNAs in the state as permanent SNAs. These nine sites have all been functioning as SNAs for nearly 30 years, as none of these sites have been open by rule for trawling since 1991 at the latest, except for one site (Newport River), which was opened by proclamation in 2004. Although just one site of nine has been opened to trawling since 1991, it is important to recognize 2004 as the latest year that this activity was accessible in these SSNAs. Due to this,

2004 will be considered the benchmark year for all sites in this analysis. In all, this amendment would convert 8,670 acres of current SSNA waters into SNAs. In terms of fiscal impacts, the only relevant changes are new requirements related to small mesh gill net attendance, which will be discussed further below.

II. Introduction and Purpose of Rule Changes

In February 2015, the Shrimp Fishery Management Plan (FMP) Amendment 1 and its rules were adopted by the Marine Fisheries Commission (MFC). The focus of Amendment 1 was to address bycatch (catch of non-target species) in the commercial and recreational shrimp fishery (NCDMF 2015a). Management options examined in the FMP were separated into 1) gear modifications; 2) effort management; 3) area restrictions; and 4) the use of other fishing gears. Area restrictions to reduce shrimp trawl bycatch were evaluated for all internal coastal waters, Pamlico Sound and its adjacent tributaries, SSNAs, and portions of Brunswick County. With the adoption of Amendment 1, shrimp trawling was prohibited in the Intracoastal Waterway (IWW) channel from Sunset Beach to the South Carolina state line, which had not been opened to trawling for 10 to 12 years due to the abundance of small fish and shrimp. In addition to the area closure, the MFC also recommended that the MFC Habitat and Water Quality Advisory Committee (AC) provide input on changing the designation of certain SSNAs that have not been opened to trawling by rule since 2004 at the latest to permanent SNAs. This recommendation was also supported by the Division of Marine Fisheries (NCDMF) and adopted by the MFC. The Shrimp FMP AC did not provide a recommendation for this management option.

Due to overlapping issues associated with petitions for rulemaking related to nursery area designations and shrimp management, the development of this management measure was delayed. A petition for rulemaking was submitted to the MFC in November 2016 that potentially overlapped with the issue of changing the designation of SSNAs and a second petition was submitted in May 2019. Rule action was held off until the petitions were resolved; neither petition resulted in rulemaking. At its meeting in December 2019, the MFC Habitat and Water Quality AC provided input on changing the designation of the nine SSNAs to permanent SNAs. After receiving this input, the MFC, at its February 2020 business meeting, voted to select its preferred management option for this management measure, which was to change the designation of all nine proposed SSNAs to SNA's, making them subject to all standard SNA gill net attendance requirements under 03R .0112(b)(1).

Primary nursery areas (PNAs), SNAs, and SSNAs are defined in MFC Rule 15A NCAC 03I .0101 and designated in 15A NCAC 03R .0103, .0104, and .0105. It is unlawful to use any trawl net, long haul seine, swipe net, dredge, or mechanical method for clams or oysters for the purpose of taking any marine fishes in PNAs. In SNAs, it is unlawful to use trawl nets for any purpose. However, in SSNAs the Fisheries Director, may, by proclamation, open any or all of the SSNAs, or any portion thereof, to shrimp or crab trawling from August 16 through May 14. The intent of these rules and proclamations is to protect this nursery habitat for young finfish and crustaceans as well as developing sub-adults.

Shrimp management in North Carolina requires unique consideration, as this fishery is considered an annual crop, where annual stock size is not a strong predictor of the next year's abundance. Because of

this, management of shrimp harvest occurs on an annual basis, and requires flexible approaches to access in order to ensure maximum sustainable catch year-over-year. By allowing limited trawling in SSNAs, fishermen are allowed to catch shrimp late in the season that have not migrated out into the larger estuaries. NCDMF staff conducts regular sampling to monitor shrimp size and abundance as well as the abundance of bycatch to determine openings in SSNAs. Target shrimp sizes (count of shrimp per pound heads-on) differ by waterbody within the state to account for variability of boat sizes, shrimp size preferences of user groups, geographical differences in shrimp size at migration, weather events, and socioeconomic conditions. The opening and closing of these SSNAs can be highly influenced by environmental conditions and the proximity of SSNAs to major inlets and rivers, as well as stakeholder input.

There are approximately 37,400 acres of SSNAs in North Carolina; however, several of these areas have not opened since the 1990s (Table 1). In the Pamlico and Pungo rivers, these SSNAs include: Pungo, Scranton, Slade, South, and Bond/Muddy creeks (Figure 1). Under Amendment 1 to the Shrimp FMP, the use of shrimp trawls (not crab trawls) is prohibited in the Pungo River upstream of a line from Wades Point to Abels Bay and in the Pamlico River upstream of a line from Wades Point to the western shore entrance of Goose Creek (15A NCAC 03R .0114). However, with the adoption of Amendment 3 of the Blue Crab FMP in February 2020 the use of crab trawls was prohibited in areas where shrimp trawls are already prohibited in the Pamlico, Pungo, and Neuse Rivers. Thus, reclassifying these areas as permanent SNAs would not further impact crab trawling. In other words, even in the absence of the proposed rule changes, crab trawling is not allowed in these areas.

Following the adoption of the 2006 Shrimp FMP, the Newport River SSNA was closed as a result of the Trawl Nets Prohibited Area (TNPA) designation (Hardesty Farm line) becoming a permanent line by rule (MFC Rule 15A NCAC 03R .0106(7); Figure 2). The Fisheries Director no longer has the authority to open these SSNAs since they are upstream of the permanent shrimp trawls prohibited and TNPA lines established by the Shrimp FMP. The Cape Fear River, Lockwood Folly River, and Saucepan Creek have not opened since being designated as SSNAs in 1986 (Figures 3 and 4).

Based on the current functioning of these nine SSNAs, the MFC has voted to proceed with re-designating in rule all of these areas as SNAs, adhering to the same rules and management as all existing SNAs in North Carolina. The two practical differences between SNAs and SSNAs relates to trawling and small mesh gill net attendance. However, none of the proposed SSNAs have been opened to trawling by proclamation since 2004. Additionally, the Fisheries Director no longer has authority to open six of these sites to trawling due to past rule changes, while the remaining three SSNA sites have never been opened to trawling since their designation in 1986 (Table 1). Due to this, the only management changes for this proposed rule change that will carry fiscal impact are the new requirements related to small mesh gill net attendance in these waters (Table 2). By rule (15A NCAC 03J .0103), small mesh gill nets in North Carolina are anchored gill nets with a mesh size of five inches or smaller. Additionally, “attended” is defined as “being in a vessel, in the water or on the shore, and immediately available to work the gear and be within 100 yards of any gear in use by that person at all times.” (15A NCAC 03I .0101(2)(b)).

Prior to this proposed rule change, four of these SSNAs require small mesh gill net attendance within 50 yards from shore from May 1 – September 30 (Newport River, Cape Fear River, Lockwood Folly River, and Saucepan Creek), another four require year-round attendance within 200 yards of shore (Pungo Creek, Slade Creek, South Creek, and Bond/Muddy creeks), while Scranton Creek requires year-round small mesh gill net attendance in all waters (Table 2, Figures 5-10). Under this proposed rule change, small mesh gill net attendance requirements are enhanced. Specifically, Newport River, Cape Fear River, Lockwood Folly River, and Saucepan Creek would now require attendance in all waters from May 1 – November 30, while Pungo Creek, Slade Creek, South Creek, and Bond/Muddy creeks would maintain year-round attendance within 200 yards of shore with an additional requirement of attendance in all waters from May 1 – November 30. Scranton Creek would see no changes in its small mesh gill net attendance requirements.

III. Fiscal Analysis

As discussed above, while this proposed rule change would contain a variety of procedural changes to management in these nine current SSNAs, the only component that would carry substantive changes with potential fiscal impact are those related to small mesh gill net attendance. Ultimately, these new requirements will carry offsetting fiscal impacts to the state; increased small mesh gill net attendance in these waterways brings a likelihood of decreased bycatch, discard mortality, and user conflict, though has offsetting costs in the form of lost opportunity cost to anglers from more attendance time.

Prior to analyzing these impacts, the data limitations of this fiscal note should be addressed. Overall, NCDMF does track the usage of small mesh gill nets in the state, but this data is highly limited. While the total annual number of trips, landings, and ex-vessel values from small mesh gill net trips are recorded through the NCDMF Trip Ticket program, geographic granularity is very coarse. Waterbody codes exists for the Newport River, Cape Fear River, and Lockwood Folly River, but the other six SSNAs can only be recorded within larger waterbody codes. Additionally, NCDMF does not record data on attendance versus non-attendance, soak times of small mesh gill nets, or the activities conducted by fishermen while their gill nets are soaking, but unattended. For these reasons, the impacts discussed below will be largely non-quantifiable, but help to demonstrate the fiscal implications of this proposed rule change.

Lastly, as this proposed rule change would result in no management changes for the Scranton Creek SSNA, there are no anticipated fiscal impacts to the state for re-designating this site, and it is omitted from the rest of this analysis.

a. Summary of Potential Economic Benefits

The economic benefits of this proposed rule change relate to positive environmental and social externalities that could occur due to increased small mesh gill net attendance. While the proposed attendance rules vary across the eight SSNAs with substantive changes, the regulations overall would increase the amount of time that small mesh gill net attendance is required, especially during the fall

season and in cases where nets are anchored closer to shore. Overall, these changes would result in a number of environmental and economic benefits.

From the environmental perspective, increased gill net attendance requirements would generate fiscal benefits through the reduction of overall bycatch, as well as the reduction of bycatch and discard mortality. With constant net attendance, fishermen are more able and likely to both see and respond to incidences of bycatch and accidental entanglement. Firstly, this could help the health of local fish populations, as these current SSNAs serve as natural spawning and sanctuary grounds for many species. For this reason, bycatch and mortality reductions of these species can result not only in immediate economic gains from maintaining these populations, but also in future benefits, as these populations will have better opportunity to spawn and grow in these nursery areas. Secondly, increased attendance will also likely lead to fewer instances of sea turtle, diamondback terrapin, and bottlenose dolphin entanglement in these current SSNAs. As these species are all non-target in North Carolina, each accidental capture with a small mesh gill net is a cost to the state, especially if mortality occurs. By reducing the potential for capture and mortality, there are economic benefits to the state, at the minimum in terms of the intrinsic value of these charismatic, and often threatened or endangered, species. While all of these impacts will lead to economic benefits, a lack of fishery-specific data limits quantification of these impacts. NCDMF does not collect bycatch, discard, or turtle/dolphin encounters for these specific current SSNAs, nor does it track a small mesh gill net's distance from shore for any trip. Due to this, the direct economic benefits described above cannot be accurately quantified. However, these impacts will only affect a small area of inland waterway, which demonstrates the small impact of any potential economic benefits. The total acreage of the SSNA considered, including Scranton Creek, is 8,670 acres. When compared to the total 2,185,197 acres of all inshore waters of North Carolina, these proposed changes equate to 0.4% of this area and outline how any economic gains will not generate significant value to the state economy.

In combination with these environmental impacts, increased small mesh gill net attendance will also lead to benefits from reduced user conflict. Overall, these inland SSNAs are often popular locations for recreational angling, and unattended gill nets can create conflict over usage of the waterways. By increasing attendance at these sites, there is the potential for decreased conflict between commercial and recreational sectors. While this will likely not have any notable economic impact to commercial fishermen, there is a likelihood for increased satisfaction and utility from recreational anglers in this waterway, which may lead to increased future expenditure on fishing. However, these long-term positive impacts cannot be quantified, and again do not generate a significant impact to the state.

b. Summary of Potential Economic Costs

As small mesh gill net attendance generates the only potential substantive impacts from this proposed rule change, potential costs all relate to the implications of keeping fishermen at their nets for more time during the year. In short, by increasing attendance requirements for small mesh gill nets, this proposed rule change generates an opportunity cost to fishermen; while this group could conduct other activities while nets are unattended (such as other fishing or work), they would now be required to stay at

their nets, negating any potential for other economic activity during these times. However, the ability to quantify this lost opportunity cost value is not possible due to data limitations. Specifically, there is a lack of data on total time small mesh gill nets have been unattended in these waters, as well as information on the activities conducted by fishermen while small mesh gill nets are soaking unattended.

In terms of known data, the NCDMF Trip Ticket Program recorded 653 small mesh gill net trips within North Carolina's inshore waters in 2018. Additionally, the average number of trips over the past 10 years was 843 annually, with moderate declines in effort over time (Table 3). However, this data is not exclusive to the SSNA waterbodies in the proposed rule change, and instead those areas make up a small percentage of the total area considered in Table 3. On top of this, the 10-year effort average implies that roughly 2.3 small mesh gill net trips occur each day within North Carolina's inshore waters. When this effort is extrapolated to the small area considered as part of this proposed rule change, the economic opportunity cost from increased attendance is not significant.

Additionally, an analysis of gill net trips within these SSNAs demonstrates that the opportunity cost from attendance in terms of additional fishing activity is insignificant. A potential cost from this proposed rule change is that small mesh gill net attendance requirements would eliminate commercial fishermen's ability to utilize other gears while gill nets are soaking. However, an analysis of trip ticket data from these SSNAs demonstrates that while gill net landings vary in magnitude, commercial fishermen are consistent in their extremely limited use of additional gears on a trip when gill nets are used (Table 4). Overall, just 2% of all gill net trips among these SSNAs from 2009-2018 employed additional gear during the trip. While anglers could seek out other work besides fishing while gill nets are unattended, this data suggests that very little commercial fishing occurs during this time, further suggesting that the cost to the state from gill net attendance requirements would be insignificant.

Lastly, as this proposed rule change is primarily designed to realign these SSNAs with regulations that match their existing usages, the additional cost of enforcement is expected to be negligible.

Appendix I Proposed Rule Changes:

15A NCAC 03R .0104 PERMANENT SECONDARY NURSERY AREAS

The permanent secondary nursery areas referenced in 15A NCAC 03N .0105(a) are delineated in the following coastal water areas:

(1) Roanoke Sound:

Inner Shallowbag Bay - west of a line beginning on the northeast shore at a point 35° 54.6729' N – 75° 39.8099' W; running southerly to the southeast shore to a point 35° 54.1722' N – 75° 39.6806' W;

(2) ~~In~~ in the Pamlico Long Sound Area:

(a) Long Shoal River - north of a line beginning at the 5th Avenue Canal at a point 35° 35.2120' N – 75° 53.2232' W; running easterly to the east shore on Pains Point to a point 35° 35.0666' N – 75° 51.2000' W;

(b) Pains Bay - east of a line beginning on Pains Point at a point 35° 35.0666' N – 75° 51.2000' W; running southerly to Rawls Island to a point 35° 34.4666' N – 75° 50.9666' W; running easterly to the east shore to a point 35° 34.2309' N – 75° 50.2695' W;

(c) Wysocking Bay - northwest of a line beginning at Benson Point at a point 35° 22.9684' N – 76° 03.7129' W; running northeasterly to Long Point to a point 35° 24.6895' N – 76° 01.3155' W;

(d) Juniper Bay-Cunning Harbor - north of a line beginning on the west shore of Juniper Bay at a point 35° 20.6217' N – 76° 15.5447' W; running easterly to a point 35° 20.4372' N – 76° 13.2697' W; running easterly to the east shore of Cunning Harbor to a point 35° 20.3413' N – 76° 12.3378' W;

(e) Swanquarter Bay - north of a line beginning at The Narrows at a point 35° 20.9500' N – 76° 20.6409' W; running easterly to the east shore to a point 35° 21.5959' N – 76° 18.3580' W;

(f) Deep Cove - The Narrows - north and east of a line beginning on the west shore at a point 35° 20.9790' N – 76° 23.8577' W; running southeasterly to Swanquarter Island to a point 35° 20.5321' N – 76° 22.7869' W; and west of a line at The Narrows beginning on the north shore to a point 35° 20.9500' N – 76° 20.6409' W; running southerly to Swanquarter Island to a point 35° 20.7025' N – 76° 20.5620' W;

(g) Rose Bay - north of a line beginning on Long Point at a point 35° 23.3404' N – 76° 26.2491' W; running southeasterly to Drum Point to a point 35° 22.4891' N – 76° 25.2012' W;

(h) Spencer Bay - northwest of a line beginning on Roos Point at a point 35° 22.3866' N – 76° 27.9225' W; running northeasterly to Long Point to a point 35° 23.3404' N – 76° 26.2491' W;

(i) Abel Bay - northeast of a line beginning on the west shore at a point 35° 23.6463' N – 76° 31.0003' W; running southeasterly to the east shore to a point 35° 22.9353' N – 76° 29.7215' W;

(j) Mouse Harbor - west of a line beginning on Persimmon Tree Point at a point 35° 18.3915' N – 76° 29.0454' W; running southerly to Yaupon Hammock Point to a point 35° 17.1825' N – 76° 28.8713' W;

(k) Big Porpoise Bay - northwest of a line beginning on Big Porpoise Point at a point 35° 15.6993' N – 76° 28.2041' W; running southwesterly to Middle Bay Point to a point 35° 14.9276' N – 76° 28.8658' W;

(l) Middle Bay - west of a line beginning on Deep Point at a point 35° 14.8003' N – 76° 29.1923' W; running southerly to Little Fishing Point to a point 35° 13.5419' N – 76° 29.6123' W;

(m) Jones Bay - west of a line beginning on Mink Trap Point at a point 35° 13.4968' N – 76° 31.1040' W; running southerly to Boar Point to a point 35° 12.3253' N – 76° 31.2767' W; and

(n) ~~In~~ in the Bay River Area:

(i) Bonner Bay - southeast of a line beginning on the west shore at a point 35° 09.6281' N – 76° 36.2185' W; running northeasterly to Davis Island Point to a point 35° 10.0888' N – 76° 35.2587' W; and

(ii) Gales Creek-Bear Creek - north and west of a line beginning on Sanders Point at a point 35° 11.2833' N – 76° 35.9000' W; running northeasterly to the east shore to a point 35° 11.9000' N – 76° 34.2833' W;

(3) ~~In~~ in the Pamlico and Pungo Rivers Area:

(a) Pungo River - north of a line beginning on the west shore at a point 35° 32.2000' N – 76° 29.2500' W; running east near Beacon "21" to the east shore to a point 35° 32.0833' N – 76° 28.1500' W;

(b) Pungo Creek - west of a line beginning on Persimmon Tree Point at a point 35° 30.7633' N – 76° 38.2831' W; running southwesterly to Windmill Point to a point 35° 31.1546' N – 76° 37.7590' W;

(c) Scranton Creek - south and east of a line beginning on the west shore at a point 35° 30.6810' N – 76° 28.3435' W; running easterly to the east shore to a point 35° 30.7075' N – 76° 28.6766' W;

(d) Slade Creek - east of a line beginning on the west shore at a point 35° 27.8879' N – 76° 32.9906' W; running southeasterly to the east shore to a point 35° 27.6510' N – 76° 32.7361' W;

~~(b)~~(e) Fortescue Creek - east of a line beginning on Pasture Point at a point 35° 25.9213' N – 76° 31.9135' W; running southerly to the Lupton Point shore to a point 35° 25.6012' N – 76° 31.9641' W;

~~(c)~~(f) Pamlico River - west of a line beginning on Ragged Point at a point 35° 27.5768' N – 76° 54.3612' W; running southwesterly to Mauls Point to a point 35° 26.9176' N – 76° 55.5253' W;

~~(d)~~(g) North Creek - north of a line beginning on the west shore at a point 35° 25.3988' N – 76° 40.0455' W; running southeasterly to the east shore to a point 35° 25.1384' N – 76° 39.6712' W;

(h) South Creek - west of a line beginning on Hickory Point at a point 35° 21.7385' N – 76° 41.5907' W; running southerly to Fork Point to a point 35° 20.7534' N – 76° 41.7870' W;

(i) Bond Creek/Muddy Creek - south of a line beginning on Fork Point at a point 35° 20.7534' N – 76° 41.7870' W; running southeasterly to Gum Point to a point 35° 20.5632' N – 76° 41.4645' W;

~~(e)~~(j) ~~In~~ in the Goose Creek Area, Campbell Creek - west of a line beginning on the north shore at a point 35° 17.3600' N – 76° 37.1096' W; running southerly to the south shore to a point 35° 16.9876' N – 76° 37.0965' W; and

~~(f)~~(k) Oyster Creek-Middle Prong - southwest of a line beginning on Pine Hammock at a point 35° 19.5586' N – 76° 32.8830' W; running easterly to Cedar Island to a point

35° 19.5490' N – 76° 32.7365' W; and southwest of a line beginning on Cedar Island at a point 35° 19.4921' N – 76° 32.2590' W; running southeasterly to Beard Island Point to a point 35° 19.1265' N – 76° 31.7226' W;

(4) ~~In~~ in the Neuse River Area:

(a) Lower Broad Creek - west of a line beginning on the north shore at a point 35° 05.8314' N – 76° 35.3845' W; running southwesterly to the south shore to a point 35° 05.5505' N – 76° 35.7249' W;

(b) Greens Creek - north of a line beginning on the west shore of Greens Creek at a point 35° 01.3476' N – 76° 42.1740' W; running northeasterly to the east shore to a point 35° 01.4899' N – 76° 41.9961' W;

(c) Dawson Creek - north of a line beginning on the west shore at a point 34° 59.5920' N – 76° 45.4620' W; running southeasterly to the east shore to a point 34° 59.5800' N – 76° 45.4140' W;

(d) Goose Creek - north and east of a line beginning at a point on the west shore at a point 35° 02.6642' N – 76° 56.4710' W; running southeasterly to a point on Cooper Point 35° 02.0908' N – 76° 56.0092' W;

(e) Upper Broad Creek - northeast of a line beginning at a point on Rowland Point on the north shore at a point 35° 02.6166' N – 76° 56.4500' W; running southeasterly to the south shore to a point 35° 02.8960' N – 76° 56.7865' W;

(f) Clubfoot Creek - south of a line beginning on the west shore at a point 34° 54.5424' N – 76° 45.7252' W; running easterly to the east shore to a point 34° 54.4853' N – 76° 45.4022' W; and

(g) ~~In~~ in the Adams Creek Area, Cedar Creek - east of a line beginning on the north shore at a point 34° 56.1203' N – 76° 38.7988' W; running southerly to the south shore to a point 34° 55.8745' N – 76° 38.8153' W;

(5) Newport River - west of a line beginning near Penn Point on the south shore at a point 34° 45.6960' N – 76° 43.5180' W; running northeasterly to the north shore to a point 34° 46.8490' N – 76° 43.3296' W;

~~(5)~~(6) Virginia Creek - all waters of the natural channel northwest of the primary nursery area line;

~~(6)~~(7) Old Topsail Creek - all waters of the dredged channel northwest of the primary nursery area line;

~~(7)~~(8) Mill Creek - all waters west of a line beginning on the north shore at a point 34° 20.6420' N – 77° 42.1220' W; running southwesterly to the south shore to a point 34° 20.3360' N – 77° 42.2400' W;

~~(8)~~(9) Pages Creek - all waters west of a line beginning on the north shore at a point 34° 16.1610' N – 77° 45.9930' W; running southwesterly to the south shore to a point 34° 15.9430' N – 77° 46.1670' W;

~~(9)~~(10) Bradley Creek - all waters west of a line beginning on the north shore at a point 34° 12.7030' N – 77° 49.1230' W; running southerly near the dredged channel to a point 34° 12.4130' N – 77° 49.2110' W; ~~and~~

(11) Cape Fear River - all waters bounded by a line beginning on the south side of the Spoil Island at the intersection of the Intracoastal Waterway and the Cape Fear River ship channel at a point 34° 01.5780' N – 77° 56.0010' W; running easterly to the east shore of the Cape Fear River to a point 34° 01.7230' N – 77° 55.1010' W; running southerly and bounded by the shoreline to the Ferry Slip at Federal Point at a point 33° 57.8080' N – 77° 56.4120' W;

running northerly to Bird Island to a point 33° 58.3870' N – 77° 56.5780' W; running northerly along the west shoreline of Bird Island and the Cape Fear River spoil islands back to point of origin;

(12) Lockwood Folly River - all waters north of a line beginning on Howells Point at a point 33° 55.3680' N – 78° 12.7930' W and running in a westerly direction along the Intracoastal Waterway near Intracoastal Waterway Marker "46" to a point 33° 55.3650' N – 78° 13.8500' W;

(13) Saucepan Creek - all waters north of a line beginning on the west shore at a point 33° 54.6290' N – 78° 22.9170' W; running northeasterly to the east shore to a point 33° 54.6550' N – 78° 22.8670' W; and

~~(10)~~(14) Davis Creek - all waters east of a line beginning on Horse Island at a point 33° 55.0160' N – 78° 12.7380' W; running southerly to Oak Island to a point 33° 54.9190' N – 78° 12.7170' W; continuing upstream to the primary nursery line and Davis Canal, all waters southeast of a line beginning on Pinner Point at a point 33° 55.2930' N – 78° 11.6390' W; running southwesterly across the mouth of Davis Canal to the spoil island at the southwest intersection of the ~~IWW~~ Intracoastal Waterway and Davis Canal to a point 33° 55.2690' N – 78° 11.6550' W.

History Note: *Authority G.S. 113-134; 113-182; 143B-289.52;*
Eff. January 1, 1991;
Amended Eff. March 1, 1996; March 1, 1994;
Recodified from 15A NCAC 3R .0004 Eff. December 17, 1996;
Amended Eff. April 1, 2021; April 1, 2011; August 1, 2004; May 1, 1997.

15A NCAC 03R .0105 SPECIAL SECONDARY NURSERY AREAS

The special secondary nursery areas referenced in 15A NCAC 03N .0105(b) are designated in the following coastal water areas:

(1) Roanoke Sound:

(a) Outer Shallowbag Bay - west of a line beginning on Baum Point at a point 35° 55.1461' N – 75° 39.5618' W; running southeasterly to Ballast Point to a point 35° 54.6250' N – 75° 38.8656' W; including the canal on the southeast shore of Shallowbag Bay; and

(b) Kitty Hawk Bay/Buzzard Bay - within the area designated by a line beginning at a point on the east shore of ~~Collington~~ Colington Creek at a point 36° 02.4360' N – 75° 42.3189' W; running westerly to a point 36° 02.6630' N – 75° 41.4102' W; running along the shoreline to a point 36° 02.3264' N – 75° 42.3889' W; running southwesterly to a point 36° 02.1483' N – 75° 42.4329' W; running along the shoreline to a point 36° 01.6736' N – 75° 42.5313' W; running southwesterly to a point 36° 01.5704' N – 75° 42.5899' W; running along the shoreline to a point 36° 00.9162' N – 75° 42.2035' W; running southeasterly to a point 36° 00.8253' N – 75° 42.0886' W; running along the shoreline to a point 35° 59.9886' N – 75° 41.7284' W; running southwesterly to a point 35° 59.9597' N – 75° 41.7682' W; running along the shoreline to the mouth of Buzzard Bay to a point 35° 59.6480' N – 75° 32.9906' W; running easterly to Mann Point to a point 35° 59.4171' N – 75° 32.7361' W; running northerly along the shoreline to the point of beginning;

~~(2) In the Pamlico and Pungo rivers Area:~~

~~(a) Pungo Creek - west of a line beginning on Persimmon Tree Point at a point 35° 30.7633' N – 76° 38.2831' W; running southwesterly to Windmill Point to a point 35° 31.1546' N – 76° 37.7590' W;~~

~~(b) Scranton Creek - south and east of a line beginning on the west shore at a point 35° 30.6810' N – 76° 28.3435' W; running easterly to the east shore to a point 35° 30.7075' N – 76° 28.6766' W;~~

~~(c) Slade Creek - east of a line beginning on the west shore at a point 35° 27.8879' N – 76° 32.9906' W; running southeasterly to the east shore to a point 35° 27.6510' N – 76° 32.7361' W;~~

~~(d) South Creek - west of a line beginning on Hickory Point at a point 35° 21.7385' N – 76° 41.5907' W; running southerly to Fork Point to a point 35° 20.7534' N – 76° 41.7870' W; and~~

~~(e) Bond Creek/Muddy Creek - south of a line beginning on Fork Point 35° 20.7534' N – 76° 41.7870' W; running southeasterly to Gum Point to a point 35° 20.5632' N – 76° 41.4645' W;~~

~~(3)~~(2) ~~In~~ in the West Bay Area:

(a) West Thorofare Bay - south of a line beginning on the west shore at a point 34° 57.2199' N – 76° 24.0947' W; running easterly to the east shore to a point 34° 57.4871' N – 76° 23.0737' W;

(b) Long Bay-Ditch Bay - west of a line beginning on the north shore of Ditch Bay at a point 34° 57.9388' N – 76° 27.0781' W; running southwesterly to the south shore of Ditch Bay to a point 34° 57.2120' N – 76° 27.2185' W; then south of a line running southeasterly to the east shore of Long Bay to a point 34° 56.7633' N – 76° 26.3927' W; and

(c) Turnagain Bay - south of a line beginning on the west shore at a point 34° 59.4065' N – 76° 30.1906' W; running easterly to the east shore to a point 34° 59.5668' N – 76° 29.3557' W;

~~(4)~~(3) ~~In~~ in the Core Sound Area:

(a) Cedar Island Bay - northwest of a line beginning near the gun club dock at a point 34° 58.7203' N – 76° 15.9645' W; running northeasterly to the south shore to a point 34° 57.7690' N – 76° 16.8781' W;

(b) Thorofare Bay-Barry Bay - northwest of a line beginning on Rumley Hammock at a point 34° 55.4853' N – 76° 18.2487' W; running northeasterly to Hall Point to a point 34° 54.4227' N – 76° 19.1908' W;

(c) Nelson Bay - northwest of a line beginning on the west shore of Nelson Bay at a point 34° 51.1353' N – 76° 24.5866' W; running northeasterly to Drum Point to a point 34° 51.6417' N – 76° 23.7620' W;

(d) Brett Bay - north of a line beginning on the west shore at a point 34° 49.4019' N – 76° 26.0227' W; running easterly to Piney Point to a point 34° 49.5799' N – 76° 25.0534' W; and

(e) Jarrett Bay - north of a line beginning on the west shore near Old Chimney at a point 34° 45.5743' N – 76° 30.0076' W; running easterly to a point east of Davis Island 34° 45.8325' N – 76° 28.7955' W;

~~(5)~~(4) ~~In~~ in the North River Area:

(a) North River - north of a line beginning on the west shore at a point 34° 46.0383' N – 76° 37.0633' W; running easterly to a point on the east shore 34° 46.2667' N – 76° 35.4933' W; and

(b) Ward Creek - east of a line beginning on the north shore at a point 34° 46.2667' N – 76° 35.4933' W; running southerly to the south shore to a point 34° 45.4517' N – 76° 35.1767' W;

~~(6) Newport River - west of a line beginning near Penn Point on the south shore at a point 34° 45.6960' N – 76° 43.5180' W; running northeasterly to the north shore to a point 34° 46.8490' N – 76° 43.3296' W;~~

~~(7)~~(5) New River - all waters upstream of a line beginning on the north side of the N.C. Highway 172 Bridge at a point 34° 34.7680' N – 77° 23.9940' W; running southerly to the south side of the bridge at a point 34° 34.6000' N – 77° 23.9710' W;

~~(8)~~(6) Chadwick Bay - all waters west of a line beginning on the northeast side of Chadwick Bay at a point 34° 32.5630' N – 77° 21.6280' W; running southeasterly to a point near Marker "6" at 34° 32.4180' N – 77° 21.6080' W; running westerly to Roses Point at a point 34° 32.2240' N – 77° 22.2880' W; following the shoreline in Fullard Creek to a point 34° 32.0340' N – 77° 22.7160' W; running northwesterly to a point 34° 32.2210' N – 77° 22.8080' W; following the shoreline to the west point of Bump's Creek at a point 34° 32.3430' N – 77° 22.4570' W; running northeasterly to the east shore to a point 34° 32.4400' N – 77° 22.3830' W; following the shoreline of Chadwick Bay back to the point of origin; and

~~(9)~~(7) Intracoastal Waterway - all waters in the ~~IWW~~ Intracoastal Waterway maintained channel from a point near Marker "17" north of Alligator Bay 34° 30.7930' N – 77° 23.1290' W; to a point near Marker "49" at Morris Landing at a point 34° 28.0820' N – 77° 30.4710' W; and all waters in the ~~IWW~~ Intracoastal Waterway maintained channel and 100 feet on either side from Marker "49" to the N.C. Highway 50-210 Bridge at Surf ~~City;~~City.

~~(10) Cape Fear River - all waters bounded by a line beginning on the south side of the Spoil Island at the intersection of the IWW and the Cape Fear River ship channel at a point 34° 01.5780' N – 77° 56.0010' W; running easterly to the east shore of the Cape Fear River to a point 34° 01.7230' N – 77° 55.1010' W; running southerly and bounded by the shoreline to the Ferry Slip at Federal Point at a point 33° 57.8080' N – 77° 56.4120' W; running northerly to Bird Island to a point 33° 58.3870' N – 77° 56.5780' W; running northerly along the west shoreline of Bird Island and the Cape Fear River spoil islands back to point of origin;~~

~~(11) Lockwood Folly River - all waters north of a line beginning on Howells Point at a point 33° 55.3680' N – 78° 12.7930' W and running in a westerly direction along the IWW near IWW Marker "46" to a point 33° 55.3650' N – 78° 13.8500' W; and~~

~~(12) Saucepan Creek - all waters north of a line beginning on the west shore at a point 33° 54.6290' N – 78° 22.9170' W; running northeasterly to the east shore to a point 33° 54.6550' N – 78° 22.8670' W.~~

History Note: *Authority G.S. 113-134; 113-182; 143B-289.52;*
Eff. January 1, 1991;
Amended Eff. March 1, 1996; March 1, 1994;
Recodified from 15A NCAC 3R .0005 Eff. December 17, 1996;
Amended Eff. April 1, 2011; August 1, 2004; May 1, 1997;

Readopted Eff. April 1, 2021.

Appendix II References:

NCDEQ (North Carolina Department of Environmental Quality). 2016. North Carolina Coastal Habitat Protection Plan Source Document. NC Division of Marine Fisheries, Morehead City, NC, 487 p.

NCDMF. 2006. North Carolina Fishery Management Plan for Shrimp. North Carolina Department of Environment and Natural Resources, Division of Marine Fisheries, Morehead City, NC, 390 p.

NCDMF. 2015a. North Carolina Shrimp Fishery Management Plan, Amendment 1. North Carolina Department of Environment and Natural Resources, Division of Marine Fisheries, Morehead City, NC. 514 p.

SAFMC (South Atlantic Fishery Management Council). 1998. Final habitat plan for the south Atlantic region: essential fish habitat requirements for fishery management plans of the South Atlantic Fishery Management Council. SAFMC, Charleston, SC, 457 p.

Appendix III. Tables and Figures:

Table 1. Special secondary nursery areas (SSNA) with no recent openings approved for SNA designation

Current Rule ID 03R .0105	Description	Year Designated (reclassified)	Latest Year Opened	Proclamation Reference
2 (a)	Pungo Creek*	1989	1990	SH-22-90
2 (b)	Scranton Creek*	1989	1990	SH-22-90
2 (c)	Slade Creek*	1989	1990	SH-22-90
2 (d)	South Creek*	1989	1990	SH-22-90
2 (e)	Bond Creek/Muddy Creek*	1989	1990	SH-22-90
6	Newport River*	1991	2004	SH-22-2004
10	Cape Fear River**	1986	-	None
11	Lockwood Folly River**	1986	-	None
12	Saucepan Creek**	1986	-	None

** Fisheries Director no longer has authority to open to shrimp trawls due to line changes from rule 15A NCAC 03R .0106(7) and 15A NCAC 03R .0114 (1) & (2)*

*** Not opened after SSNA designation*

Table 2. Current and potential gill net attendance requirements for all proposed SNA designation sites. Currently, all nine sites are classified as SSNA. This proposed rule change would result in no other tangible management changes, as trawling has not been opened by proclamation in any of these sites in recent years.

	Special Secondary Nursery Area								
Management Options	Pungo Creek	Scranton Creek	Slade Creek	South Creek	Bond and Muddy creeks	Newport River	Cape Fear River	Lockwood Folly River	Saucepan Creek
Current gill net attendance requirements	Year-round attendance within 200 yards of shore	Year-round attendance in all waters	Year-round attendance within 200 yards of shore	Year-round attendance within 200 yards of shore	Year-round attendance within 200 yards of shore	Attendance within 50 yards of shore from May 1 - September 30	Attendance within 50 yards of shore from May 1 - September 30	Attendance within 50 yards of shore from May 1 - September 30	Attendance within 50 yards of shore from May 1 - September 30
Proposed gill net attendance requirements	Year-round attendance within 200 yards of shore and attendance in all waters from May 1 - November 30	No Change	Year-round attendance within 200 yards of shore and attendance in all waters from May 1 - November 30	Year-round attendance within 200 yards of shore and attendance in all waters from May 1 - November 30	Year-round attendance within 200 yards of shore and attendance in all waters from May 1 - November 30	Extends gill net attendance period in all waters from May 1 - November 30	Extends gill net attendance period in all waters from May 1 - November 30	Extends gill net attendance period in all waters from May 1 - November 30	Extends gill net attendance period in all waters from May 1 - November 30

Table 3. Annual small mesh gill net trips within North Carolina's inshore waters, 2009-2018.

Year	ASMA Region	Pamlico Sound Region	Central Region	Southern Region	Total
2009	324	359	160	126	969
2010	289	319	146	99	853
2011	282	283	195	131	891
2012	275	307	201	83	866
2013	305	380	230	89	1,004
2014	286	407	206	108	1,007
2015	210	297	161	94	762
2016	167	276	145	65	653
2017	186	323	178	86	773
2018	161	277	141	74	653
Average	249	323	176	96	843

Table 4. Annual gill net landings and effort data for the SSNA sites under proposed rule change, 2009-2018. Note: Select waterbodies are not exact outlines of the SSNA sites under consideration and include multiple SSNA sites; Pamlico River includes South Creek, Muddy Creek, and Bond Creek; Pungo River includes Pungo Creek, Slade Creek, and Scranton Creek; and Shallotte River includes Saucepan Creek. Note: the waterbodies below do not exactly encompass the SSNA sites under consideration, but rather provide a close approximation of the areas discussed.

	Cape Fear			Lockwood's Folly			Newport River		
Year	Total Landings (pounds)	Total Value ($)	Trips Using Additional Gears (%)	Total Landings (pounds)	Total Value ($)	Trips Using Additional Gears (%)	Total Landings (pounds)	Total Value ($)	Trips Using Additional Gears (%)
2009	56,179	$63,919	1.80%	8,700	$8,858	6.40%	19,368	$17,176	9.60%
2010	39,607	$35,808	0.90%	2,805	$3,072	14.30%	25,522	$22,508	11.00%
2011	61,236	$54,902	2.20%	7,296	$10,301	31.60%	46,952	$45,196	0.00%
2012	45,170	$59,759	5.50%	3,130	$4,830	52.60%	33,129	$31,446	0.00%
2013	72,507	$86,439	0.40%	5,642	$8,668	22.40%	30,540	$41,427	1.10%
2014	80,528	$73,103	1.00%	2,389	$3,431	3.40%	75,609	$76,248	4.70%
2015	58,669	$78,478	5.50%	3,637	$7,860	7.10%	20,705	$33,437	2.90%
2016	48,498	$100,029	3.90%	1,491	$2,876	12.50%	27,863	$51,400	0.00%
2017	47,225	$88,848	1.40%	3,363	$7,120	0.00%	41,640	$78,295	0.70%
2018	63,331	$125,401	0.40%	4,282	$9,217	0.00%	47,655	$77,184	0.00%
	Pamlico River			Pungo River			Shallotte River		
Year	Total Landings (pounds)	Total Value ($)	Trips Using Additional Gears (%)	Total Landings (pounds)	Total Value ($)	Trips Using Additional Gears (%)	Total Landings (pounds)	Total Value ($)	Trips Using Additional Gears (%)
2009	369,805	$428,794	1.90%	54,712	$39,378	8.50%	2,924	$2,167	6.80%
2010	210,672	$234,481	0.50%	5,588	$3,804	2.60%	3,981	$3,123	3.10%
2011	191,855	$264,292	1.00%	15,178	$18,251	8.20%	1,203	$1,457	10.00%
2012	287,707	$285,379	0.50%	12,310	$14,813	5.90%	3,515	$3,164	31.00%
2013	226,798	$363,896	0.30%	14,780	$22,938	4.60%	925	$1,603	7.10%
2014	203,782	$269,552	0.90%	20,144	$22,268	3.70%	468	$497	6.30%
2015	126,480	$215,969	1.90%	12,708	$19,274	8.30%	492	$986	0.00%
2016	121,830	$199,563	1.30%	16,916	$34,854	13.30%	3,908	$9,335	3.30%
2017	198,517	$305,119	1.80%	28,336	$39,408	1.80%	12,469	$20,989	1.80%
2018	124,341	$213,911	1.60%	16,595	$18,660	1.80%	2,293	$4,376	0.00%

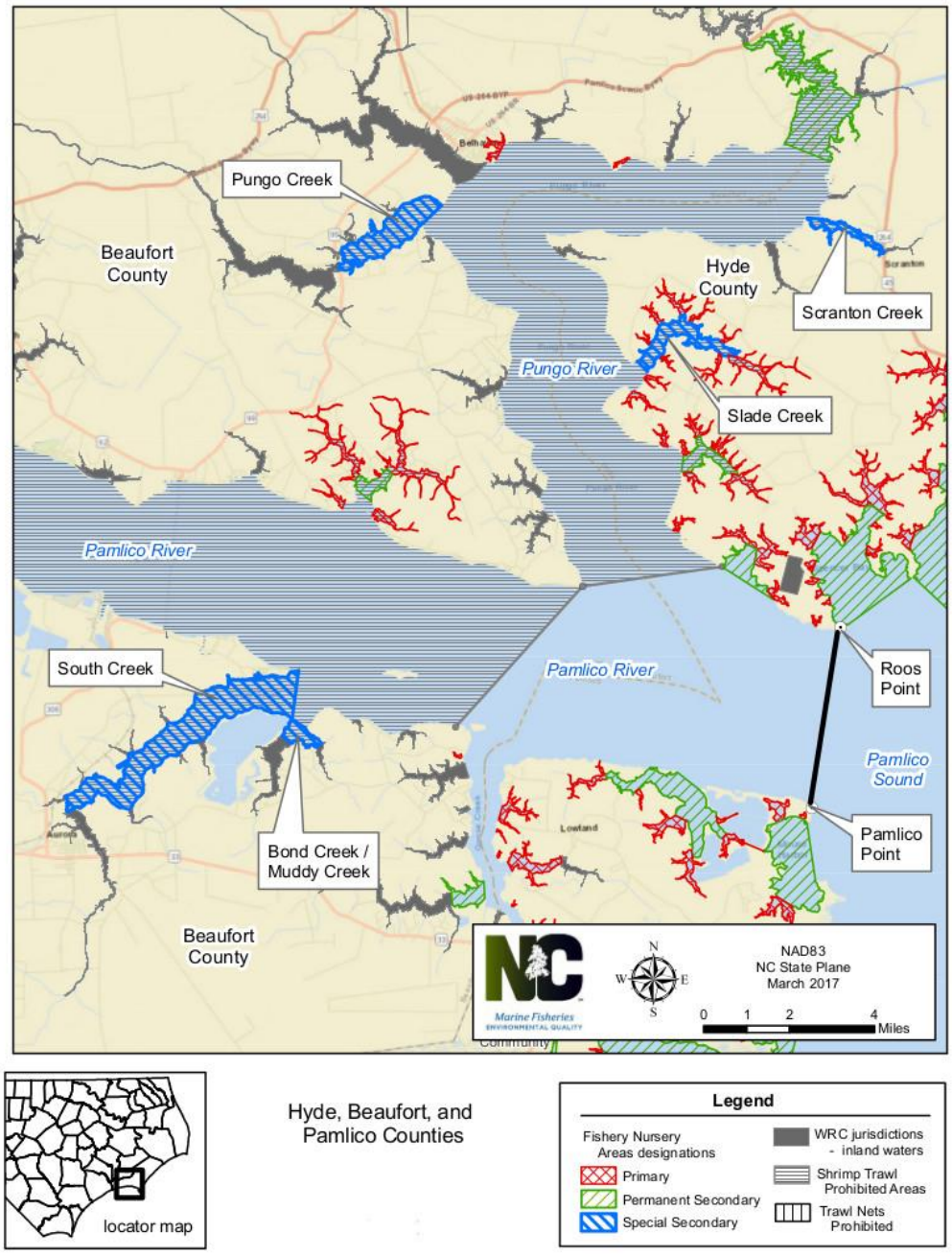

Figure 1. Map of the shrimp management and nursery areas in the Pamlico and Pungo rivers. Areas to the west of the line beginning at Roos Point to Pamlico Point are subject to gill net attendance rules (<5 inch stretched mesh). Gill net attendance will be required in all areas marked as special secondary nursery areas (SSNAs) from May 1 through November 30 if proposed rule change received final approval to permanent secondary nursery areas (SNAs). Year-round attendance (<5 inch stretched mesh) is already required in Scranton Creek.

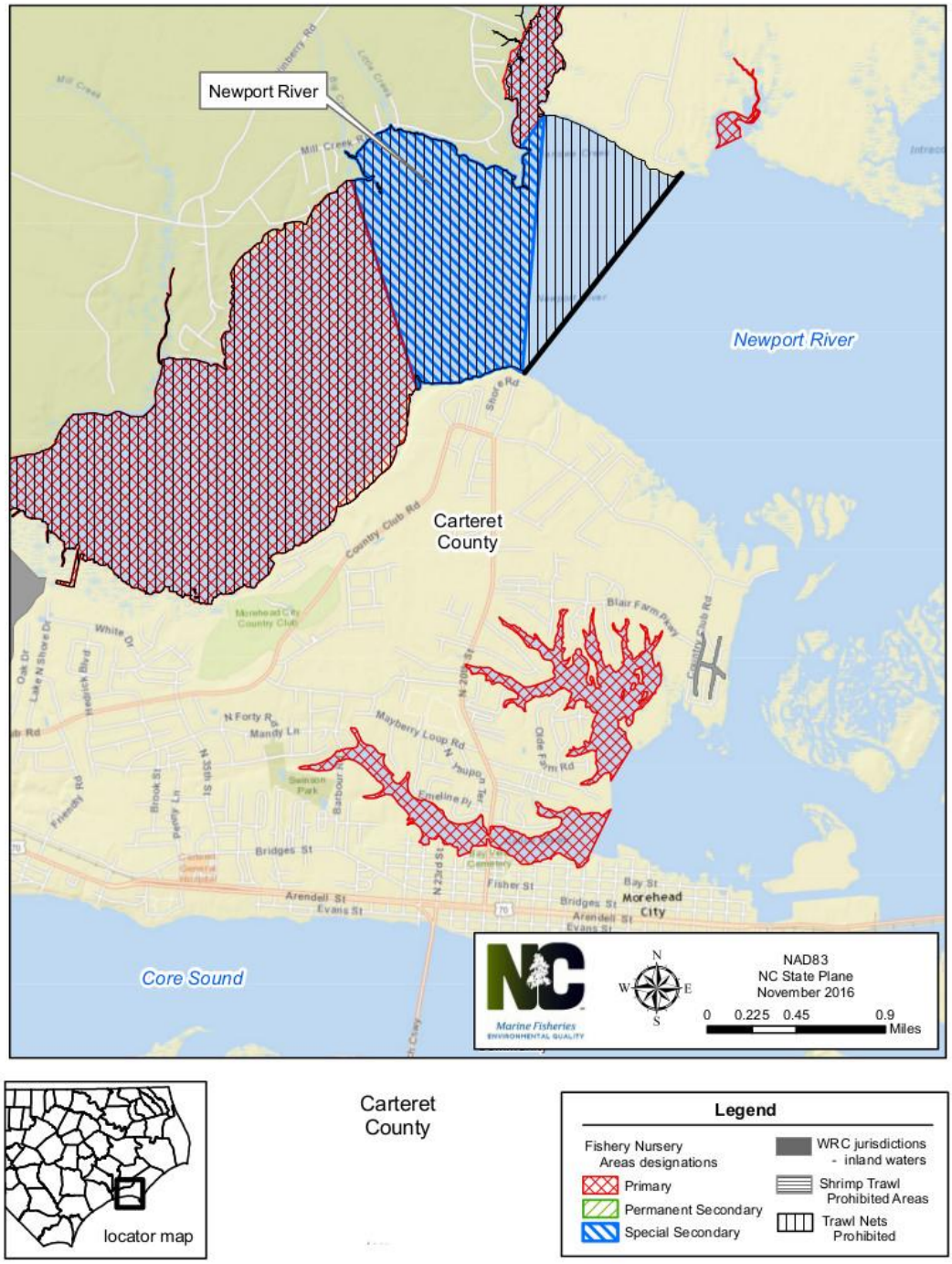

Figure 2. Map of the shrimp management and nursery areas in the Newport River. Gill net attendance (<5 inch stretched mesh) will be required in all areas marked as special secondary nursery areas (SSNAs) from May 1 through November 30 if proposed rule change is approved to permanent secondary nursery areas (SNAs).

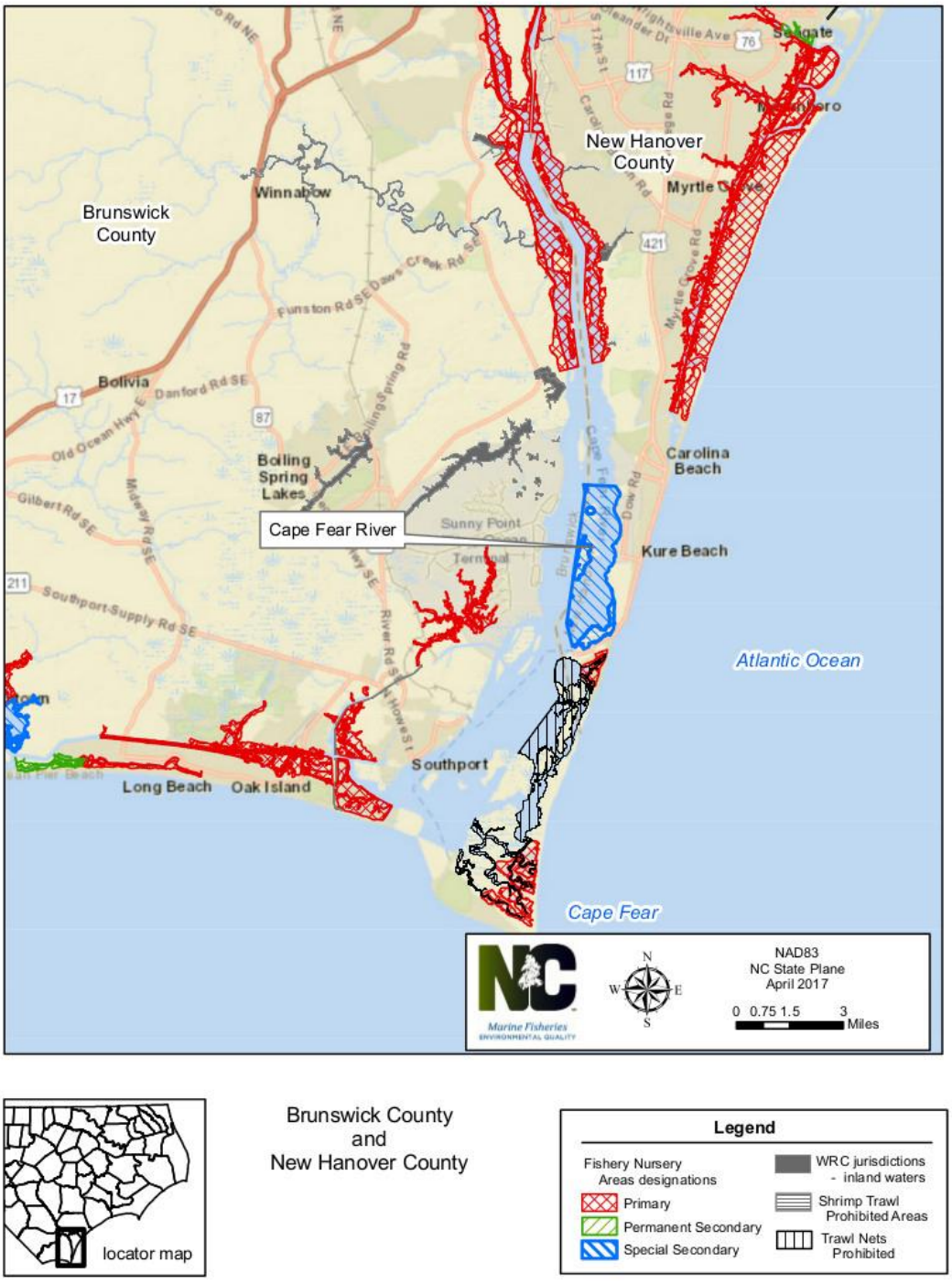

Figure 3. Map of the shrimp management and nursery areas in the Cape Fear River. Gill net attendance (<5 inch stretched mesh) will be required in all areas marked as special secondary nursery areas (SSNAs) from May 1 through November 30 if proposed rule change receives final approval to permanent secondary nursery areas (SNAs).

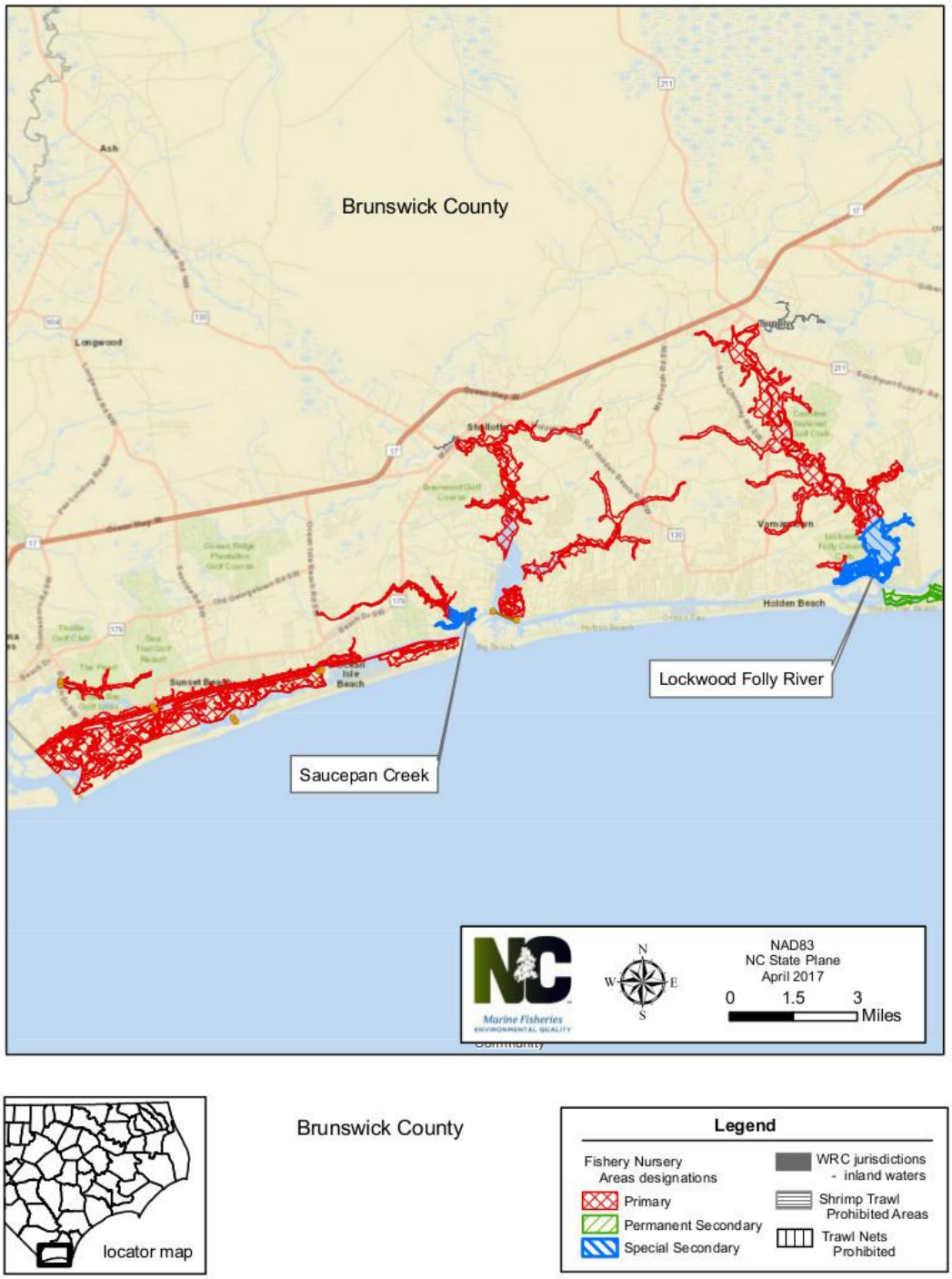

Figure 4. Map of the shrimp management and nursery areas in Brunswick County. Gill net attendance (<5 inch stretched mesh) will be required in all areas marked as special secondary nursery areas (SSNAs) from May 1 through November 30 if proposed rule change receives final approval to permanent secondary nursery areas (SNAs).

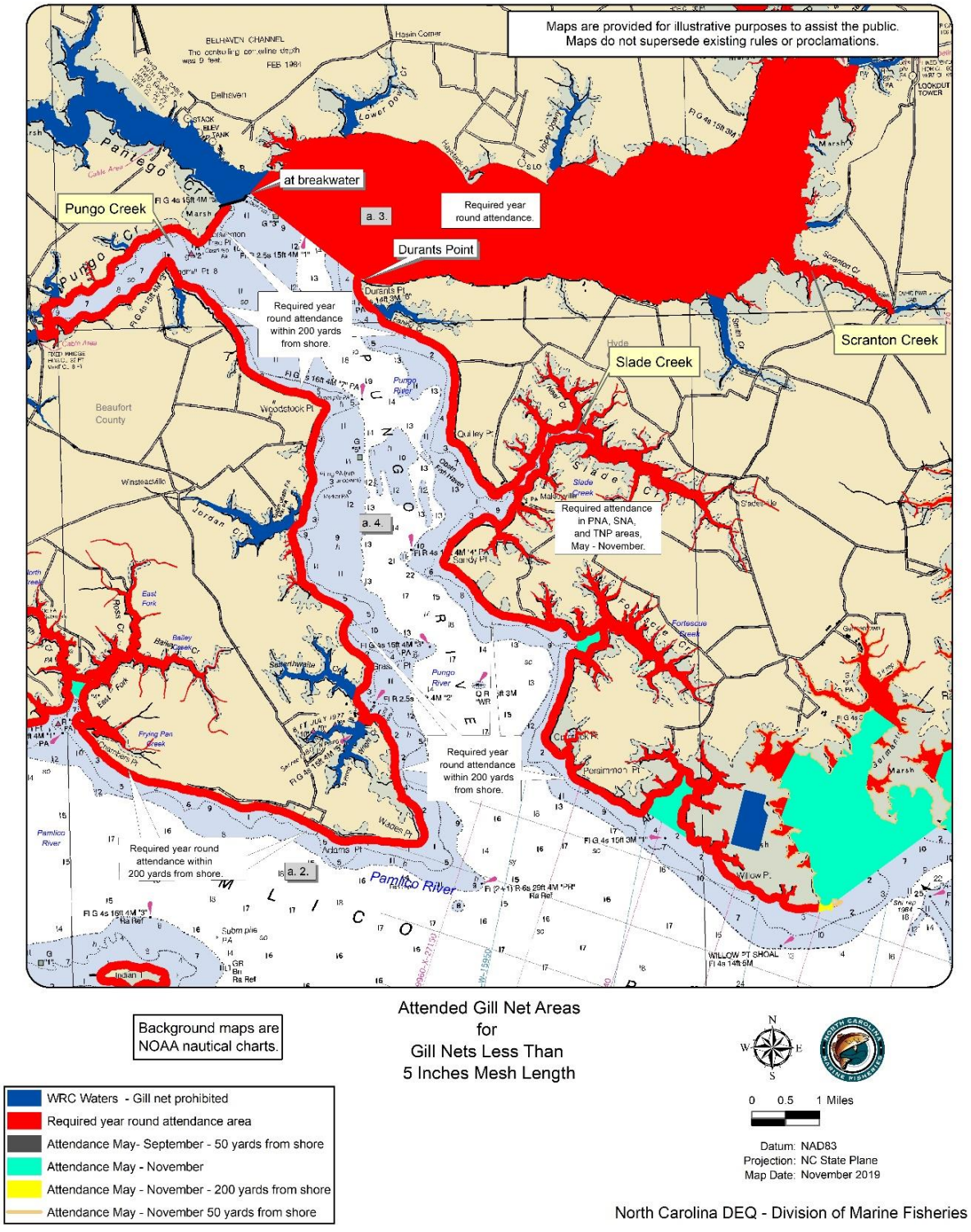

Figure 5. Map of current gill net attendance (<5 inch stretched mesh) and primary and permanent secondary nursery areas in Pungo, Scranton, and Slade creeks.

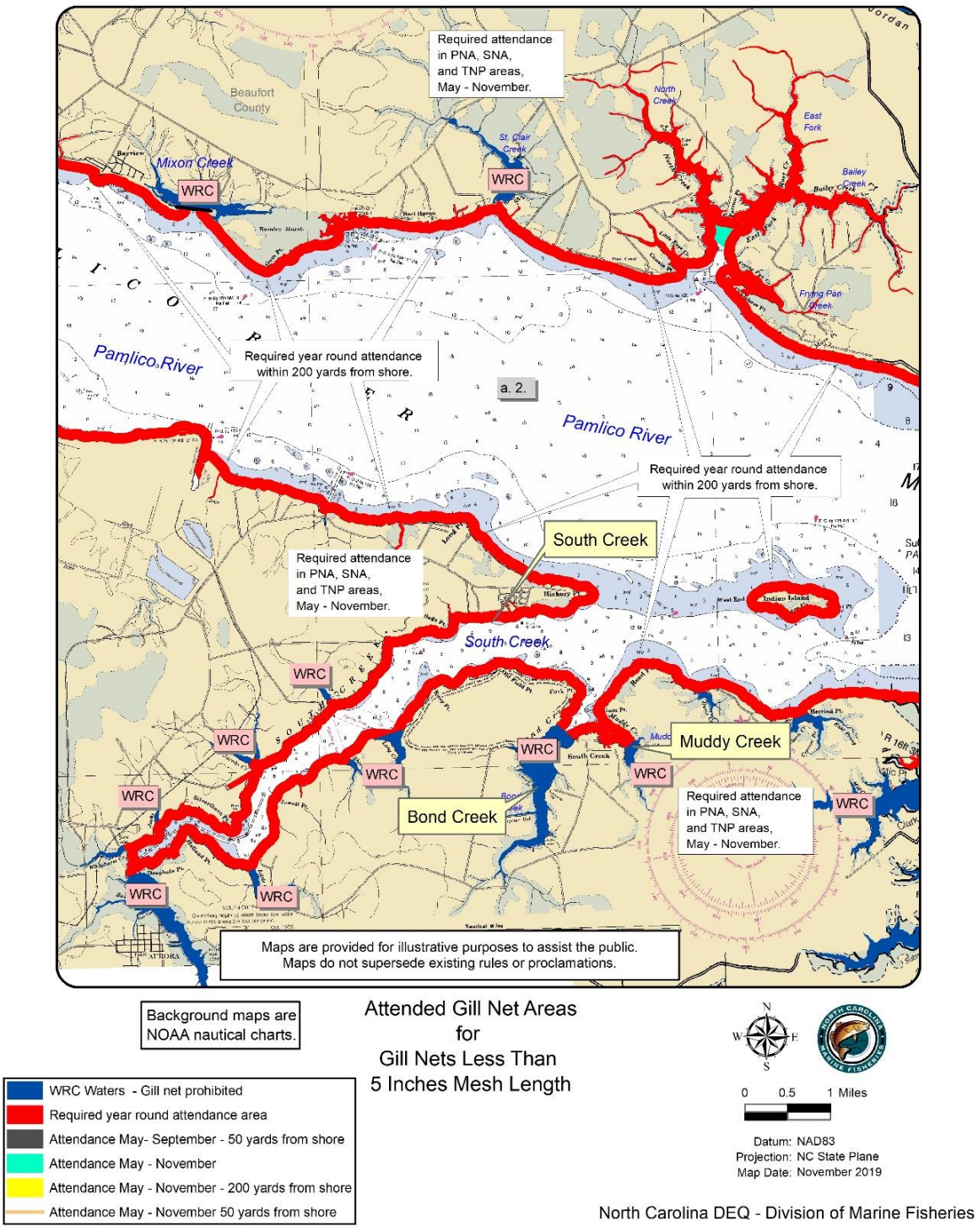

Figure 6. Map of current gill net attendance (<5 inch stretched mesh) and primary and permanent secondary nursery areas in South, Bond, and Muddy Creeks.

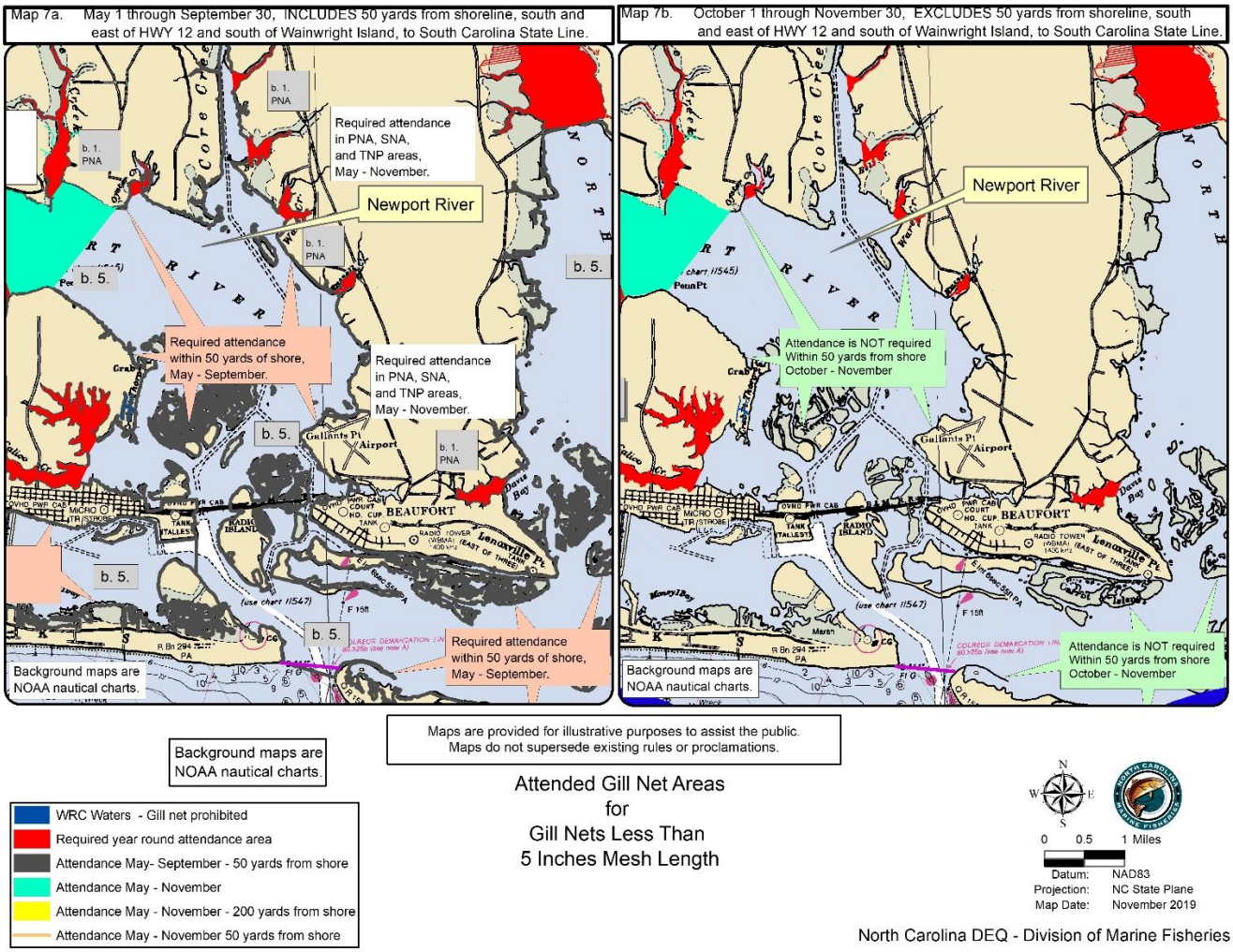

Figure 7. Map of current gill net attendance (<5 inch stretched mesh) and nursery areas in the Newport River.

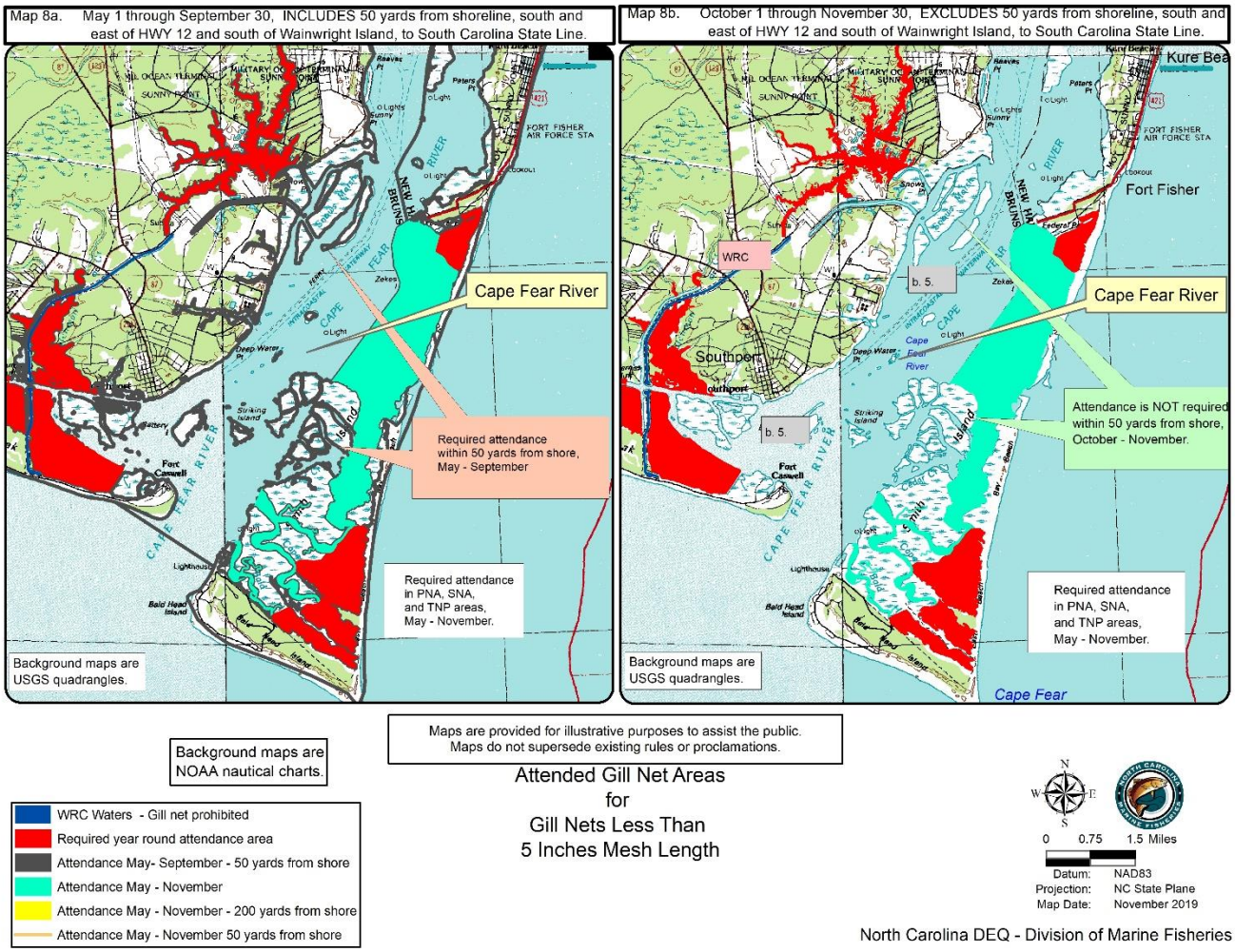

Figure 8. Map of current gill net attendance (<5 inch stretched mesh) and nursery areas in the Cape Fear River.

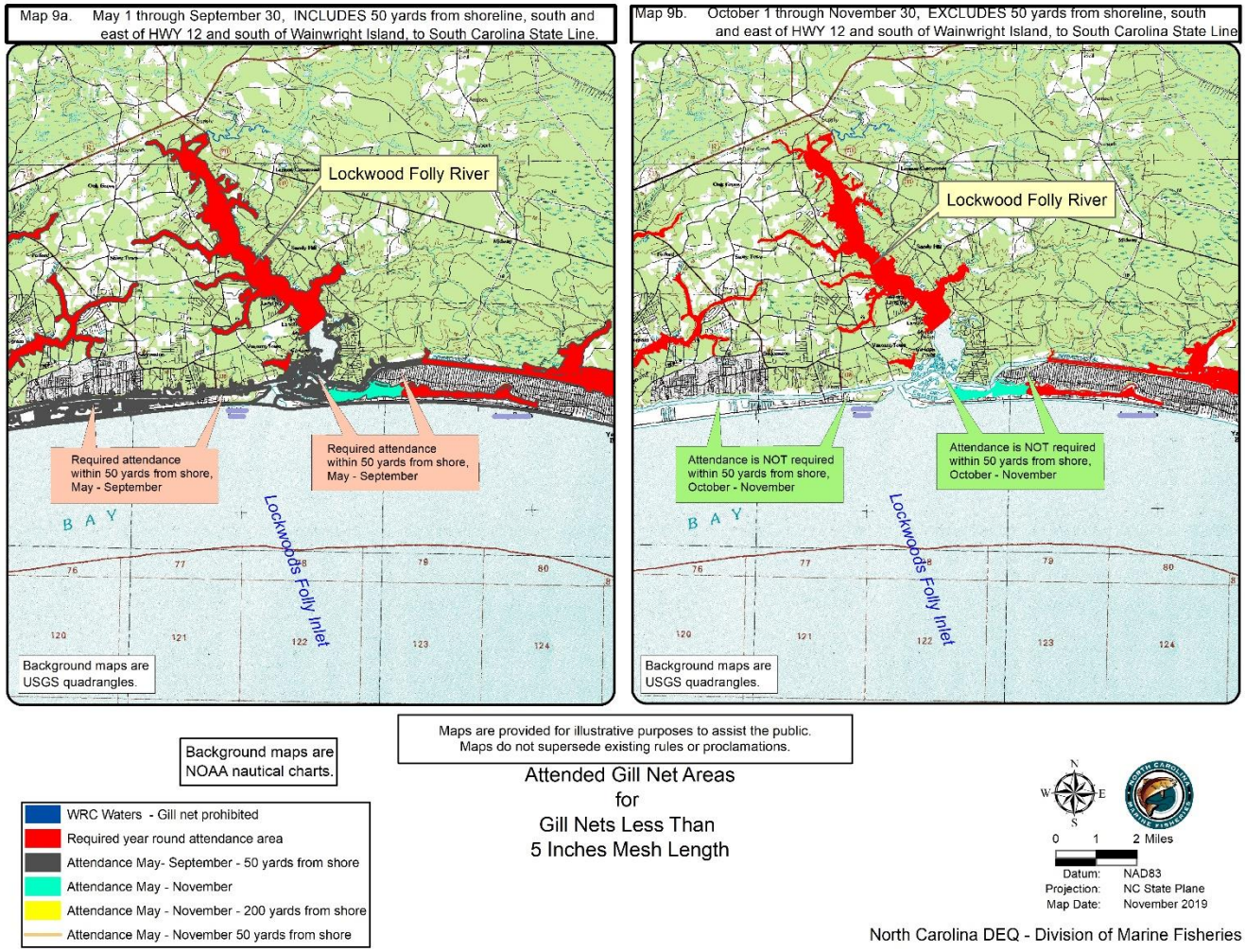

Figure 9. Map of current gill net attendance (<5 inch stretched mesh) and nursery areas in the Lockwood Folly River.

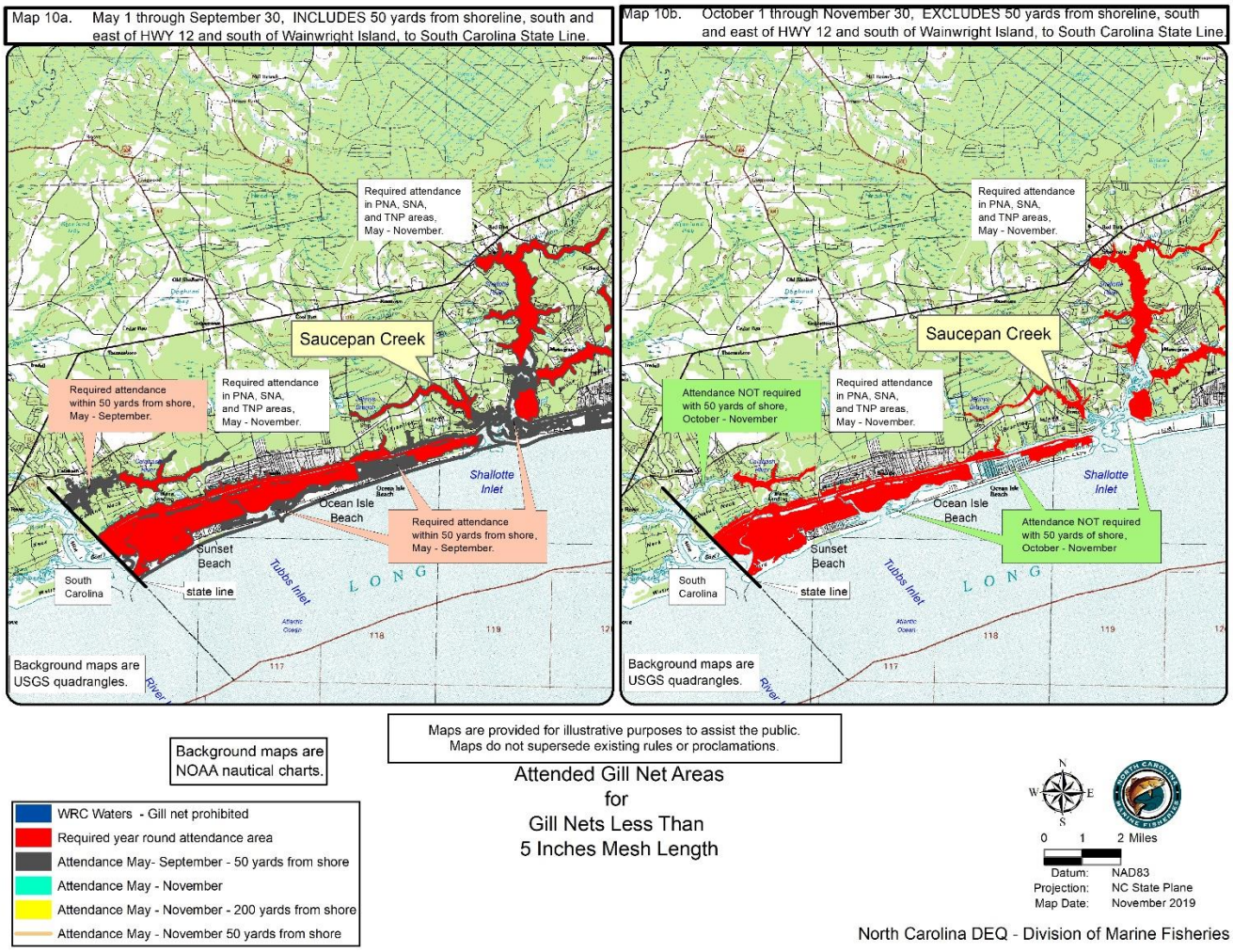

Figure 10. Map of current gill net attendance (<5 inch stretched mesh) and nursery areas in Saucepan Creek.

Fiscal Impact Analysis of Proposed Oyster Sanctuary Rule Amendments

Rule Amendments: 15A NCAC 03R .0117

Name of Commission: N.C. Marine Fisheries Commission

Agency Contact: David Dietz, Fisheries Economics Program Manager
N.C. Division of Marine Fisheries
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Morehead City, NC 28557
(919) 707 8573
david.dietz@ncdenr.gov

Impact Summary:

State government:	Yes
Local government:	No
Federal government:	No
Substantial impact:	No

Authority:

North Carolina General Statutes

GS § 113-134	Rules
GS § 113-182	Regulation of fishing and fisheries
GS § 113-201	Cultivation of shellfish
GS § 113-204	Propagation of shellfish
GS § 143B-289.52	Marine Fisheries Commission – power and duties

North Carolina Session Laws
Session Law 2014-120, Section 44 as amended by
Session Law 2015-241, Section 14.9

North Carolina Marine Fisheries Commission Rules

15A NCAC 03K .0209	Oyster Sanctuaries
15A NCAC 03R .0117	Oyster Sanctuaries
15A NCAC 07H .0208	Use Standards

Necessity: In order for oyster sanctuary reef sites to serve their intended management function as sanctuaries for oyster broodstock, harvest protections need to be applied. While some sites are currently protected by rule, it is proposed to add five new sites, currently protected by proclamation authority, to the existing permanent rule delineating the sanctuary boundaries.

The anticipated effective date of the proposed rule changes is April 1, 2021.

I. Summary

Rule amendments are proposed to add the boundaries of the five most recently developed oyster sanctuaries (i.e., Long Shoal, Little Creek, Pea Island, Raccoon Island, and Swan Island) and update boundaries for three existing sanctuaries (i.e., Neuse River, West Bluff, and Gibbs Shoal). Boundaries delineating the area for two existing sanctuaries (i.e., Ocracoke and Clam Shoal) are proposed to be removed from rule as they no longer function as biologically productive oyster sanctuaries.

II. Introduction and Purpose of Rule Changes

Marine protected areas (MPAs) are a powerful management approach for restoration and conservation of marine species and ecosystems. In general, the abundance and size of individual species within MPAs is often significantly greater and larger, respectively, than outside MPAs, which can also lead to a "spill-over effect" of larvae and individuals from inside the MPA to areas outside the MPA (Gell and Roberts 2002; Halpern 2003; Sobel and Dahlgren 2004). In other words, fish are generally larger and more abundant in MPAs. In pursuit of shellfish rehabilitation, the Division of Marine Fisheries (DMF) has applied the MPA model through its Oyster Sanctuary Program. This program is responsible for creating artificial reef habitat, designed to support healthy and abundant oyster populations throughout Pamlico Sound and its tributaries. Once built, a reef site is protected from harvest to preserve oyster broodstock and is called an "oyster sanctuary." With healthy and abundant broodstock populations inside sanctuary boundaries, these sites serve their intended function by supplying oyster larvae to other reefs nearby.

In North Carolina, both sanctuaries and artificial reefs are sometimes referred to as reef sites; however, it is important to distinguish that while all artificial reef habitat is considered "reef," not all reefs are considered "sanctuary." The term sanctuary refers only to reefs protected from oyster harvest in Marine Fisheries Commission (MFC) rule or by proclamation issued by the Fisheries Director under the authority of MFC rule. It is also important to consider that the created habitat within sanctuary or artificial reef boundaries always exists as a collection of separate reef habitat patches; see Figures 2-6 in Appendix III for examples of this. As a result of the relationship of these elements, the terms "reef", "sanctuary", and "reef site" are often used interchangeably. In most cases concerning reef sites managed by the Oyster Sanctuary Program, the entire reef site authorized by state and federal permits is protected from oyster harvest. When describing area as can be seen in Tables 1 and 2 (see Appendix III), managers typically refer to boundary area as the total sanctuary area (acres) within the boundaries delineated in rule or by proclamation. Habitat footprint area refers to the cumulative total area of reef patches only, not to include unconsolidated soft bottom. For example, in Table 1, the Croatan Sound oyster sanctuary site has 3.10 acres of habitat within the overall boundary of 7.73 acres, meaning 4.63 acres of the site do not have habitat material deposited on them.

The Blue Ribbon Advisory Council on Oysters (BRACO) made the first recommendations concerning the establishment of oyster sanctuaries in North Carolina in 1995. The BRACO recommended the state provide selected areas where wild oyster stocks can adapt to present water quality and disease conditions without being subjected to the additional stress of habitat disturbance and oyster harvest. In addition to providing a sanctuary for oysters, these areas would also provide good nursery habitat for other species, increasing their abundance for commercial and recreational fishing. The protected oysters would also provide for increased water filtration reducing turbidity and excess nutrients in the estuary. As part of the recommendation, oyster

sanctuaries would be closed to taking of shellfish (i.e., oysters, clams, mussels, and scallops) and to bottom disturbing activities such as trawling, long hauling, and dredging for an indefinite period (Frankenberg 1995). DMF developed 10 oyster sanctuaries in Pamlico Sound and its tributaries. These sanctuaries were originally designated as shellfish management areas by proclamation, as authorized by Rule 15A NCAC 03K .0103. For these reef sites to serve their intended management function as oyster broodstock sanctuaries, harvest protections needed to be applied. As part of the 2008 Oyster Fishery Management Plan Amendment 2, the MFC moved the protection of sanctuaries from proclamation into rules 15A NCAC 03K .0209 and 03R .0117, Oyster Sanctuaries, the former placing restrictions on fishing activities within defined oyster sanctuaries and the latter defining in rule the specific location of each oyster sanctuary using coordinate points.

The Nature Conservancy, National Oceanic and Atmospheric Administration National Estuarine Counsel, Coastal Recreational Fishing License, and other mitigation sources provided funding to expand the Oyster Sanctuary Program. DMF has since constructed five additional sanctuaries, which will increase the amount of broodstock and help answer research needs. These additional sanctuaries are situated in the Neuse River (Little Creek) and Pamlico Sound (Long Shoal, Raccoon Island, Pea Island, and Swan Island). Under the authority of Rule 15A NCAC 03K .0103, Proclamation SF-6-2013 was issued July 8, 2013 to initially protect Long Shoal and Raccoon Island oyster sanctuaries by declaring them shellfish management areas and closing them to all fishing equipment. A proclamation extending protection to these two oyster sanctuaries and the three subsequent sanctuaries that were constructed (i.e., Pea Island, Little Creek, and Swan Island) has since been issued (Proclamation SF-2-2019). All five of these sanctuaries would be protected under the proposed rule changes (see Appendix I). The division has a policy which recommends moving long-standing proclamations into rule once variable conditions have stabilized, to aid in the clarity of regulations for the public.

While the growing interest in oyster and other shellfish products has promoted sanctuary networks, continuing evidence of the additive environmental benefits mentioned by BRACO has also helped drive industry growth. Specifically, oyster reefs, even those artificially built as sanctuaries, provide a suite of ecosystem services to the surrounding water body, which are defined as the tangible benefits that humans gain from different natural environments. In the case of oyster sanctuaries, the primary ecosystem services benefits that can be measured, as discussed above, are increased output for recreational and commercial fishing of other species through habitat enhancement, improvement of water quality, primarily from nitrogen removal, and shoreline protection due to the energy-capturing potential of oyster reefs. These benefits were captured for the state of North Carolina by RTI International, who prepared a cost-benefit study in 2016 of oyster propagation for the Albemarle-Pamlico National Estuary Partnership (Callihan et al. 2016). Ultimately, research has demonstrated that ecosystem services provide tangible, quantifiable benefits to the state, which are calculated in the fiscal note below.

In all, these direct and indirect benefits that come from constructing sanctuary reefs have been recognized by the state of North Carolina, both in statute and by appropriations. Firstly, the North Carolina General Assembly recognized the continued importance of oyster sanctuaries in the 2014 and 2015 legislative sessions: Session Law 2014-120, Section 44 as amended by Session Law 2015-241, Section 14.9, which established the Senator Jean Preston Oyster Sanctuary Network (Figure 1; see Appendix III). This was done “to enhance shellfish habitats within the

Albemarle and Pamlico Sounds and their tributaries to benefit fisheries, water quality, and the economy. This will be achieved through the establishment of a network of oyster sanctuaries, harvestable enhancement sites, and coordinated support for the development of shellfish aquaculture." While this demonstrates the state's commitment to these sites, it is the state-appropriated spending that has already occurred which signals this long-term investment.

Today, DMF maintains and manages 15 oyster sanctuaries in the network, 10 protected in the oyster sanctuary rules and five protected via proclamation. The sanctuaries are in Pamlico Sound and its tributaries encompassing 4.59 – 60.30 acres each, totaling 395.44 acres, with over 205,000 tons of material deployed for oyster habitat (Table 1; see Appendix III). This includes the five new sanctuary sites that are proposed to be added to this rule, which have already had material deployed and reefs constructed.

Callihan et al (2016) have estimated average costs for constructing oyster sanctuary sites, taking into account all significant cost components of development. Using cost data from existing sites and projects that have been completed in the state, the authors found an average cost of $44.04 per ton of material deployed. Based on this research, it is estimated the state has appropriated roughly $9 million towards existing oyster sanctuaries, underscoring the strong commitment North Carolina already has made to oyster sanctuary development. Additionally, it is important to note that state appropriations for the new sites, estimated at nearly $3 million using the same cost assumptions, have already been spent, as these sites are fully constructed and operating as sanctuaries. This means the $9 million commitment covers both the current and future oyster sanctuary sites. Because of this, there is no expectation of future construction costs from this proposed rule amendment, and construction costs should therefore be excluded from future fiscal analysis, as the funds have been used and cannot be earned back by de-commissioning these new sanctuaries.

In an ongoing effort to review oyster sanctuary boundaries post-construction, DMF recently discovered through side-scan imagery that three of the 10 currently defined sanctuaries in rule (i.e., Neuse River, Gibbs, Shoal, and West Bluff) have material slightly outside of their permitted boundaries. This is likely due to construction error or slight movement during material settlement. To prevent this error from occurring during future development, DMF intends to establish a 100-foot buffer of no development for reef construction. The no-development buffer is intended to protect against deployment error and possible material transport over time (Figures 2–4; see Appendix III). The Oyster Sanctuary Program has updated the boundary coordinates for these sites to incorporate any material that was found outside of the original depicted sanctuary perimeters. Revisions have already been made to existing reef site permits (state and federal) and now need to be updated in rule for consistency. Proposed rule changes for the Neuse River, Gibbs, Shoal, and West Bluff sanctuaries would delineate all reef site area intended for oyster sanctuary purposes so that protections provided by 15A NCAC 03K .0209 and 03R .0117 may be accurately applied (see Appendix I). In addition, accurately delineated boundaries would help safeguard boaters navigating the area.

Along with the amendments previously described, DMF proposes to remove coordinates delineating boundaries for two sanctuaries, Clam Shoal and Ocracoke, from rule (see Appendix I). These two sites were originally funded by fishing clubs in Hatteras and Ocracoke, for the purpose of recreational hook and line fishing. Following the BRACO's recommendations to establish

oyster sanctuaries in 1996, the reef sites were delineated as oyster sanctuaries under 15A NCAC 03R .0117 and thereby protected from oyster harvest under 15A NCAC 03K .0209. In the years following sanctuary delineation, the boundaries of the reef sites were substantially expanded in state and federal permit and further developed by the Artificial Reef Program as artificial reefs. The boundaries for sanctuary protections were never expanded at these two sites, therefore only a subsection of each reef site as described in 15A NCAC 03R .0117 is protected from oyster harvest (Figures 5 and 6; see Appendix III). Presently, both Ocracoke and Clam Shoal reefs are marked by buoys identifying their outside margins, but do not offer any reference point for where harvest is restricted.

Additionally, long term biological evaluation has led to the determination that the Clam Shoal and Ocracoke sites no longer function as biologically productive oyster sanctuaries (Luck, 2019). The Marine Protected Area/sanctuary model is a management tool whereby small areas of high productivity habitats are protected to support broodstock with high reproductive potential. For oyster restoration, effective sanctuary sites must intrinsically sustain high population densities of adult oysters. DMF maintains a monitoring program to assess the productivity of each sanctuary with a restoration target of 10 oysters/m^2 (Powers et al. 2009). Sanctuaries are expected to maintain oyster densities above this threshold to be considered functioning restoration tools. Under DMF's monitoring, Clam Shoal initially showed promising settlement success similar to other sanctuaries within the Pamlico Sound. By year three, however, Clam Shoal's oyster densities fell well below the threshold of 10 oysters/m^2 and has remained below this threshold since that time. The apparent low oyster densities are indicative of low juvenile oyster recruitment or low survivorship to adulthood. Oyster densities at Ocracoke, identical to Clam Shoal, exhibited an abrupt decline with little evidence of recovery (Figure 7 [see Appendix III]; Z. Knorek, unpublished). Observed population density trends here offer strong evidence that oyster population recovery is unlikely, given relatively unfavorable environmental conditions. Both Clam Shoal and Ocracoke oyster sanctuaries are unique compared to all others due to their locations in relatively high salinity waters (>16 psu; Figure 8 [see Appendix III]). In this habitat regime, increased diversity and abundance of competing biofouling organisms (e.g., barnacles, alga, sponge), shellfish predators (e.g., sheepshead and crabs), and pests (e.g., Cliona boring sponge) commonly occur and can negatively influence oyster settlement and reef persistence. Given that long term oyster population trends at both Ocracoke and Clam Shoal sanctuaries exhibit extremely low oyster population densities, is it easy to conclude that these sites are not serving their management purpose for oyster restoration. Therefore, it is appropriate for these sites to be proposed for removal from the existing oyster sanctuary rule.

III. Fiscal Analysis

This proposed rule change encompasses multiple spatial updates to the existing oyster sanctuary program, including site removals, additions, and expansions. However, the fiscal impact to the state in terms of production of natural resources boils down to a single value of acreage being removed from the public access.

A core tenet of DMF's current site selection approach is to find locations that meet the criteria of the DMF's habitat suitability index (HSI), and do not currently contain any existing shell resource. According to rule 15A NCAC 07H .0208, the location and construction of all sanctuary reefs must not create any "significant adverse impacts upon the productivity and biologic

integrity of coastal wetlands, shellfish beds, submerged aquatic vegetation…and spawning and nursery areas." In short, all bottom sited for sanctuary reef construction must not contain any existing shellfish habitat or habitat suited for marine resource spawning and nursing, meaning all sanctuary bottom is unproductive prior to construction. On top of this, the buffer acreage added to the existing sites must meet these same criteria and can therefore be considered unproductive bottom that in the future is expected to develop into broodstock habitat like the rest of the sanctuary site.

Additionally, the two sites being decommissioned, Clam Shoal and Ocracoke, have been deemed by DMF staff to not be functioning as biologically productive shellfish habitats (Luck 2019). Due to this, the bottom of these two sites can be considered to have the same economic value as they did prior to sanctuary establishment. Given all of these components and findings, it is concluded that all the acreage considered in this rule, including acreage proposed to be added to and removed from sanctuary status, has the same biological functioning and lack of significant economic output.

Based on this assumption that all bottom being considered is of the same biological status, all sanctuary additions, subtractions, or modifications can be calculated together to create one total acreage value to analyze. In the case of this rule, that equates to a net of 101.09 acres being added to sanctuary status, thereby being removed from public access. This net removal of water bottom would not directly impact the amount of shellfish habitat available for harvest, as it was not existing shellfish habitat. However, it may indirectly impact shellfish harvest in the future, as the increase in sanctuary reef is expected to lead to greater broodstock provision to surrounding waters. Lastly, as all of this acreage was not functioning as fishing grounds, restricted activities inside sanctuaries, namely trawling, long-hauling, and dredging activities, would not be significantly affected either.

a. Summary of Potential Economic Benefits

The principal benefit of the proposed rule amendments is increased production of oysters and other shellfish in Pamlico Sound, due to increased broodstock production from the net gain of 101.09 acres of sanctuary bottom. Based on site research of existing sanctuary sites (Figure 7), mean oyster densities tend to increase in the first five years after planting the sanctuary, with roughly a 100% increase in mean densities over that time period. Given the increase in oyster sanctuary acreage in this region, the expected increase in mean oyster density is expected to cause increased broodstock into surrounding waters. This effect will likely lead to improved adult oyster density in surrounding shellfish habitats, leading to increased landings of wild oysters in Pamlico Sound with no shifts in effort. However, the timing and magnitude of these increases are not specifically known, and therefore the exact economic gain from these effects cannot be accurately quantified. Lastly, the expansion of existing sanctuaries through buffer zones should, over time, improve broodstock output due to reduced disturbance from recreational and commercial boating activity. However, the exact level of impact these 100-foot buffers will provide is difficult to quantify, and therefore the direct economic benefit of buffers to shellfish products cannot be estimated.

In addition to the direct benefits of increased shellfish broodstock, there are also the economic benefits from ecosystem services of oyster reefs. As discussed, artificial oyster reefs provide additional benefits related to water quality, shoreline protection, and increased habitat for other species. Callihan et al. (2016) assert an average annual benefit per acre of $4,178.38. Coupled with the net increase of 101.09 acres of oyster reef, this proposed rule change could result in an average annual benefit of $422,392.43, ignoring any direct benefits from increased oyster production and cultivation.

Lastly, beyond these ecological benefits described, there are additional expected benefits from this proposed rule amendment in the form of safer navigation and reduced administration. A corollary benefit of the buffer zone additions is the reduced risk of vessel strikes or unintentional groundings on reefs. As noted, the impetus for buffer development was the discovery of reef material outside of the sanctuary boundary. By extending the boundaries out 100 feet in all directions, vessels are much less likely to strike or become stuck upon reef material, reducing damage costs from sanctuaries considerably. On top of this, there may be a small economic benefit in the form of reduced future administration and planning, as these new boundaries should not require further amending. While these components could add to the economic benefit from the proposed rule amendment, losses from reef damage to vessels is not specifically tracked and expected time savings cannot be accurately estimated; therefore, an exact estimate of the economic gain from these components cannot be quantified.

b. Summary of Potential Economic Costs

While the primary driver of benefits for the proposed rule change comes from the potential output of oyster broodstock and other shellfish from the net gain of 101.09 acres of sanctuary, the offsetting costs will consider the corresponding loss of 101.09 acres to all shellfish harvesting, trawl-fishing, long-hauling, and dredging activities. This is an economic tradeoff, and represents an opportunity cost corresponding to the potential output of the new sanctuary bottom if it were left to the public for alternative uses other than oyster broodstock development. As indicated above, all sites selected for sanctuary construction must be devoid of any shellfish habitat, spawning, or nursery grounds, as required by rule. Due to this, no significant economic cost is expected in terms of shellfish harvest from this proposed rule change.

Regarding the economic impacts to the other activities prohibited within this 101.09 acres, namely trawling, dredging, and long-hauling, the effects are expected to be negligible. Firstly, there no economic impacts are expected on dredging and trawling for shellfish, as this 101.09 acres does not contain any shellfish resources at the onset, as required by rule. For the effects on trawling for non-shellfish species and long-hauling, the costs are also negligible, which is most clearly demonstrated through a spatial analysis of the total acreage lost to public access. In the spatial review of the region affected by this proposed rule amendment, the entire waterbody region considered, excluding areas designated as a shellfish lease or sanitation closure, comprises 1,202,307.05 acres (Figure 9). Given that trawling and long-hauling activities occur throughout the Sound and are not directly reliant on the bottom area being designated as sanctuary in this proposed rule change, then the 0.0084% reduction in available area in the Sound would have a negligible economic cost to all stakeholders. Lastly, the long-haul fishing industry in North Carolina is small – and shrinking – and a reduction in acreage should not significantly affect

industry output. According to NOAA, the estimated number of participants in this fishery was reduced from 372 to just 30 in 2017. This signals the decline of this fishery, and also suggests that a small reduction in available bottom would not significantly affect the industry overall (NOAA Fisheries, 2019).

Additionally, there are costs to consider beyond the ecological impacts, pertaining to construction and enforcement. However, upon analysis, all of these costs are negligible or irrelevant to this proposed rule amendment and are not expected to create any significant economic impacts. As discussed in the background section, while an estimated $3 million was spent constructing the sanctuaries proposed to be added by this rule amendment, all of these funds have already been appropriated by the State, and all construction and related costs have already been incurred. Additionally, all updated signage related to these new sanctuaries, as well as the updated buffer zones, have already been updated and marked according to permit, paid by state funds. Because the expected costs for these two components have already been incurred, there are no future economic impacts associated with construction and signage, and therefore all future costs are negligible at this time. Lastly, given the existing presence of shellfish sanctuaries and the mechanisms in place to enforce the rules associated with them, there are no expected impacts to enforcement costs from this proposed rule change.

Appendix I Proposed Rule Changes:

15A NCAC 03R .0117 OYSTER SANCTUARIES

The Oyster Sanctuaries referenced in 15A NCAC 03K .0209 are delineated in the following coastal water areas:

~~(1) Croatan Sound area: within the area described by a line beginning at a point 35° 48.2842' N - 75° 38.3360' W; running southerly to a point 35° 48.1918' N - 75° 38.3360' W; running westerly to a point 35° 48.1918' N - 75° 38.4575' W; running northerly to a point 35° 48.2842' N - 75° 38.4575' W; running easterly to the point of beginning.~~

~~(2)~~(1) Pamlico Sound area:

(a) Croatan Sound: within the area described by a line beginning at a point 35° 48.2842' N - 75° 38.3360' W; running southerly to a point 35° 48.1918' N - 75° 38.3360' W; running westerly to a point 35° 48.1918' N - 75° 38.4575' W; running northerly to a point 35° 48.2842' N - 75° 38.4575' W; running easterly to the point of beginning.

~~(a)~~(b) Crab Hole: within the area described by a line beginning at a point 35° 43.6833' N - 75° 40.5083' W; running southerly to a point 35° 43.5000' N - 75° 40.5083' W; running westerly to a point 35° 43.5000' N - 75° 40.7500' W; running northerly to a point 35° 43.6833' N - 75° 40.7500' W; running easterly to the point of beginning.

(c) Pea Island: within the area described by a line beginning at a point 35° 05.4760' N - 76° 23.5370' W; running southerly to a point 35° 05.4760' N - 76° 23.4040' W; running westerly to a point 35° 05.3680' N - 76° 23.4040' W; running northerly to a point 35° 05.3680' N - 76° 23.5370' W; running easterly to the point of beginning.

(d) Long Shoal: within the area described by a line beginning at a point 35° 33.8600' N - 75° 49.9000' W; running southerly to a point 35° 33.8600' N - 75° 49.7670' W; running westerly to a point 35° 33.7510' N - 75° 49.7670' W; running northerly to a point 35° 33.7510' N - 75° 49.9000' W; running easterly to the point of beginning.

~~(b)~~(e) Gibbs Shoal: within the area described by a line beginning at a point ~~35° 27.3557' N - 75° 55.8434' W;~~ 35° 27.3550' N - 75° 55.9190' W; running southerly to a point ~~35° 27.1732' N - 75° 55.8434' W;~~ 35° 27.1010' N - 75° 55.9190' W; running westerly to a point ~~35° 27.1732' N - 75° 56.0735' W;~~ 35° 27.1010' N - 75° 56.2300' W; running northerly to a point ~~35° 27.3557' N - 75° 56.0735' W;~~ 35° 27.3550' N - 75° 56.2300' W; running easterly to the point of beginning.

~~(c)~~(f) Deep Bay: within the area described by a line beginning at a point 35° 22.9126' N - 76° 22.1612' W; running southerly to a point 35° 22.7717' N - 76° 22.1612' W; running westerly to a point 35° 22.7717' N - 76° 22.3377' W; running northerly to a point 35° 22.9126' N - 76° 22.3377' W; running easterly to the point of beginning.

~~(d)~~(g) West Bluff: within the area described by a line beginning at a point ~~35° 18.3000' N - 76° 10.0890' W;~~ 35° 18.3160' N - 76° 10.2960' W; running southerly to a point ~~35° 18.1460' N 76° 10.0890' W;~~ 35° 18.3160' N - 76° 10.0690' W; running westerly to a point ~~35° 18.1460' N - 76° 10.2760' W;~~ 35° 18.1290' N - 76° 10.0690' W; running northerly to a point ~~35° 18.3000' N - 76° 10.2760' W;~~ 35° 18.1290' N - 76° 10.2960' W; running easterly to the point of beginning.

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~~(e) Clam Shoal: within the area described by a line beginning at a point 35° 17.4800' N - 75° 37.1800' W; running southerly to a point 35° 17.1873' N - 75° 37.1800' W; running westerly to a point 35° 17.1873' N - 75° 37.4680' W; running northerly to a point 35° 17.4800' N - 75° 37.4680' W; running easterly to the point of beginning.~~

~~(f)~~(h) Middle Bay: within the area described by a line beginning at a point 35° 14.1580' N - 76° 30.1780' W; running southerly to a point 35° 14.1150' N - 76° 30.1780' W; running westerly to a point 35° 14.1150' N - 76° 30.3320' W; running northerly to a point 35° 14.1580' N - 76° 30.3320' W; running easterly to the point of beginning.

(i) Swan Island: within the area described by a line beginning at a point 35° 05.6170' N - 76° 27.5040' W; running southerly to a point 35° 05.6020' N - 76° 26.7650' W; running westerly to a point 35° 05.4850' N - 76° 26.7640' W; running northerly to a point 35° 05.4990' N - 76° 27.5030' W; running easterly to the point of beginning.

~~(g) Ocracoke area: within the area described by a line beginning at a point 35° 10.8150' N - 75° 59.6320' W; running southerly to a point 35° 10.6320' N - 75° 59.6320' W; running westerly to a point 35° 10.6320' N - 75° 59.8530' W; running northerly to a point 35° 10.8150' N - 75° 59.8530' W; running easterly to the point of beginning.~~

(j) Raccoon Island: within the area described by a line beginning at a point 35° 05.4760' N - 76° 23.5370' W; running southerly to a point 35° 05.4760' N - 76° 23.4040' W; running westerly to a point 35° 05.3860' N - 76° 23.4040' W; running northerly to a point 35° 05.3680' N - 76° 23.5370' W; running easterly to the point of beginning.

~~(h)~~(k) West Bay: within the area described by a line beginning at a point 34° 58.8517' N - 76° 21.3632' W; running southerly to a point 34° 58.7661' N - 76° 21.3632' W; running westerly to a point 34° 58.7661' N - 76° 21.4735' W; running northerly to a point 34° 58.8517' N - 76° 21.4735' W; running easterly to the point of beginning.

~~(3)~~(2) Neuse ~~River:~~River area:

(a) Little Creek: within the area described by a line beginning at a point 35° 02.6940' N - 76° 30.9840' W; running southerly to a point 35° 02.6940' N - 76° 30.7940' W; running westerly to a point 35° 02.5380' N - 76° 30.7940' W; running northerly to a point 35° 02.5380' N - 76° 30.9840' W; running easterly to the point of beginning.

(b) Neuse River: within the area described by a line beginning at a point ~~35° 00.4742' N - 76° 31.9550' W;~~ 35° 00.4910' N - 76° 31.9350' W; running southerly to a point ~~35° 00.3920' N - 76° 31.9550' W;~~ 35° 00.3750' N - 76° 31.9350' W; running westerly to a point ~~35° 00.3920' N - 76° 32.0550' W;~~ 35° 00.3750' N - 76° 32.0750' W; running northerly to a point ~~35° 00.4742' N - 76° 32.0550' W;~~ 35° 00.4910' N - 76° 32.0750' W; running easterly to the point of beginning.

History Note: *Authority G.S. 113-134; 113-182; 113-201; 113-204; 143B-289.52;*
Eff. October 1, 2008;
Amended Eff. May 1, 2020; April 1, 2011.

Fiscal Impact Analysis of Proposed Rule 15A NCAC 03R .0117

Appendix II Literature Cited:

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Appendix III Tables and Figures:

Table 1. Oyster Sanctuary Names, Locations, Spatial Extents, and Development. Reported boundary sizes are calculated on areas bound by delineating coordinates in 15A NCAC 03K .0209. Ocracoke and Clam Shoal sites are substantially larger than what is reported in this table (*see Discussion*). Values for Habitat Footprint and Total Material Deployed are subject to increase over time, as reef enhancement and construction are ongoing.

OS#	Site Name	Latitude	Longitude	Boundary Size (Acres)	Habitat Footprint (Acres)	Total Material Deployed (Tons)
1	Croatan Sound	35° 48.238' N	75° 38.397' W	7.73	3.10	2,093
2	Deep Bay	35° 22.842' N	76° 22.249' W	17.20	4.15	1,749
3	West Bay	34° 58.809' N	76° 21.418' W	6.56	2.27	2,329
4	Clam Shoal	35° 17.334' N	75° 37.325' W	58.12	21.45	38,359
5	Crab Hole	35° 43.592' N	75° 40.629' W	30.52	13.26	36,489
6	Ocracoke	35° 10.723' N	75° 59.743' W	28.05	10.36	15,183
7	Middle Bay	35° 14.137' N	76° 30.255' W	4.59	0.27	900
8	Neuse River	35° 0.433' N	76° 32.005' W	11.21	3.55	7,357
9	West Bluff	35° 18.223' N	76° 10.182' W	29.42	2.82	10,162
10	Gibbs Shoal	35° 27.228' N	75° 56.075' W	54.69	8.19	22,447
11	Long Shoal	35° 33.806' N	75° 49.833' W	10.01	1.13	2,173
12	Raccoon Island	35° 5.422' N	76° 23.471' W	9.97	1.61	1,824
13	Pea Island	35° 39.960' N	75° 36.940' W	46.63	2.62	3,420
14	Little Creek	35° 2.616' N	76° 30.889' W	20.71	6.14	5,700
15	Swan Island	35° 5.551' N	76° 27.134' W	60.30	10.93	55,000
			Total	**395.44**	**91.85**	**205,185**

- Sanctuaries (1-10) are under authority of rules 15A NCAC 03K .0209 and 03R .0117.
- Sanctuaries 4 and 6 are proposed for removal from 15A NCAC 03R .0117 and subsequent protections of 15A NCAC 03K .0209
- Sanctuaries (11-12) are under authority of Rule 15A NCAC 03K .0103 via Proclamation SF-2-2019.
- Sanctuaries (13-15) are not yet codified in rule.
- Latitude and longitude points mark the center of each site.

Table 2. Oyster Sanctuaries with New or Updated Boundaries for Sanctuary Protection in Rule.

OS #	Site Name	Old Boundary (Acres)	Proposed Boundary (Acres)	Difference (Acres)
4	Clam Shoal	58.12	0	-58.12
6	Ocracoke	28.05	0	-28.05
8	Neuse River	5.71	11.21	5.50
9	West Bluff	19.95	29.42	9.47
10	Gibbs Shoal	30.02	54.69	24.67
11	Long Shoal	0	10.01	10.01
12	Raccoon Island	0	9.97	9.97
13	Pea Island	0	46.63	46.63
14	Little Creek	0	20.71	20.71
15	Swan Island	0	60.30	60.30
--	**Total**	**141.85**	**242.94**	**101.09**

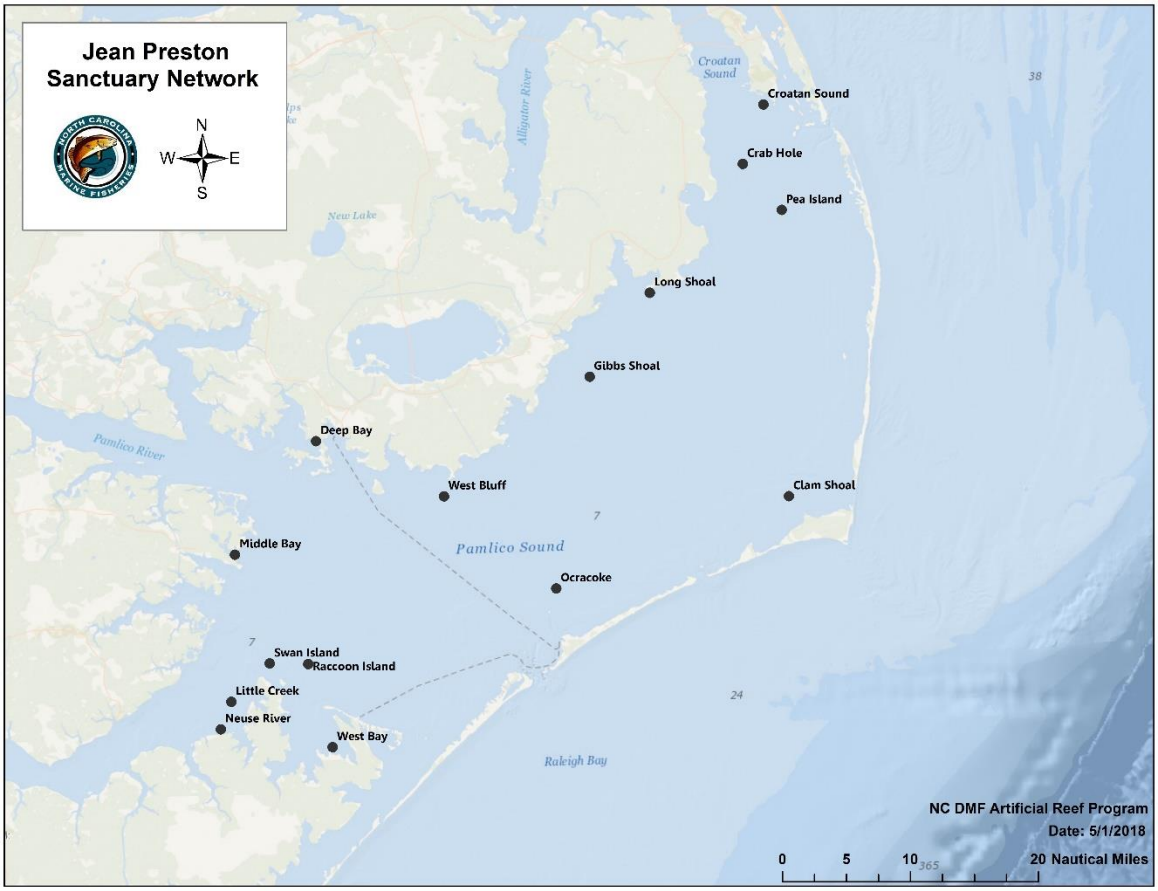


Figure 1. Oyster Sanctuary locations.

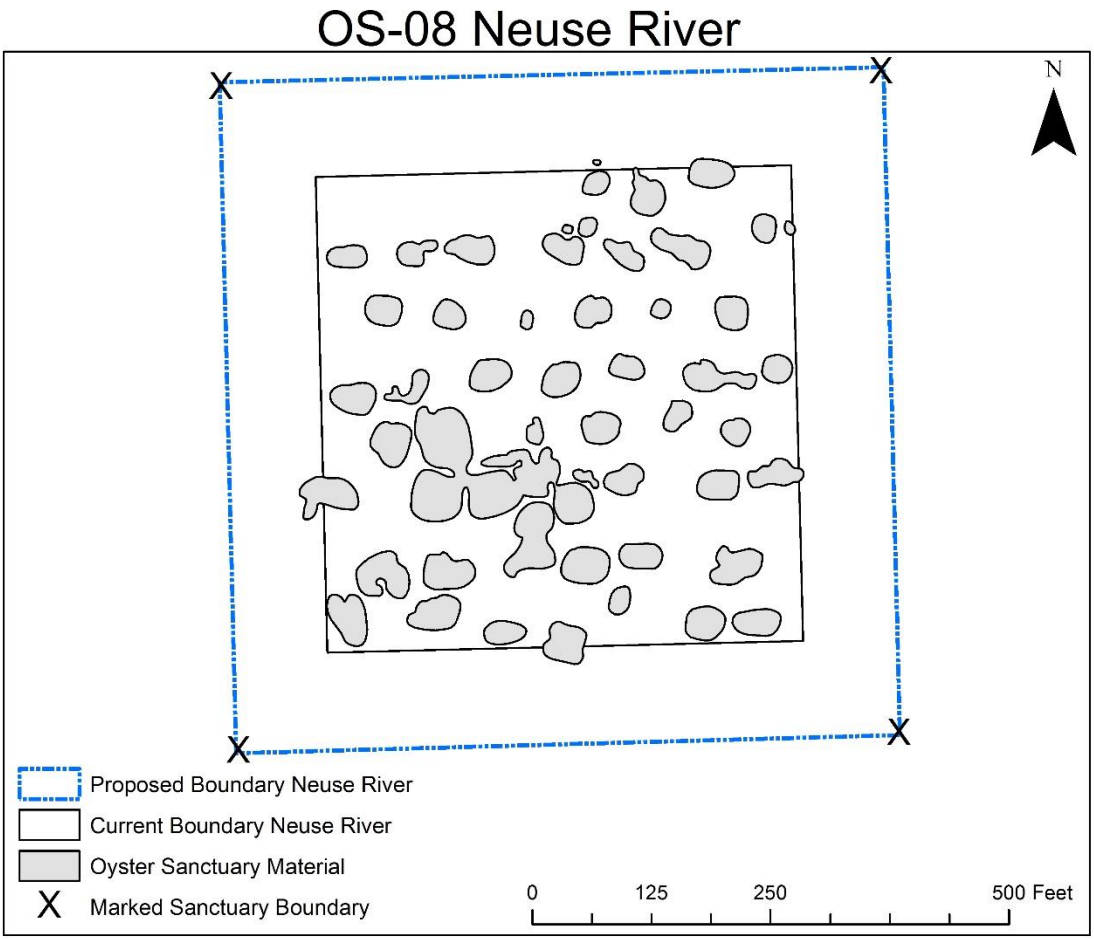


Figure 2. Neuse River Oyster Sanctuary. Proposed boundary marks 100-foot buffer from outermost material.

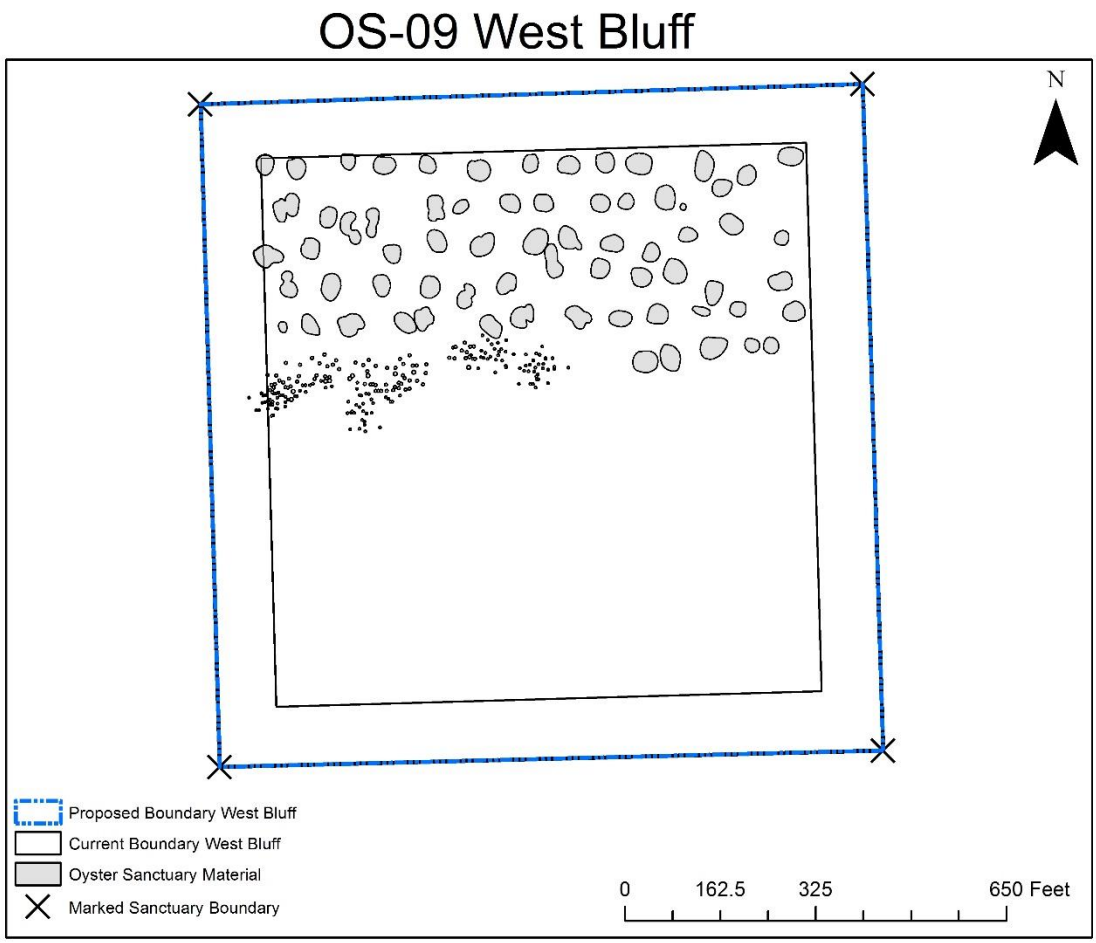


Figure 3. West Bluff Oyster Sanctuary. Proposed boundary marks 100-foot buffer from outermost material.

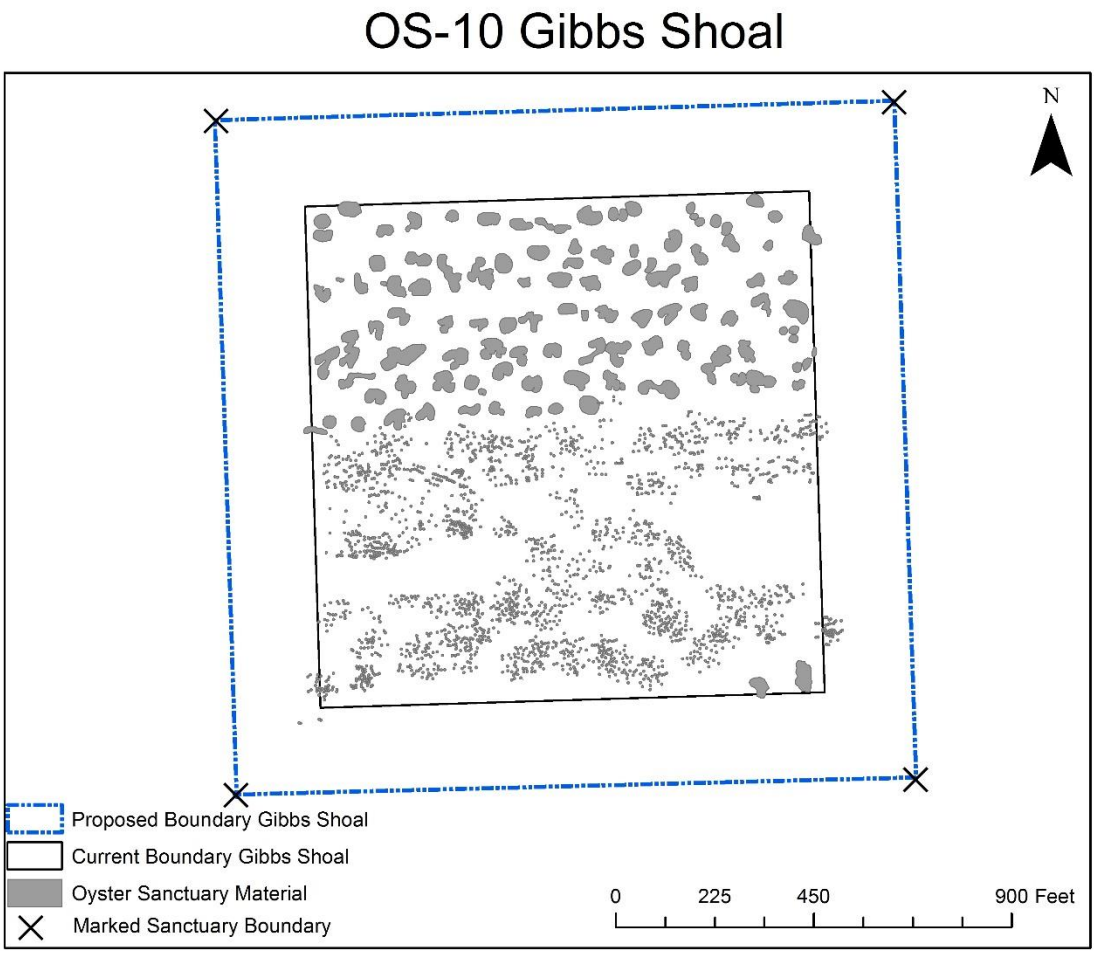


Figure 4. Gibbs Shoal Oyster Sanctuary. Proposed boundary marks 100-foot buffer from outermost material.

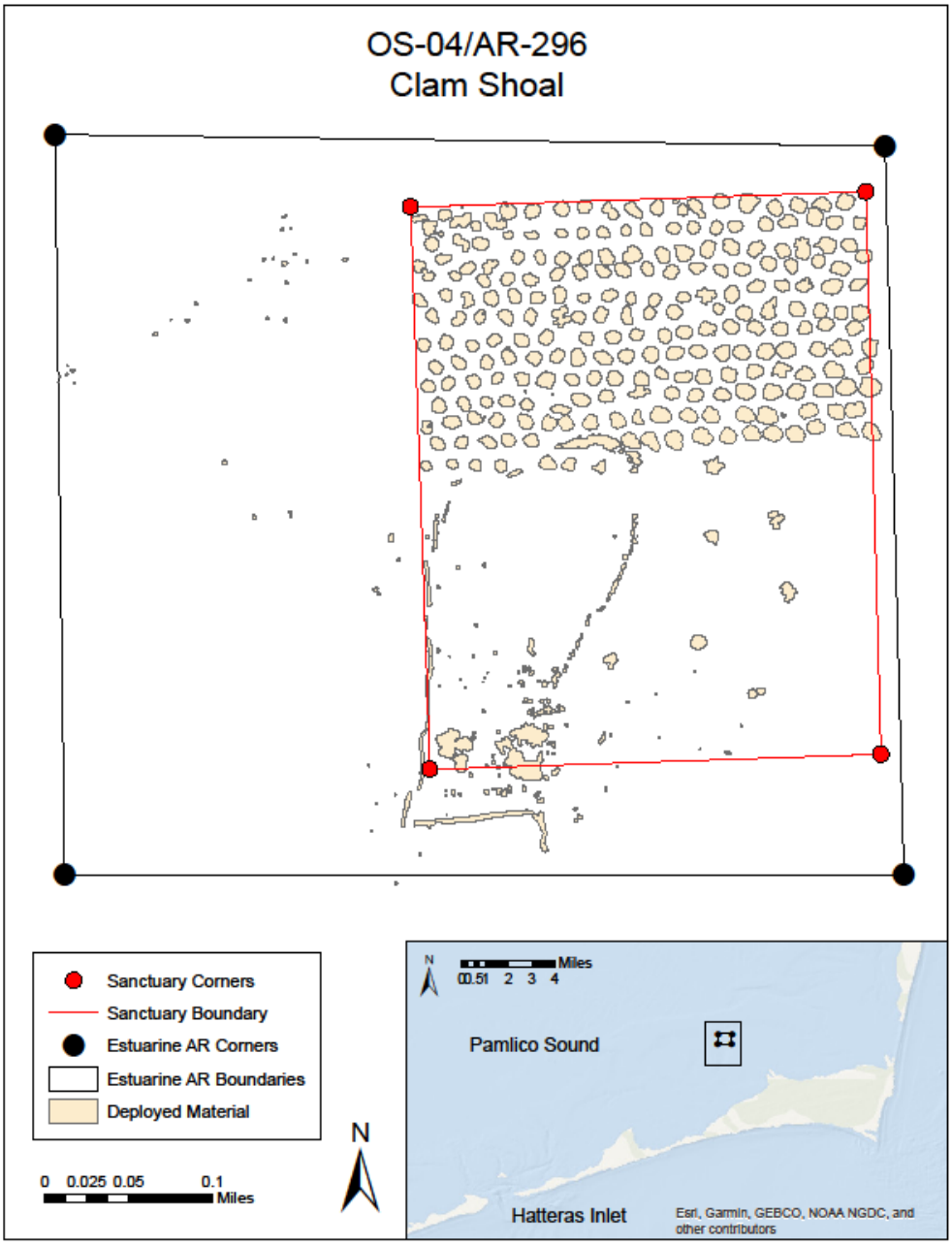


Figure 5. Map of Clam Shoal Reef (Hatteras Island Business Association Reef) and Oyster Sanctuary.

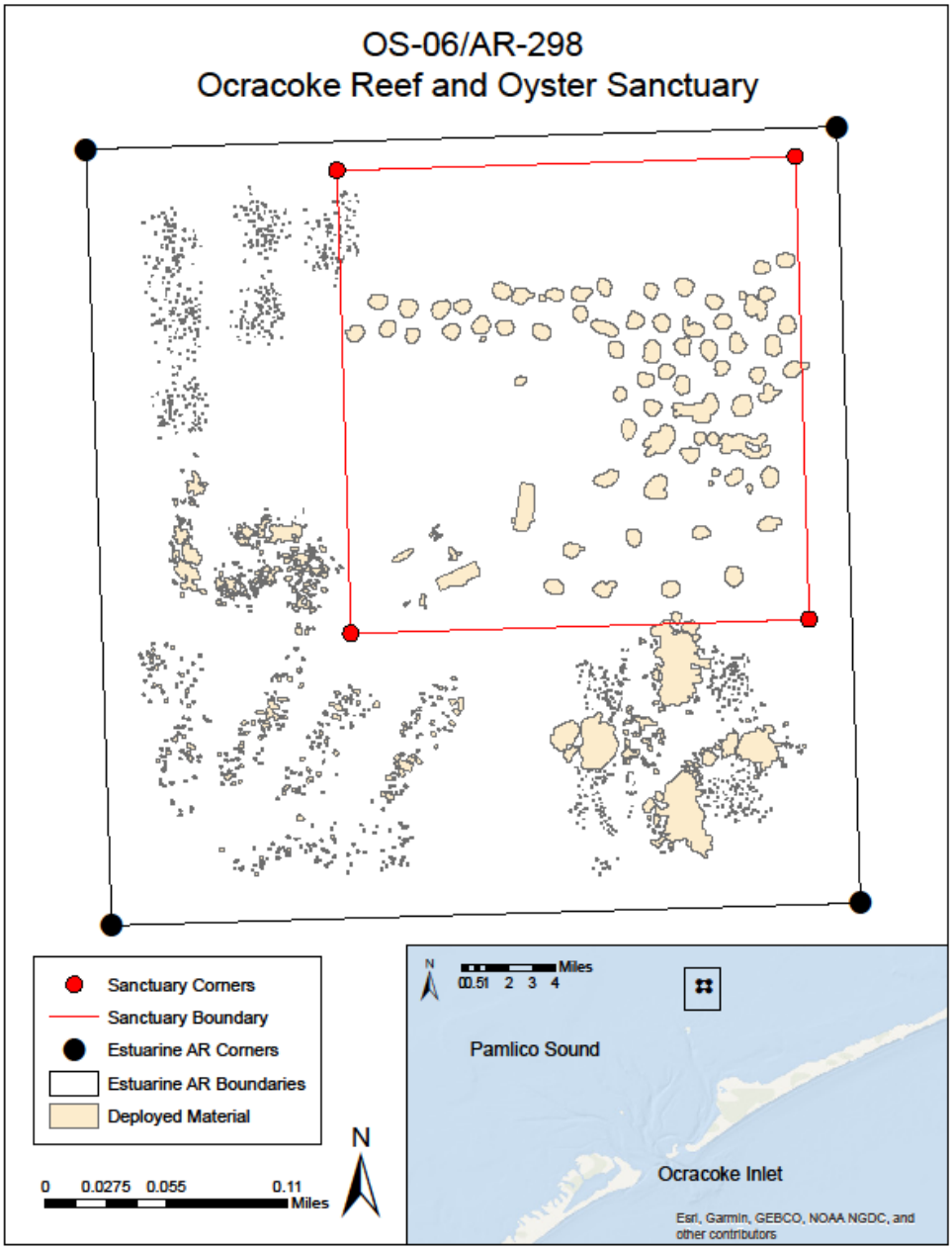


Figure 6. Map of Ocracoke Reef and Oyster Sanctuary.

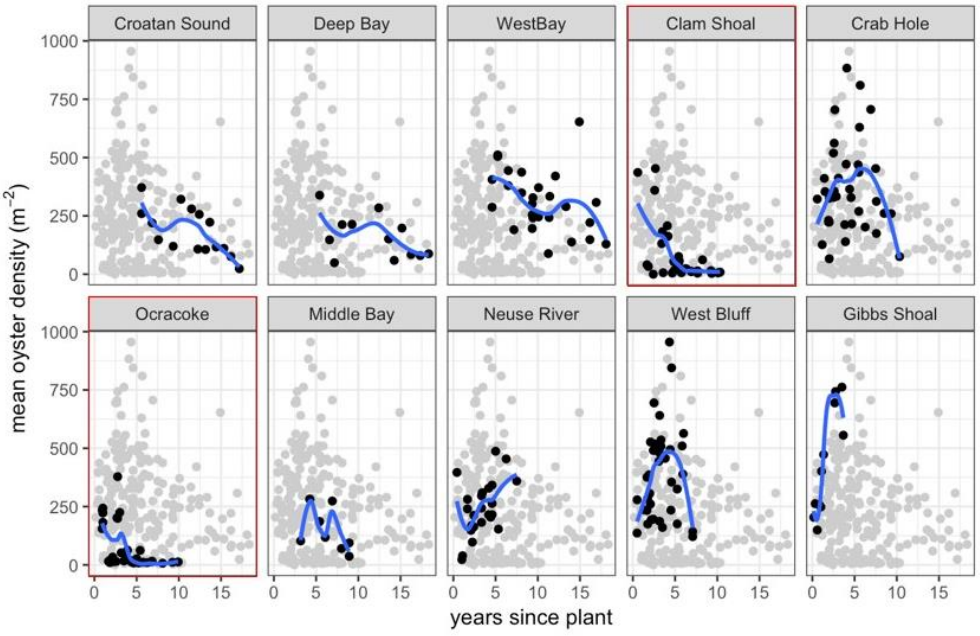


Figure 7. Oyster mean densities per site since sanctuary was planted (Z. Knorek, unpublished).

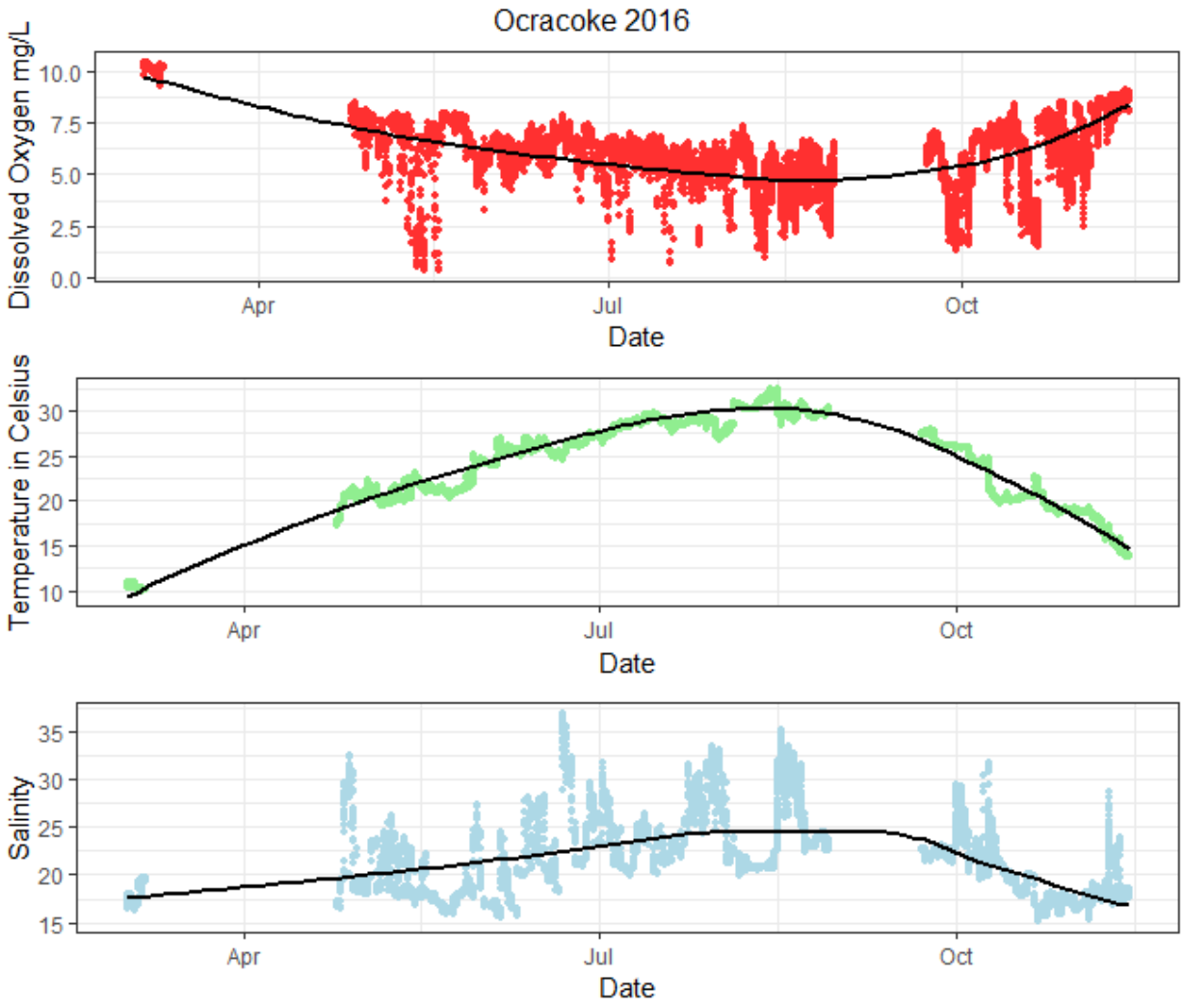
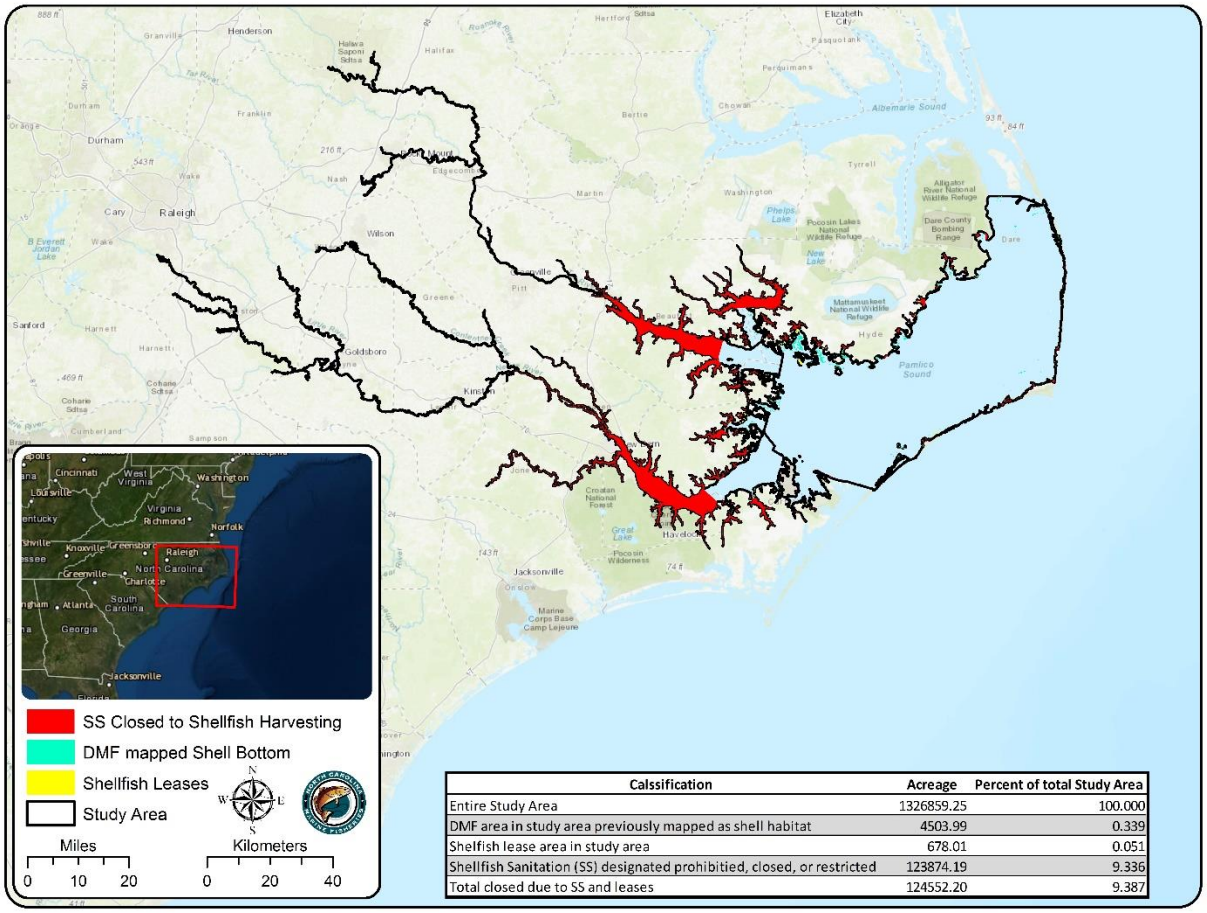


Figure 8. Water quality data collected at OS-04/AR 298 from March 2, 2016 - October 25, 2016.



Calssification	Acreage	Percent of total Study Area
Entire Study Area	1326859.25	100.000
DMF area in study area previously mapped as shell habitat	4503.99	0.339
Shelfish lease area in study area	678.01	0.051
Shellfish Sanitation (SS) designated prohibitied, closed, or restricted	123874.19	9.336
Total closed due to SS and leases	124552.20	9.387

Figure 9. Spatial analysis of region affected by proposed rule change. All existing and proposed sanctuaries are within the above study area. Analysis was conducted to identify total area, total recognized shellfish habitat, and total area closed to due shellfish leases and sanitation notices.