Blue Crab FMP

Draft Blue Crab FMP Amendment 3

DEPARTMENT OF ENVIRONMENTAL QUALITY

Marine Fisheries

NCMFC | Jason Rock and Corrin Flora | August 2019

Timeline

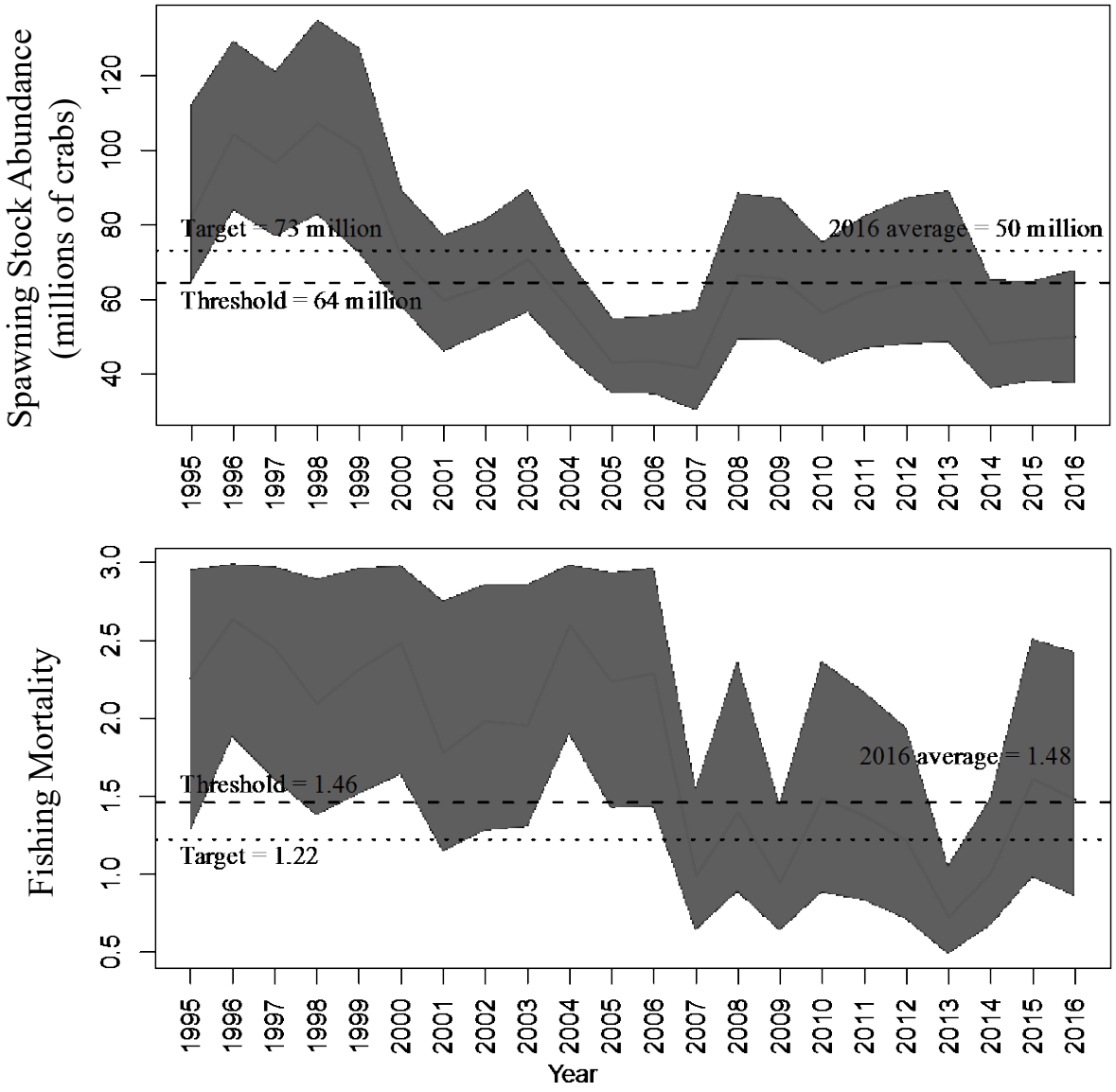
TIMELINE FOR BLUE CRAB FISHERY MANAGEMENT PLAN AMENDMENT 3 (May 1, 2018)	
MILESTONES	PROJECTED COMPLETION DATE
1. Orient AC and Discuss Issues, Goal and Objectives	September 2017-June 2018
2. Draft/Revise and Review Informational Sections and Issue Papers in the FMP and Establish NCDMF/AC Positions	June 2018- June 2019
3. Present Timeline and Goal and Objectives to NCMFC; Solicit NCMFC Input on Issues	August 2018
4. Obtain NCMFC Approval for Review of FMP	August 2019
5. Public and Committee Review of FMP	September 2019
6. Present Revised FMP to NCMFC for Selection of Preferred Management Options	November 2019
7. Review of FMP by Department and Legislative Committee	December 2019/January 2020
8. Procedural Approval of FMP and Approval of Notice of Text for Rulemaking by NCMFC	N/A
9. Direct Rules through APA Process	N/A
10. Final FMP Approval by NCMFC	February 2020
11. Selected Management Measures Effective Date	48 hours by proclamation

You are here

Issues Addressed in Amendment 3

1. Achieving sustainable harvest in the North Carolina blue crab fishery
2. Management measures beyond quantifiable harvest reductions
3. Addressing water quality concerns impacting the North Carolina blue crab stock
4. Expand crab spawning sanctuaries to improve spawning stock biomass
5. Establish a framework to implement the use of terrapin excluder devices in crab pots
6. Bottom disturbing gear in the blue crab fishery

Stock Assessment Recap



- Reference points based on Maximum Sustainable Yield (MSY)
  - Threshold at MSY
  - Target 75% of MSY
- 98% probability the blue crab stock is overfished
- 52% probability overfishing is occurring

Appendix 4.1: Achieving Sustainable Harvest In The North Carolina Blue Crab Fishery

Issue: Implement management measures to achieve sustainable harvest in the North Carolina blue crab fishery

- 2018 stock assessment determined blue crab stock is overfished (98% probability) and overfishing is occurring (52% probability)
- Harvest reduction of 0.4% (in number of crabs) is needed to end overfishing within two years
- Harvest reduction of 2.2% (in number of crabs) is needed to achieve sustainable harvest within 10 years with a 50% probability of success
- Update the adaptive management framework

Appendix 4.1: Achieving Sustainable Harvest In The North Carolina Blue Crab Fishery

- Harvest reduction from stock assessment only calculated for commercial hard blue crab fishery
- Only quantifiable management measures with reductions that fell within the range of what is needed were included
  - Mature female size limit
  - Prohibiting harvest of immature female hard crabs
  - Season closure
  - Adjusting the cull tolerance of prohibited crabs
- Ocean data excluded from analysis (data confidential and little or no landings)

Appendix 4.1: Achieving Sustainable Harvest In The North Carolina Blue Crab Fishery

Year	Estimated Harvest Reduction (%)						
	Mature Female						
	6.75" Maximum Size	6.5" Maximum Size	5" Minimum Size	5.25" Minimum Size	Prohibit Immature Female Harvest	Season Closure – March	Reduce Cull Tolerance to Zero
2011	1.6	4.2	1.2	3.9	1.2	4.5	4.5
2012	2.5	6.0	0.9	2.9	1.2	3.0	5.3
2013	2.7	6.4	1.4	3.8	1.3	0.9	2.3
2014	3.2	6.7	0.7	1.8	1.7	0.5	2.8
2015	2.4	5.4	0.3	1.6	0.9	0.9	3.8
2016	**1.5**	**4.3**	**0.9**	**4.1**	**0.5**	**5.0**	**3.6**
Average	2.3	5.4	0.9	3.0	1.1	2.5	3.8

Appendix 4.1: Achieving Sustainable Harvest In The North Carolina Blue Crab Fishery

Proposed Adaptive Management Framework for Amendment 3:

1. Update the stock assessment at least once in between full reviews of the FMP, timing at the discretion of the division
2. If the stock is overfished and/or overfishing is occurring, then management measures shall be adjusted using the director's proclamation authority
3. Any quantifiable management measure, including those not explored in this paper, with the ability to achieve sustainable harvest (as defined in the stock assessment), either on its own or in combination, may be considered
4. Use of the director's proclamation authority for adaptive management is contingent on:
    a. consultation with Northern, Southern, and Shellfish/Crustacean advisory committees
    b. approval by the Marine Fisheries Commission
5. If the stock is not overfished and overfishing is not occurring, then current management measures shall remain in place until a new benchmark stock assessment and the next scheduled review of the FMP is completed

Upon evaluation by the division, if a management measure adopted to achieve sustainable harvest (either through Amendment 3 or a subsequent Revision) is not working as intended, then it may be revisited and either: 1) revised or 2) removed and replaced as needed provided it conforms to steps 3 and 4 above.

Appendix 4.1: Achieving Sustainable Harvest In The North Carolina Blue Crab Fishery

Blue Crab AC Recommendation

- Option 18.3: 1) North of the Highway 58 Bridge: January 1 through January 31 closed season, a 6.75" mature female maximum size limit, and prohibit immature female harvest and 2) South of the Highway 58 Bridge: March 1 through March 15 closed season and prohibit immature female harvest.
  - 3.7% harvest reduction (2011-2016)
  - **3.2% harvest reduction (2016)**
- Maintain 5% cull tolerance established in 2016 Revision
- No consensus recommendation for the proposed adaptive management framework

Appendix 4.1: Achieving Sustainable Harvest In The North Carolina Blue Crab Fishery

NCDMF Recommendation

- Option 12.8: 1) 5-inch mature female minimum size limit, 2) prohibit immature female hard crab harvest, and 3) a March 1 through March 31 closure period.
  - 4.6% harvest reduction (2011-2016)
  - **6.3% harvest reduction (2016)**
- Maintain 5% cull tolerance established in 2016 Revision
- Adopt proposed adaptive management framework

Appendix 4.2: Management Options Beyond Quantifiable Harvest Reductions

Issue: Implement qualitative management measures to improve the North Carolina blue crab stock

- Qualitative management measures do not have a quantifiable harvest reduction and do not count toward sustainable harvest calculations
- However, they may positively impact recruitment and other population metrics that will aid in long-term sustainability of the fishery
- Impacts from these measures will be seen as part of the population response through an updated stock assessment

Appendix 4.2: Management Options Beyond Quantifiable Harvest Reductions

Management Measure	Sub-Option
1) Increase Cull Ring Size	a) Increase cull ring size to 2 3/8 inches b) Increase cull ring size to 2 7/16 inches
2) Number of Cull Rings	**a) Increase to 3 per pot (2016 Revision)** b) Increase to 4 per pot c) Decrease to 2 per pot
3) Placement of Cull Rings	**a) Require one cull ring in modified position (2016 Revision)** b) Require two cull rings in modified position
4) Remove Cull Ring Exemptions	a) Remove exemption for Newport River b) Remove exemption for Pamlico Sound c) Remove exemptions for Newport River and Pamlico Sound and prohibit designation of exempt areas in the future d) Re-establish proclamation authority for exemptions in Newport River and Pamlico Sound with specific criteria for use
5) Require Degradable Panels in Pots	N/A
6) Increase Crab Trawl Mesh Size to 4-inches Statewide	N/A
7) Limit Harvest of Sponge Crabs	**a) Prohibit dark sponge crab harvest from April 1 - April 30 (2016 Revision)** b) Prohibit harvest of all sponge crabs from Jan. 1 - May 31 c) Prohibit harvest of all sponge crabs year-round
8) Peeler/Soft Crab Minimum Size Limit	a) Establish 3-inch minimum size limit b) Establish 3 1/4-inch minimum size limit
9) Pot Limit	N/A
10) Fishing Time Restrictions	N/A

Appendix 4.2: Management Options Beyond Quantifiable Harvest Reductions

Blue Crab AC Recommendation

Leave in existing rules put in in 2016 and do not adopt anything else at this time. Except with 2 options on cull rings: 1) 2 cull rings in proper corner placement or 2) keeping the 3 cull rings with 1 in proper placement.

NCDMF Recommendation

Option 2a: increase number of cull rings in pots to 3

Option 3b: two cull rings placed within one full mesh of corner and the apron on opposite outside panels in the upper chamber

Option 4c: remove cull ring exemptions for Newport River and eastern Pamlico Sound and prohibit designation of exempt areas in future

Option 7c: prohibit harvest of sponge crabs year-round

Option 8a: establish 3-inch minimum size limit for peeler and soft crabs

Appendix 4.3: Addressing Water Quality Concerns Impacting The North Carolina Blue Crab Stock

Issue: Improving water quality by addressing pollution sources, especially agricultural runoff, may positively impact the North Carolina blue crab stock

- Environmental Management Commission and Coastal Resources Commission have authority over activities and development affecting water quality
- Agricultural contributions to nonpoint source water pollution are managed primarily through voluntary participation
- 2012 mass mortality event of peeler blue crabs
  - Investigated by NCDA&CS Pesticide Division, NCDMF, and NCDWR
  - Collaborative effort to educate the public and prevent future incidents
- Water quality restoration projects take time and collaboration
  - Neuse River Basin in 1998 set goal of reducing nitrogen load by at least 30%
  - Have yet to achieve goal

Appendix 4.3: Addressing Water Quality Concerns Impacting The North Carolina Blue Crab Stock

The NCMFC has no regulatory authority over land use and other practices that impact water quality

The NCMFC could:

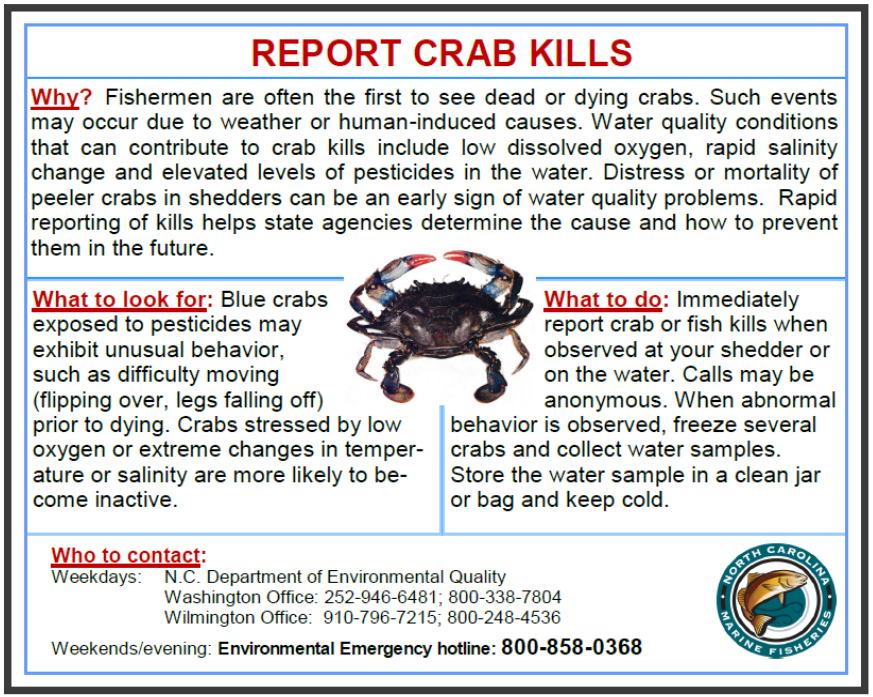
1. Highlight problem areas and advise other regulatory agencies (Coastal Resources Commission, Environmental Management Commission, DEQ Division of Water Quality, Department of Agriculture and Consumer Services, DEQ Division of Energy, Mineral and Land Resources, US Army Corps of Engineers, and local and state governments) on preferred options and potential solutions.
2. Push to create a joint interagency working group to facilitate cooperation and efforts in monitoring and restoring water quality. This should include coastal monitoring which is currently limited; including increased USGS sampling downstream from wastewater treatment plants.
3. Work with state agencies and interest groups to support maintaining the Clean Water Act at a national level and striving to meet or exceed recommendations.

Appendix 4.3: Addressing Water Quality Concerns Impacting The North Carolina Blue Crab Stock

4. Task the CHPP steering committee to prioritize blue crab water quality impacts. These should include hypoxia and toxins, while researching specific sources of water quality degradation and their effects on blue crabs.
5. Send letters to the NCDA&CS Division of Forest Resources, Division of Environmental Programs, Division of Soil and Water Conservation, and Department of Transportation to share their concerns about water quality and the importance of Best Management Practices, especially buffer zones abutting coastal waters.
6. Invite these agencies to future NCMFC meetings in order to present mitigation efforts on water quality impacts, monitoring, and rehabilitation. These may include pesticide and herbicide policies, Best Management Practices reviews, and enforcement.

Appendix 4.3: Addressing Water Quality Concerns Impacting The North Carolina Blue Crab Stock

7. Public outreach is recommended to encourage the public to report crab and fish kills. One possible source of outreach may include a handout when licenses and permits are purchased and/or renewed (recreational and commercial licenses, and shedding permits) which informs and directs the public how and what to report for these events



REPORT CRAB KILLS

Why? Fishermen are often the first to see dead or dying crabs. Such events may occur due to weather or human-induced causes. Water quality conditions that can contribute to crab kills include low dissolved oxygen, rapid salinity change and elevated levels of pesticides in the water. Distress or mortality of peeler crabs in shedders can be an early sign of water quality problems. Rapid reporting of kills helps state agencies determine the cause and how to prevent them in the future.

What to look for: Blue crabs exposed to pesticides may exhibit unusual behavior, such as difficulty moving (flipping over, legs falling off) prior to dying. Crabs stressed by low oxygen or extreme changes in temperature or salinity are more likely to become inactive.

What to do: Immediately report crab or fish kills when observed at your shedder or on the water. Calls may be anonymous. When abnormal behavior is observed, freeze several crabs and collect water samples. Store the water sample in a clean jar or bag and keep cold.

Who to contact:

Weekdays: N.C. Department of Environmental Quality
Washington Office: 252-946-6481; 800-338-7804
Wilmington Office: 910-796-7215; 800-248-4536

Weekends/evening: **Environmental Emergency hotline: 800-858-0368**

NORTH CAROLINA MARINE FISHERIES

Appendix 4.3: Addressing Water Quality Concerns Impacting The North Carolina Blue Crab Stock

Blue Crab AC Recommendation

- Support all management options in this paper.
- Support making the highest priority option four tasking the CHPP steering committee to what is suggested here and follow up with each of the other recommendations as that step is justified.
- Have the habitat staff report back to the Shellfish/Crustacean AC with progress.

NCDMF Recommendation

- Support all management options presented
- Recommend Option 4 as the highest priority
- Division habitat staff shall regularly report back to the Shellfish/Crustacean AC with progress on each management option

Appendix 4.4: Expand Crab Spawning Sanctuaries To Improve Spawning Stock Biomass

Issue: Consider expansion of existing Crab Spawning Sanctuaries and designation of new sanctuaries to protect mature females prior to spawning

- Crab Spawning Sanctuaries designated in 1965 for Oregon, Hatteras, Ocracoke, Drum, and Barden inlets
- Closed to use of trawls, pots, and mechanical methods for oysters and clams and to the taking of crabs with any commercial fishing equipment from March 1 through August 31
- No sanctuaries exist south of Barden Inlet (14 inlets total)
- Research has shown existing sanctuaries are largely ineffective due to their small size
- Establishing migration corridors may increase the number of mature females reaching the spawning grounds

Appendix 4.4: Expand Crab Spawning Sanctuaries To Improve Spawning Stock Biomass

Blue Crab AC Recommendation

- Keep Oregon, Hatteras, and Ocracoke inlets the same and change Drum and Barden inlets to proposed boundaries
- Add spawning sanctuaries from Beaufort through Tubbs inlets using AC recommended boundaries with a closure period of March 1 through October 31 with the same restrictions as existing sanctuaries

Appendix 4.4: Expand Crab Spawning Sanctuaries To Improve Spawning Stock Biomass

NCDMF Recommendation

- Expand boundaries as presented for Oregon, Hatteras, Ocracoke, and Barden inlets
- Move boundary for Drum Inlet crab spawning sanctuary as presented
- Concur with AC recommendations for Beaufort, Bogue, Bear, Browns, New River, Topsail, Rich, Mason, Masonboro, Carolina Beach, Shallotte, Lockwood Folly, and Tubbs inlets
- Use NCDMF recommended boundary for Cape Fear River crab spawning sanctuary
- Concur with AC recommendation of a March 1 through October 31 closure for Beaufort Inlet through Tubbs Inlet sanctuaries with same restrictions as existing sanctuaries
- Establish a crab spawning sanctuary to serve as a migration corridor on the east side of Croatan Sound, as presented, closed to blue crab harvest from May 16 through July 15

Appendix 4.5: Establish A Framework To Implement The Use Of Terrapin Excluder Devices In Crab Pots

Issue: Establish a framework for developing proclamation use criteria and terrapin excluder device specifications to reduce interactions of diamondback terrapins with crab pots

- Diamondback terrapins are a species of concern in NC and most states they occur
  - State endangered species in RI and MA
  - Federal species of concern in Dare, Pamlico, and Carteret counties
- Amendment 2 (2013) NCMFC recognized diamondback terrapin as a wildlife resource in need of protection from crab pots and sought to proactively implement conservation measures
- Proclamation authority exists in rule but cannot be used until use criteria are approved by the NCMFC
- Develops use criteria and create a stepwise process involving:
  - Public comment
  - Advisory committee consultation
  - Scientific data
- Result will be creation of Diamondback Terrapin Management Areas (DTMAs)

Appendix 4.5: Establish A Framework To Implement The Use Of Terrapin Excluder Devices In Crab Pots

Criteria 1

- The following terrapin excluder devices shall be considered approved for use in DTMAs:
  - the pre-made plastic shell width limiting “SC design” measuring 5.1-6.4 x 7.5 cm (2-2.5 x 3.1 in.)
  - any pre-made plastic shell height limiting excluder devices with an internal opening no larger than 4 x 16 cm (1.6 x 6.3 in.) height by width
  - any shell height limiting excluders made from at least 10-gauge galvanized wire and hog rings with an internal opening no larger than 4 x 16 cm (1.6 x 6.3 in.) height by width
- A diamondback terrapin bycatch reduction workgroup of fisherman, academic researchers, and managers will be created.
- Additional or alternative terrapin excluder devices or modified pot designs recommended through the workgroup may be approved by NCDMF, in consultation with the Shellfish/Crustacean Advisory Committee, provided they have been shown to reduce impacts to blue crab catch or cost to fisherman and maintain the level of diamondback terrapin protection offered by the terrapin excluder devices initially approved and listed above.

Appendix 4.5: Establish A Framework To Implement The Use Of Terrapin Excluder Devices In Crab Pots

Criteria 2

- As peak captures of diamondback terrapins in crab pots occur in early spring as individuals emerge and become active, it is important to account for annual variably in spring temperature and have terrapin excluder devices employed before diamondback terrapins become active.
- Based on NCDMF interactions and research conducted in North Carolina, terrapin excluder devices shall be used in designated DTMAs from March 1 through October 31 to cover the entirety of the potential diamondback terrapin active season to limit diamondback terrapin bycatch.
- Both commercial and recreational crab pots would be required to use terrapin excluder devices when fishing in DTMA's during the diamondback terrapin active season.

Criteria 3

- Based on available data, areas both less than 250 m (820 feet) from any shoreline and less than 3 m (9.8 feet) deep at low tide shall be generally identified as areas of potential overlap between diamondback terrapins and the crab pot fishery.
- These criteria may be revised as additional research is completed.

Appendix 4.5: Establish A Framework To Implement The Use Of Terrapin Excluder Devices In Crab Pots

Criteria 4

Diamondback terrapin presence and overlap with the crab pot interaction zone shall be verified using any of the following: data from the NCDMF, NC National Heritage Program, other agencies, universities, and peer-reviewed published literature.

Criteria 5

- Boundaries of DTMAs shall be drawn to incorporate a significant portion of the potential interaction zone containing verified population(s) of diamondback terrapins and to minimize the inclusion of areas not identified in the potential interaction zone.
- Boundaries of existing natural or conservation areas may be used as DTMA boundaries to simplify enforcement and support the conservation goals of these areas.

Appendix 4.5: Establish A Framework To Implement The Use Of Terrapin Excluder Devices In Crab Pots

Criteria 6

The division shall produce an information paper (with the information outlined above), present the information to the appropriate regional advisory committee for their input, inform the public of the proposed DTMA via a press release, hold a 30-day public comment period, and contact local crab fishermen and diamondback terrapin researchers for their comment.

Criteria 7

The division will issue a proclamation and mark the boundaries of the DTMA at least one month prior to its effective date.

Appendix 4.5: Establish A Framework To Implement The Use Of Terrapin Excluder Devices In Crab Pots

Additional Discussion:

- Targeted approach improves localized protection of diamondback terrapins and minimizes impacts to the crab fishery
- Uses best available scientific data and allows for new data to be incorporated in the future
- Minimizes inclusion of areas too deep or far from shore
- Addressing this issue may improve fishery ratings from groups like Seafood Watch and aid in sustainability certifications from groups like the Marine Stewardship Council

Appendix 4.5: Establish A Framework To Implement The Use Of Terrapin Excluder Devices In Crab Pots

Blue Crab AC Recommendation

Use science on locally specific pot funnel design to reduce terrapins and identify individual creeks with terrapin population hot spots that would be closed to potting.

NCDMF Recommendation

Use the criteria as outlined in this paper for the establishment of DTMAs

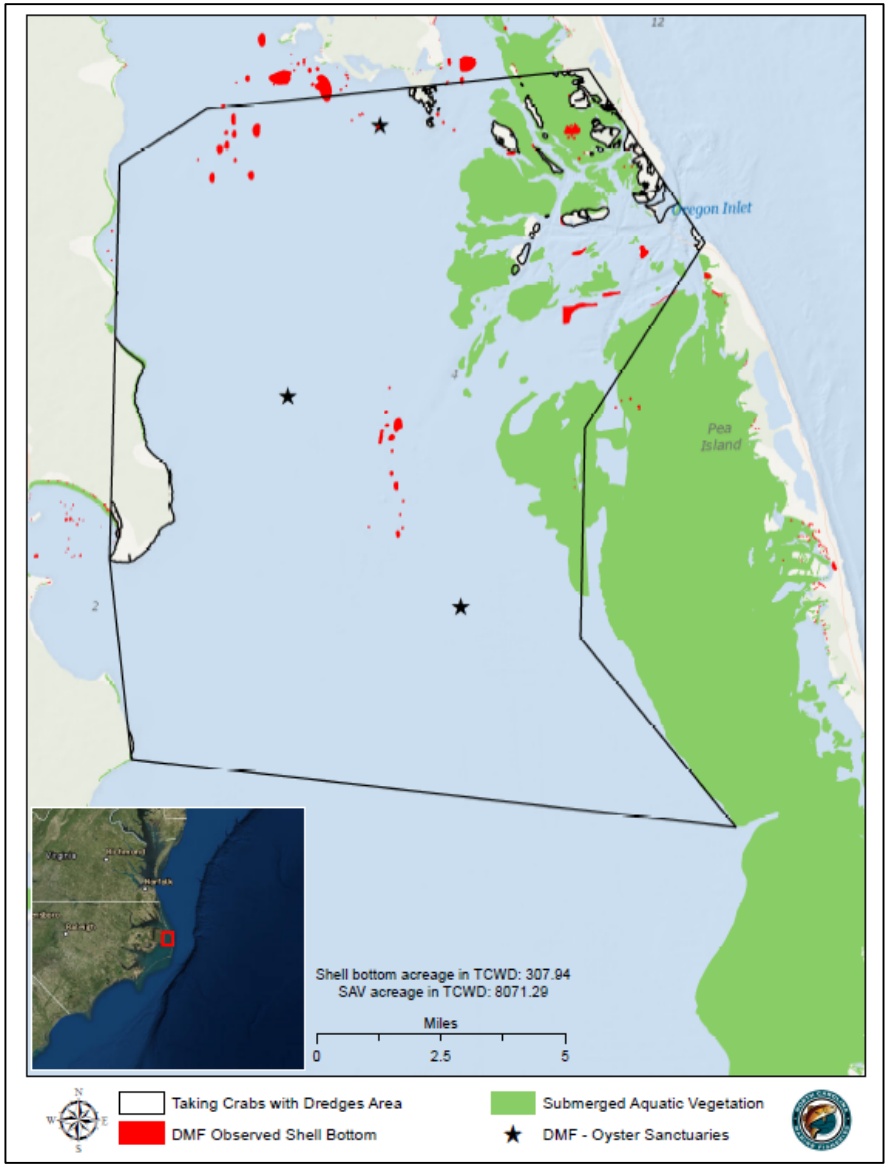
Appendix 4.6: Bottom Disturbing Gear In The Blue Crab Fishery

Issue: Limit the use of bottom disturbing gear (dredges and trawls) in the blue crab fishery to reduce habitat impacts and improve spawning potential of mature females

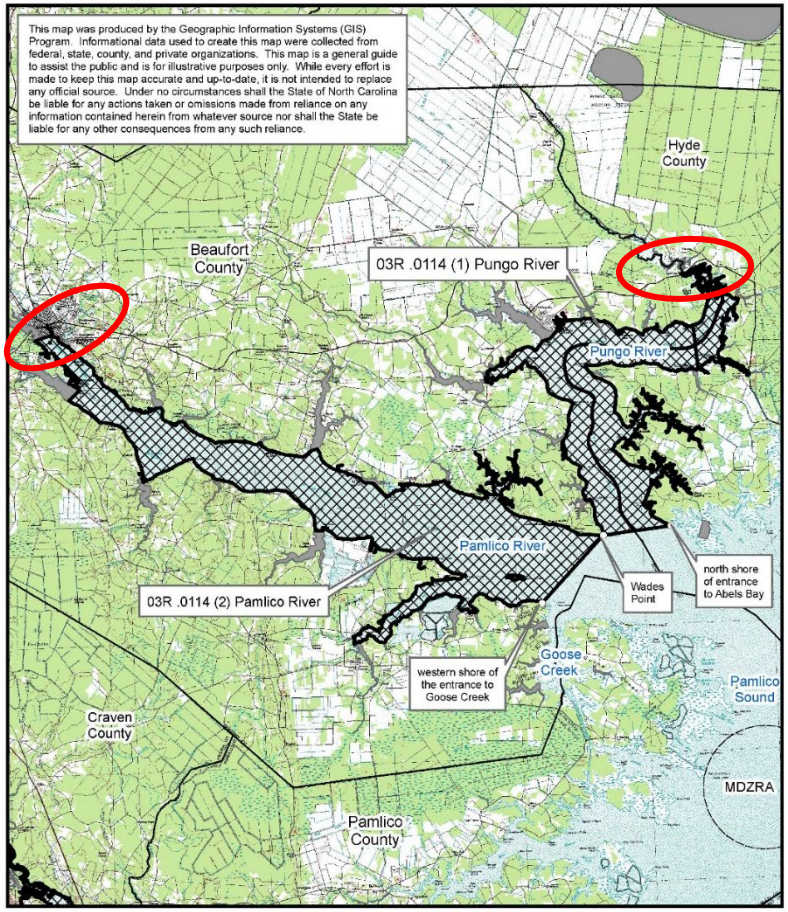
- Trawl and dredge fisheries have historical importance and cultural significance
- Both gears present fishery and habitat concerns
- May predominantly catch overwintering mature females in certain areas

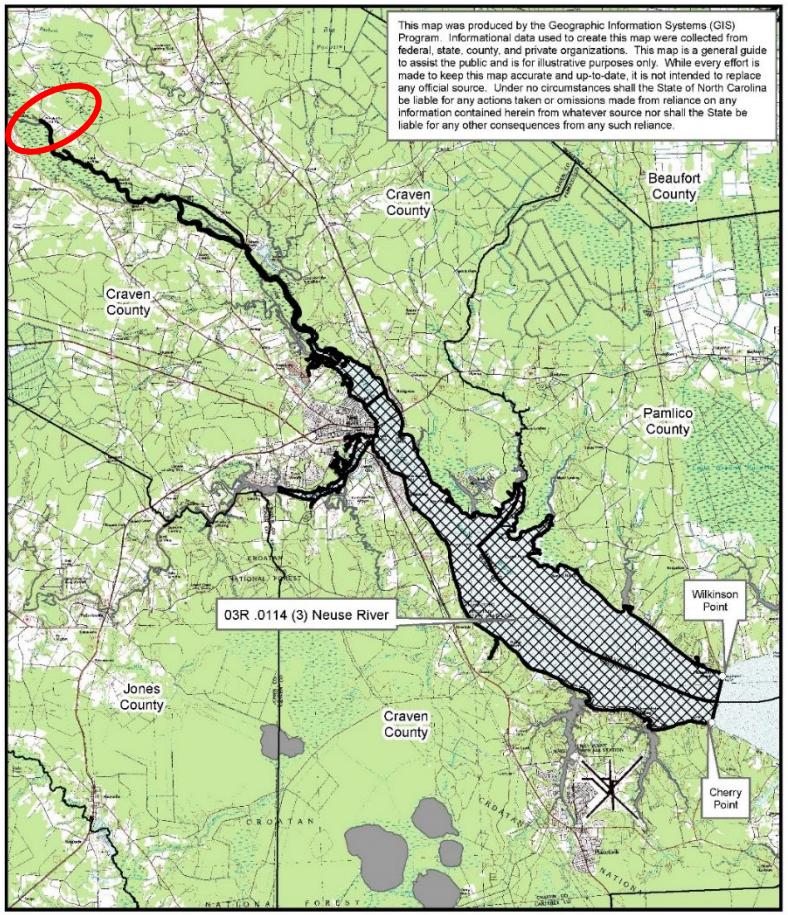
Appendix 4.6: Bottom Disturbing Gear In The Blue Crab Fishery

- Crab dredges limited to northern Pamlico Sound
- Open Jan. 1 – March 1
- Currently closed as part of 2016 Revision to Amendment 2
- Incidental harvest while oyster dredging is still permitted
- Oyster dredge trip limit allows targeted crab dredging outside of designated crab dredge area
- Less than 0.1% of entire blue crab fishery by landings and ex-vessel value



Appendix 4.6: Bottom Disturbing Gear In The Blue Crab Fishery





Appendix 4.6: Bottom Disturbing Gear In The Blue Crab Fishery

Blue Crab AC Recommendation

Not adopt any of the recommended management options on crab dredge and leave crab trawl lines as is.

NCDMF Recommendation

Option 1a: prohibit taking of crabs with crab dredges

Option 1d: reduce the bycatch limit from oyster dredges to 10% of the total weight of the oyster and crab catch or 100 pounds, whichever is less

Option 2a: prohibit use of crab trawls in areas where shrimp trawls are already prohibited in the Pamlico, Pungo, and Neuse rivers

Next Steps

- August 2019: NCMFC vote to send draft Amendment 3 out for public comment and standing and regional advisory committee review
- November 2019: NCMFC vote to select preferred management options
- Dec. 2019/Jan. 2020: DEQ and legislative review
- Feb. 2020: NCMFC vote on final approval of Amendment 3

Questions?