

See BCFMP Section 11 PRINCIPAL ISSUES AND MANAGEMENT OPTIONS for specific issue papers which contain an in-depth summary of each issue (attached BCFMP pages 162-328).

See Table 4.1.1 (below) for a summary of the issues and recommendations.

Section 4.1 SYNOPSIS OF MANAGEMENT RECOMMENDATIONS (BCFMP pages 2-5)

Table 4.1.1 Synopsis of management recommendations from NCDMF and the Blue Crab Advisory Committee (AC). Differences between the two sets of recommendations are shown by underlining.

ISSUE	NCDMF RECOMMENDATIONS	AC RECOMMENDATIONS	REGULATORY ACTION
Stock Protection			
11.1 Adaptive management framework for the North Carolina blue crab stock AC vote: unanimously in favor of 1, 2, & 3 (8/22/11)	Option 1: Repeal the current female stock conservation management trigger. <u>Continue existing sampling programs to maintain baseline information for the Traffic Light method.</u>	1. Repeal the current female stock conservation management trigger. 2. <u>Leave management of the sanctuaries as they are now.</u> 3. <u>Eliminate the harvest of female crabs carrying sponge but allow no more than a 3% culling tolerance by number.</u>	Rule change to 03L .0201, 03L .0203, 03L .0204, 03L .0205, 03L .0206, 03L .0209, and 03J .0301.
#3. Revisit allow the continued taking of sponge crabs: 3 in favor, 4 against and 1 abstention (9/19/11)	<u>Adopt adaptive management framework based on the Traffic Light Stock Assessment and the proposed moderate and elevated management levels for recruit, adult, and production stock characteristics.</u> <u>Note: All regulations from the management levels would be through proclamation.</u>	4. <u>Support the principle behind the adaptive management system as opposed to the system that is currently in place.</u>	
#4. 7 in favor and 1 against (9/19/11)		5. <u>Improve data collection and consider fishery dependent and independent data to apply to the stoplight method.</u>	
#5. Unanimously in favor (9/19/11)	Option 2: <u>NCDMF would like further public input to consider the recommendations in Option 1 with the addition of prohibition on sponge crab harvest in rule.</u>	6. <u>Prohibit the harvest of v-apron immature hard crab females 5-inches or greater.</u>	
#6. 7 in favor and 1 against (9/19/11)			
User Conflicts			
11.2 Crab pot limit for southern Bogue Sound AC vote: 6 in favor; 3 abstained (4/11/11)	Status quo – No change.	Status quo – No change.	None
11.3 Consider allowing non-pot areas in the Pungo River area to be re-designated as open to pots AC vote: unanimously in favor (5/23/11)	Open the haul net areas all the time by rule in the Pungo River and keep status quo in the Long Point area on the Pamlico River.	Open the haul net areas all the time by rule in the Pungo River and keep status quo in the Long Point area on the Pamlico River.	Rule change to 03R .0107.

Summary Blue Crab FMP Issues/Recommendations for Public Comment Meetings - Dec. 2011

Table 4.1.1 Synopsis of management recommendations from NCDMF and the Blue Crab AC. Differences between the two sets of recommendations are shown by underlining.

ISSUE	NCDMF RECOMMENDATIONS	AC RECOMMENDATIONS	REGULATORY ACTION
Clarification of Rules			
11.4 Incorporate the lower Broad Creek closure of pot area into rule AC vote: unanimously in favor (5/2/11)	Modify the rule to include the lower Broad Creek area that is closed to crab pots from June 1 through November 30.	Modify the rule to include the lower Broad Creek area that is closed to crab pots from June 1 through November 30.	Rule change to 03R .0107.
11.5 Clarify crab dredging restrictions AC vote: unanimously in favor (5/2/11)	Amend the rule to match harvest management.	Amend the rule to match harvest management.	Rule change to 03L .0203.
11.6 Incorporate the Pamlico Sound crab trawling proclamation into rule 15A NCAC 03L .0202 AC vote: unanimously in favor of putting proc. into Rule (5/2/11) Motion to <u>repeal proclamation authority for the Director in the current rule failed: 2 in favor, 2 against, and 4 abstaining (9/19/11)</u>	Modify Rule 15A NCAC 03L .0202 to incorporate the long-standing provisions of Proclamation SH-5-2007 (Pamlico Sound four inch mesh crab trawl line), and retain the Director's proclamation authority to restrict crab trawl mesh size.	Modify Rule 15A NCAC 03L .0202 to incorporate the long-standing provisions of Proclamation SH-5-2007 (Pamlico Sound four inch mesh crab trawl line), and retain the Director's proclamation authority to restrict crab trawl mesh size.	Rule change to 03L .0202
11.7 Explore options for escape ring exemptions in hard crab pots to harvest peeler crabs AC vote: unanimously in favor (7/25/11)	Amend the current rule to use type of bait instead of pot mesh size to define escape ring requirements in a crab pot. Repeal the proclamation authority that allows for exempting the escape ring requirement in order to allow the harvest of peeler crabs.	Amend the current rule to use type of bait instead of pot mesh size to define escape ring requirements in a crab pot. Repeal the proclamation authority that allows for exempting the escape ring requirement in order to allow the harvest of peeler crabs.	Rule change to 03J. 0301.
11.8 Convert crab pot escape ring proclamation exemptions for mature females into rule AC vote: unanimously in favor (6/13/11)	Adopt the <u>no trawl line along the Outer Banks in Pamlico Sound</u> as the new boundary in Pamlico Sound, and the Newport River boundaries as delineated in the proposed rule as new boundaries for the area where closure of escape rings to take small mature females is allowed.	Adopt the <u>four inch mesh size crab trawl line</u> as the new boundary in Pamlico Sound, and the Newport River boundaries as delineated in the proposed rule as new boundaries for the area where closure of escape rings to take small mature females is allowed.	Rule change to 03J. 0301. New Rule 03R .0118.

Table 4.1.1 Synopsis of management recommendations from NCDMF and the Blue Crab AC. Differences between the two sets of recommendations are shown by underlining.

ISSUE	NCDMF RECOMMENDATIONS	AC RECOMMENDATIONS	REGULATORY ACTION
Clarification of Rules			
11.9 Correction of peeler trawl exception rule AC vote: unanimously in favor (9/19/11)	Modify Rule 15A NCAC 03J .0104 (b)(4) TRAWL NETS to correctly reference the Pamlico, Back and Core sounds as the areas in which the Director can open peeler trawling by proclamation.	Modify Rule 15A NCAC 03J .0104 (b)(4) TRAWL NETS to correctly reference the Pamlico, Back and Core sounds as the areas in which the Director can open peeler trawling by proclamation.	Rule change to 03J. 0104.
11.10 Blue crab size limit and culling tolerance AC vote: unanimously in favor (4/4/11)	Modify rule to clearly state the intent of the exceptions, culling tolerance, and separation requirements for the various categories of crabs.	Modify rule to clearly state the intent of the exceptions, culling tolerance, and separation requirements for the various categories of crabs	Rule change to 03L .0201.
Harvest Practices			
11.11 Allow floating crab pot lines in areas where obstructions exist AC vote: unanimously in favor (5/2/11)	Status quo, continue with non-floating line in crab pots.	Status quo, continue with non-floating line in crab pots.	None
11.12 Diamondback terrapins interactions with the blue crab fishery in North Carolina AC vote: unanimously in favor of proclamation authority and developing criteria for use (7/25/11) Unanimously in favor of <u>excluder device of 2-inches by 6-inches</u> (6/13/11)	Establish (1) proclamation authority for requiring terrapin excluder devices in crab pots; and (2) a framework for developing proclamation use criteria and excluder specifications which may extend until after adoption of the amendment. The recommendation is contingent on (1) consultation with the Crustacean AC on developing criteria; and (2) no use of the proclamation authority until criteria are approved by the MFC.	Establish (1) proclamation authority for requiring terrapin excluder devices in crab pots; and (2) a framework for developing proclamation use criteria and excluder specifications which may extend until after adoption of the amendment. The recommendation is contingent on (1) consultation with the Crustacean AC on developing criteria; (2) no use of the proclamation authority until criteria are approved by the MFC; and <u>(3) a terrapin excluder device of 2-inches by 6-inches located in all lower entrance tunnels to allow blue crab catch.</u>	Rule change to 03L .0204.
11.13 Multiple pots to a single buoy AC vote: 4 in favor; 1 against; 2 abstained (6/13/11). Not to exceed 2 pots - unanimously in favor (10/3/11)	<u>Status quo: do not allow multiple pots to a single buoy.</u>	<u>Allow proclamation authority for multiple pots on a line not to exceed 2 pots per buoy.</u>	AC option - Rule change to 03J .0301.

Summary Blue Crab FMP Issues/Recommendations for Public Comment Meetings - Dec. 2011

Table 4.1.1 Synopsis of management recommendations from NCDMF and the Blue Crab AC. Differences between the two sets of recommendations are shown by underlining.

ISSUE	NCDMF RECOMMENDATIONS	AC RECOMMENDATIONS	REGULATORY ACTION
<p>Harvest Practices</p> <p>11.14 Pot loss and ghost pot bycatch mortality AC vote: unanimously in favor (10/3/11)</p>	<p><u>Encourage crab potters in areas of high pot loss to incorporate methods to reduce pot loss. Develop and provide information on potential methods to reduce pot loss.</u></p> <p><u>Encourage crab potters in areas of high pot loss to incorporate escape panel designs in pots to reduce potential ghost fishing impacts. Develop and provide information on potential methods and materials to reduce ghost fishing impacts.</u></p>	<p><u>Status quo for both minimizing pot loss and reducing ghost pot fishing mortality.</u></p>	<p>None</p>
<p>Environmental Factors</p> <p>10.4 Habitat and water quality recommendations AC vote: 5 in favor and 1 against (10/3/11)</p>	<p><u>Approve recommendations in Section 10.4 (see recommendations below).</u></p>	<p><u>Support all management recommendations except numbers 10, 11, and 12 in the habitat recommendations (Section 10.4) and number 6 (Section 10.5) in the research recommendations.</u></p>	<p>None; Follows the Coastal Habitat Protection Plan implementation strategy (Shown below from Section 10.0).</p>

See BCFMP Section 10.0 ENVIRONMENTAL FACTORS (BCFMP pages 129-161) for a discussion of environmental information. Habitat and water quality recommendations and research needs from this section are outlined below.

Section 10.4 ENVIRONMENTAL FACTORS RECOMMENDED MANAGEMENT STRATEGY
(from BCFMP page 160)

Suitable and adequate habitat is a critical element in the ecology and productivity of estuarine systems. Degradation or improvement in one aspect of habitat may have a corresponding impact on water quality. Maintenance and improvement of suitable estuarine habitat and water quality is critical to successfully managing blue crab stocks. Below are the 2010 CHPP Recommendations and management needs that could be beneficial to protecting and improving habitat and water quality utilized by blue crab.

Habitat Recommendations (from BCFMP pages 160-161)

1. Identify and designate Strategic Habitat Areas (SHAs) that will enhance protection of the blue crab.
2. Identify, research, and designate additional areas as Primary Nursery Areas that may be important to blue crabs as well as other fisheries.
3. Continue to map blue crab spawning areas and evaluate any that need to adjust or expand the boundaries or restrictions of the crab spawning sanctuaries based on recent research.
4. Remap and monitor SAV in North Carolina to assess distribution and change over time.
5. Restore coastal wetlands to compensate for previous losses and enhance habitat and water quality conditions for the blue crab.
6. Work with CRC to revise shoreline stabilization rules to adequately protect riparian wetlands and shallow water habitat and significantly reduce the rate of shoreline hardening.
7. Develop and implement a comprehensive coastal marina and dock management plan and policy to minimize impacts to SAV, wetland edge, and other habitat important to blue crab.
8. Assess the distribution, concentration, and threat of heavy metals and other toxic contaminants in freshwater and estuarine sediments and identify the areas of greatest concern to focus water quality improvement efforts.
9. Support oyster shell recycling and oyster sanctuary programs to provide areas of enhanced or restored shell bottom habitat.

AC did not support habitat recommendations 10 – 12.

10. Consider if prohibition of crab dredging is advisable.
11. Protect “recruitment bottlenecks”, like inlets for the blue crab, from trawling or other impacts including natural channel modification using hardened structures like groins and jetties.
12. Shallow areas where trawling is currently allowed should be re-examined to determine if additional restrictions are necessary.

Water Quality Recommendations (from BCFMP page 161)

1. Improve methods to reduce sediment and nutrient pollution from construction sites, agriculture, and forestry.
2. Increase on-site infiltration of stormwater through voluntary or regulatory measures.
3. Provide more incentives for low-impact development.
4. Aggressively reduce point source pollution from wastewater through improved inspections of wastewater treatment facilities, improved maintenance of collection infrastructure, and establishment of additional incentives to local governments for wastewater treatment plant upgrading.
5. Provide proper disposal of unwanted drugs, prevent the use of harmful JHA insecticides near-surface waters or in livestock feed, and develop technologies to treat wastewater for antibiotics and hormones.

Section 10.5 ENVIRONMENTAL FACTORS RESEARCH NEEDS (from BCFMP page 161)

1. Continue research on the impacts of endocrine disrupting chemicals (EDCs) on the various life stages of the blue crabs and way to reduce introduction of EDCs into estuarine waters.
2. Assess the impact of winter inlet deepening dredge activities on the overwintering female blue crabs and their habitat.
3. Determine the spatial and biological characteristics of SAV beds that maximize their ecological value to the blue crab for restoration or conservation purposes.
4. Identify, research, and map shallow detrital areas important to blue crabs.
5. Additional research is needed on the extent, causes, and impacts of hypoxia and anoxia on blue crab behavior and population abundance in North Carolina's estuarine waters.
AC did not support research need number 6.
6. Conduct research on the water quality impacts of crab pot zincs, bait discard, and alternative crab baits in the pot fishery.

Section 12.2 RESEARCH RECOMMENDATIONS (below from BCFMP pages 330-332) contains all the research recommendations from the various sections of the BCFMP.
Recommendations will be finalized after the MFC selects the management strategy.

1. Continue to support research to determine the status of protected species (e.g., migration patterns, habitat utilization) along the North Carolina coast to better anticipate and prevent interactions.
2. Support research on blue crab fishery interactions with protected species (e.g., identifying any seasonal or spatial peaks in potential for interactions).
3. Support gear modification research and testing that could reduce protected species interactions.
4. Continue socioeconomic surveys of blue crab harvesters.
5. Update Recreational Commercial Gear License (RCGL) survey.
6. Continue survey and compile data of recreational crabbers not possessing a RCGL license.
7. Determine the economic effects of imported crabmeat, including the mixture of imported meat with local crabmeat, on processing and demand.
8. Determine the costs associated with crab processing. Identify the factors and their relative importance in predicting processor closures.
9. Research the changing demographics of the commercial blue crab fishery.
10. Continue research on the impacts of endocrine disrupting chemicals (EDCs) on the various life stages of the blue crabs and way to reduce introduction of EDCs into estuarine waters.
11. Assess the impact of winter inlet deepening dredge activities on the overwintering female blue crabs and their habitat.
12. Determine the spatial and biological characteristics of SAV beds that maximize their ecological value to the blue crab for restoration or conservation purposes.
13. Identify, research, and map shallow detrital areas important to blue crabs.
14. Additional research is needed on the extent, causes, and impacts of hypoxia and anoxia on blue crab behavior and population abundance in North Carolina's estuarine waters.
15. Conduct research on the water quality impacts of crab pot zincs, bait discard, and alternative crab baits in the pot fishery.
16. Develop methods to expand sampling effort to more accurately assess the status of the blue crab stock and its fisheries.
17. Continue research on blue crab discards in the shrimp trawl fishery.
18. Expand research state wide on the use of terrapin excluder devices in crab pots.

19. Implement outreach programs to inform state agencies, the public, and the commercial and recreational fishing industries about issues relating to protected species and fishery management.
20. Continue gear development research to minimize species interactions.
21. Continue existing programs that have been used to monitor North Carolina's blue crab stock to maintain baseline data.
22. Identify key environmental factors that significantly impact North Carolina's blue crab stock and investigate assessment methods that can account for these environmental factors.
23. Conduct a study of the selectivity of the gear used in the Juvenile Anadromous Trawl Survey (Program 100) to evaluate the size at which blue crabs are fully-selected to the survey gear; the results of such a study could help determine whether the survey data could be used to develop a reliable index of blue crab recruitment for the Albemarle region; no such index is currently available.
24. Expand spatial coverage of the Estuarine Trawl Survey (Program 120) to include shallow-water habitat in Albemarle Sound; sampling in shallow-water habitat is intended to target juvenile blue crabs so that a recruitment index for the Albemarle Sound could be developed.
25. Expand temporal coverage of the Estuarine Trawl Survey (Program 120) beyond May and June sampling; additional sampling later in the blue crab's growing season would provide more information on within-year changes in growth, mortality, and abundance; at a minimum, recommend addition of September sampling in order to capture the fall settlement peak.
26. Expand spatial coverage of Pamlico Sound Survey (Program 195) to include deepwater habitat in Albemarle Sound and the Southern Region; expanding the sampling region of adult blue crab habitat would allow for a more spatially-comprehensive adult index; additionally, there would be increased confidence in comparison of adult abundance trends among regions since all would derive from the same sampling methodology.
27. Implement a statewide survey with the primary goal of monitoring the abundance of blue crabs in the entire state; such a survey would need to be stratified by water depth to ensure capture of all stages of the blue crabs life cycle and standardized among North Carolina waters.
28. Implement monitoring of megalopal settlement near the ocean inlets could potentially add a predictive function to the blue crab stock assessments in the future; Forward et al. (2004) detected a positive, linear relationship between megalopal abundance and commercial landings of hard blue crabs for both the local estuarine area and the entire state of North Carolina when a two-year time lag was implemented (Forward et al. 2004); such monitoring is critical to track larval ingress peaks and the effect of natural forces, such as tropical storms and prevailing winds, on ingress.
29. Continue surveys of recreational harvest and effort to improve characterization of the recreational fishery for blue crabs.
30. Identify programs outside the NCDMF that collect data of potential use to the stock assessment of North Carolina's blue crabs.
31. Perform in-depth analysis of available data; consider standardization techniques to account for gear and other effects in development of indices; explore utility of spatial analysis in assessing the blue crab stock.