



ROY COOPER  
*Governor*

MARY PENNY KELLEY  
*Secretary*

KATHY B. RAWLS  
*Director*

Oct. 6, 2024

**MEMORANDUM**

**TO:** Marine Fisheries Commission  
Shellfish Crustacean Standing Advisory Committee

**FROM:** Tina Moore, Southern District Manager  
Fisheries Management Section

**SUBJECT:** Meeting of the Marine Fisheries Commission's Shellfish Crustacean Standing Advisory Committee, Sept. 26, 2024, to have conversation between the Division and the Advisory Committee on options available in the Blue Crab FMP through the Adaptive Management framework adopted in Amendment 3

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The Marine Fisheries Commission's (MFC) Shellfish Crustacean Standing Advisory Committee (AC) held a meeting on Sept. 26, 2024, at the Division of Marine Fisheries (DMF) Central District Office, Morehead City, North Carolina and via webinar. AC members could attend in either setting to communicate with other committee members. Public comment was received in-person and the meeting was streamed to the public not in attendance via YouTube.

The following Advisory Committee members were in attendance: Mike Blanton, Mike Marshall, Lauren Burch, Ryan Bethea

Online: Ted Wilgis, Tim Willis, Michael Hardison (Absent –Mary Sue Hamann, Jim Hardin, Bruce Morris, Brian Shepard)

Division of Marine Fisheries (DMF) Staff: Tina Moore, Jason Rock, Dan Zapf, McLean Seward, Robert Corbett, Daniel Ipock, Hope Wade, Jessie Bisette, Brandi Salmon, Alan Bianchi, Brooke Anderson

Public: None. There were two viewers on You Tube.

The Shellfish Crustacean AC had six members present at the start of the meeting and a quorum was met.

Shellfish Crustacean Standing AC Chair Mike Blanton called the meeting to order at 6:00 p.m. Chair Blanton said there will be no votes today and will be discussing adaptive management of blue crab.

**APPROVAL OF THE AGENDA AND APPROVAL OF THE MINUTES**

Jessie Bisette indicated that the AC would not be voting to approve the minutes from the Apr. 11, 2024 meeting. On Aug. 6, 2024, the NC Court of Appeals found that for a quorum to be met, members must physically attend meetings to cast votes. Members attending virtually can still participate in meetings;

however, they cannot vote on action items. While this case was from a ruling involving the Anson Co. Sheriff's Department, this will impact votes cast by members attending virtually tonight. The AC will vote on the approval of the Apr. 11, 2024 minutes at the next meeting. We are working with legal and the Department of Justice now to determine if virtual votes are valid, particularly if one of the virtual votes is a deciding vote. Jessie asked that members attend the next meeting in person. Fifty percent of the members plus one or six people must be present for a quorum for the Shellfish Crustacean Advisory Committee.

Tim Willis expressed many boards do virtual meetings and votes. Lauren Burch asked for clarification on what is a quorum. Bissette said fifty percent of the members plus one or six people must be present for a quorum for the Shellfish Crustacean Advisory Committee. Right now, it's looking like the virtual votes will not count. Blanton said this meeting is to share ideas and there are no planned action items at this meeting requiring a vote and a couple of members are participating virtually.

### **PRESENTATION OF BLUE CRAB FMP AMENDMENT 3 ADAPTIVE MANAGEMENT POTENTIAL OPTIONS**

Robert Corbett, lead biologist for blue crab, presented a brief history of blue crab management in North Carolina, the 2023 stock assessment update, and the adaptive management framework. In 2023, the division began updating the 2018 benchmark stock assessment with data through 2022. Results of the model update indicate trends in estimated recruitment, female spawner abundance, and fishing mortality were similar to the benchmark assessment; however, the maximum sustainable yield-based reference points used to determine stock status for both female spawner abundance and fishing mortality both drastically changed with the expanded time series. Due to the magnitude of the change in reference points, the division requested an external review of the updated stock assessment which was completed in December 2023. The reviewers identified concerns with model specifications and results. They strongly recommended resolving these issues before basing management decisions on assessment results. Suggestions provided by reviewers can only be incorporated through a new benchmark stock assessment. Given concerns with the updated assessment, identified by the division and external peer reviewers, the division does not recommend using results of the 2023 stock assessment update to inform management decisions.

The original North Carolina Blue Crab FMP was adopted in December 1998 and Amendment 1 was adopted in December 2004. Following Amendment 1 was Amendment 2, which was adopted in November 2013. The Amendment 2 adaptive management framework relied on annual updates to the Traffic Light Stock Assessment which provided information on the relative condition of the blue crab stock. The traffic light stock assessment gets its name by assigning a color (red, yellow or green) to data trends in comparison to established reference points. Based on results of the traffic light assessment updated with 2015 data, management action was required by the MFC. To improve the condition of the blue crab stock, the MFC adopted management measures via Amendment 2 adaptive management and incorporated them in the May 2016 revision to Amendment 2. A comprehensive review of the Blue Crab FMP was originally scheduled to begin in July 2018, but at their August 2016 business meeting, the MFC voted to begin review immediately to assess the status of the blue crab stock and identify more comprehensive management strategies.

A benchmark stock assessment was completed and approved for management use in March 2018. This assessment included data from 1995-2016 and concluded the stock was overfished and overfishing was occurring. The stock assessment projections indicated a harvest reduction of 0.4% was needed to end overfishing and a harvest reduction of 2.2% was projected to achieve sustainable harvest and rebuild the blue crab spawning stock within 10 years of the date of plan adoption with a 50% probability of success of meeting the statutory requirement. Based on assessment results and projections, the division encouraged the MFC to consider a reduction of at least 5.9% which was projected to reduce fishing mortality to a level close to the fishing mortality target and have a 90% probability of achieving sustainable harvest. In November 2019, the MFC voted for preferred management measures projected to result in a 3.7% harvest

reduction with a 50% - 67% probability of success. However, at the following meeting in February 2020 the MFC changed their preferred measures lowering the projected harvest reduction to 2.4% with only a 50% chance of achieving sustainable harvest in 10 years, which is only slightly higher than the statutory required minimum of 2.2%.

Adoption of Amendment 3 also included the Adaptive Management framework and established specific steps to be taken once an updated stock assessment was completed. If the stock is overfished and/or overfishing is occurring or it is not projected to meet the sustainability requirements, then management measures may be adjusted using the director's proclamation authority. For management to move forward, the adaptive management framework requires management measures must be quantifiable. The framework also specifies the division will consult with the MFC Northern, Southern and Shellfish/Crustacean ACs prior to new management measures being approved by the MFC. Upon evaluation by the division, if a management measure adopted to achieve sustainable harvest is not working as intended, then it may be revised or removed and replaced as needed. While we do not have an updated stock assessment that can be used for management purposes, and are unlikely to for some time, there is substantial data suggesting management measures adopted in Amendment 3 are not working as intended and need to be revised using the Amendment 3 adaptive management.

McLean Seward next gave a presentation on recruitment and spawning stock biomass trends from the recent stock assessment update. Both the estimated number of recruits within the stock and spawner abundance indicate steady declines over the last decade. The update also indicated that fishing mortality has remained relatively unchanged since adoption of Amendment 3 management measures in 2020. Next, Seward presented data from the division's Pamlico Sound Survey (P195), showing continued declines or continued low abundance through 2022 for males and females of both life stages there have been continued, with some of the lowest values in the time series being in recent years. Data from the division's Juvenile Trawl Survey (P120) also indicates a decline in male and female recruits with the last few years being the lowest on record. Declines in the annual commercial landings appear to track with juvenile and adult indices of abundance. Commercial landings of all blue crabs have been in decline since the record high of 67 million pounds in 1996. In 2022, the harvest level dropped to the lowest in the time series. In addition to declining harvest levels, participation and number of trips has also declined in recent years.

Seward further noted other states along the Atlantic coast have observed similar declines in their commercial landings. In January 2023, the South Carolina Department of Natural Resources released a status report for the South Carolina blue crab fishery. The report concluded the South Carolina blue crab stock has been in decline for nearly two decades and provided recommendations to prevent overharvesting, gradually reduce fishing pressure, prevent overexploitation, and strengthen enforcement capabilities. In the Chesapeake Bay, although the blue crab stock is not depleted and overfishing is not occurring, juvenile abundance remains low. Precautionary management, focusing on protecting mature females and juveniles, has been recommended for the Chesapeake Bay stock and a benchmark stock assessment has begun to better understand the population.

All available information suggests the blue crab stock has continued to decline since adoption of Amendment 3 management measures back in February 2020. Amendment 3 implemented management measures which were projected to result in minimal harvest reductions with minimal probability of success. Since adoption of Amendment 3, commercial landings have continued to decline to historic lows. And despite low commercial landings, the stock assessment update indicates fishing mortality has not decreased. Abundance of all blue crab life stages as indicated from fishery independent surveys, are at historic lows. Specifically, recruitment has been at historic lows, which means we just don't have new crabs coming into this population to replace what we are harvesting. New management that is more substantial than what was adopted in Amendment 3 needs to be developed to reverse the declines we've observed.

## **COLLABORATIVE CONVERSATION BETWEEN THE DIVISION, ADVISORY COMMITTEE, AND THE PUBLIC**

There was no public in attendance to provide comment. Willis requested more information on the 2023 stock assessment update and why the model statistics were different and could not be used for management. Corbett reiterated the MSY reference points changed drastically between the original assessment and update but the trends in the data did not. Willis asked if other statistics were used to look at trends to get some predictability. Corbett said timing has been an issue with losing the last stock assessment scientist at DMF just after the blue crab update came out. Also, external reviewers suggested, and division staff agree, the only fix would be a completely new benchmark assessment. Willis noted in 2020 areas were closed to crabbing and asked if there were any positive changes in those areas. Corbett said the trends are statewide and not to the specific areas, the inlet sanctuaries. Dan Zapf explained the coastal inlets prevent disturbance where blue crabs spawn with the idea to produce more juveniles and we have not seen any increase in juvenile abundance in our independent sampling. Willis said with less people crabbing, something else is going on with blue crabs. Bissette said the stock assessment scientist provided the report to the MFC in May with more detail and will send to the group for further background.

Ryan Bethea said with the decline in trips and crabbers what do they think could contribute to declining stock? Corbett said it could be environmental factors or disease, we don't know and have a limited toolbox on what we can do in fisheries management. Blanton said that just because there are less crabbers doesn't mean they will catch more crabs (i.e., CPUE won't increase with less crabbers, it's way more complex since it's passive gear and includes bait). Blanton said you have to be careful when looking at CPUE and needs to be investigated more. Corbett noted CPUE is difficult to use with dependent sampling, but independent sampling is another piece of data for looking at trends. DMF has independent sampling since the 1970s and we see all-time low in the current years.

Burch asked what the concerns were from the external reviewers. Corbett indicated the juvenile estuarine trawl survey that was adapted for the blue crab survey. Burch asked if the model used in 2023 was the same model as the benchmark model. Zapf indicated the 2016 model was peer-reviewed and cleared to use. The latest update was the same assessment, we just added data, the trends were the same but reference points changed to the point where it appeared the stock was always overfished and overfishing was always occurring. But we couldn't identify the reason why that occurred. The advice gained from reviewers of the updated stock assessment would have been big changes to model and would require whole new benchmark stock assessment. Given the trends seen in the stock it was decided to move forward with adaptive management. Burch then asked if we go to same locations every year to get data. Zapf indicated some surveys (P120 – Juvenile Estuarine Trawl Survey) go to same locations every year whereas other surveys are random stations (P195 – Pamlico Sound Survey). Burch was concerned because crab abundance depends on salinity and locations change each year, crabs are going to move. Burch said they can't keep adding restrictions to the fishery based on poor data. Confidence intervals are really small.

Burch asked if landings are included in the model? Zapf indicated that landings are included in model. If that goes down and less are removed from population that could be good if population can rebuild itself but that's not what we are seeing in the independent data. Corbett indicated that environmental conditions go into assessment model as well. Burch asked if we have started throwing out outliers. Corbett indicated that the model already picked out outliers, including related to environmental factors. Burch indicates that catch is not reduced at her dock, she's seen bigger crabs. Corbett clarified that now is the time to provide recommendations and talk about options and pros and cons at this point. Tina Moore asked Burch where she crabs because there could be regional variability. Burch said Currituck and Albemarle but goes where crabs are, said salinity is a big thing.

Bethea asked what impacts recruitment and larvae, predation? Corbett said a wide range of items impact recruitment - environmental factors, predation, SAV habitat requirements, disease, water quality. We are at all-time low of recruitment. Corbett said the MFC basically chose the minimum requirement with only a 50% likelihood of rebuilding the stock (basically flipping a coin).

Blanton asked for summary of other AC meetings. Corbett said we heard similar comments at the other ACs and during one-on-one conversations with crabbers trends varied by region. We discussed the options in the decision document and they noted options they could live with and others not so much. Market influences were also noted. We heard from some to look at hard versus soft shelled trawling and regional closures. Regional closures were a concern because of shifts in effort.

Burch said a spring closure would hurt industry and economy. The availability of crabs in other states influences NC landings and their value. Burch questioned whether this would be quantifiable, Corbett said it would be. Burch said a lot of people make a good part of their money during that spring season. Burch said in 2010 study that they didn't find much clutch damage. Corbett said certain groups (eastern part of state) would be hurt with sponge crab closure.

Bethea asked what measures excite DMF? Corbett said nothing excites him and wished we weren't here. Corbett said we need the biggest bang for our buck, less harsh on industry but most reductive for getting higher recruits. Bethea asked if there was a measure that he thought would be most effective? Corbett said we are at the initial phase and he doesn't have numbers here and wants this conversation to guide us so they can get those numbers.

Burch asked if recruits were biggest problem. Corbett confirmed. Bethea said Chesapeake Bay, York Harbor, Florida showed ocean acidification is a big impact and asked if that was a problem in NC. Corbett said there's nothing we can do about that. Moore said it's a global phenomenon. Corbett said a great thing about blue crab is that you can identify sex and maturity so can customize management by life history. Burch said just because it's easy to put a number on it doesn't mean it's the right approach. Corbett said if there's a time the market is flooded we can try to use limits to take the pressure off the crabs when they are not worth as much to the industry. Burch said that wouldn't be doable. Burch said a spring closure would be when price per unit is higher. Corbett asked if she recommends a fall closure and Burch said she recommends no closure. Burch recommended a peeler size limit, maybe 2 inches. Blanton recommended no peeler size limit because of the effort to measure them; peelers are a small part of fishery, but very economically important (as well as soft crabs), said he's completely against it and wouldn't give stock rebuilding advantage. Said small peelers can have a market and are used for bait. Corbett stated there are markets for small peelers for bait. Blanton agreed but again are a very small part of the fishery, the window of opportunity for peelers is 30-45 days and gives the fishermen the push they need economically to get through the year. Only a little amount of effort needed for a higher value product. The peelers will not rebuild the stock, we do not need regulations on peelers. Bissette said this is exactly what we want from these meetings. Corbett reiterated that through adaptive management process all measures must be quantifiable.

Blanton asked for more in-depth presentation on how fishery operates north to south in NC, there may be economic benefits to consider as well; provide an overview of the crab life cycle and fishery. More information on trawls and how long the gear is effective. How crabs pot at different life stages. What do crabs eat, when do they reproduce, when do the sea turtles show up. They eat up the crabs in the pots, what happens next. They sponge out, they shed, they turn into peelers, then the jimmies show up. The small jimmies show up, the females shed off, the crabs harden up and start catching up everything. The females swim back to the beach. Then a second blast after the peak of the hot water. The jimmies find shelter, but the DO drops, then the crabbers start looking. After the water hits the right temperature, they shed again. The females shed in the fall, but there are so many jimmies. They are not hungry, they don't

pot. The female's stage until the next spring. Not everybody knows this. We need to look at this to inform management measures. Let's showcase the lifecycle and how crabbers pursue the crabs. Blanton said the public and committees need to understand the dynamics to form segmented management that wouldn't be hard on everybody at one time. He said it would be nice to have a room full of crabbers but they will keep crabbing. Blanton said he's not going to make any specific recommendations today but we need to take a look at places in fishery that would have limited participation or impact on industry but biggest impact on population/recruitment. Moore asked where she thinks that is in Albemarle? Blanton said in the fall during heavy female run where price is low. Blanton noted if there needs to be reduction to look in the fall; you won't see crabs in pots in the north until last week of February. Corbett said this is a good point because when looking into extending the closure to February 15 it probably wouldn't lead to an actual reduction. Blanton and Burch both indicated the early season has biggest financial gain for crabbers and early season closures would not work because it would take a lot away from crabbers financially but not that many crabs caught. Moore asked what a high value is for female crabs? Blanton said \$80-\$100 per basket for females, \$40-\$60 is normal, and typically it is \$10-20 per basket of females once the market is flooded. Blanton said bait quality has gone down but bait price has doubled and crab price has gone down. Some people are paying \$30-\$40 a flat for catfish heads to use as bait in the pots. And we no longer get big menhaden so handling more smaller menhaden to re-bait takes more time than just one big one.

Ted Wilgis said other states are dealing with low crab populations as well. He asked what weight do those populations play on our decisions? Corbett said that trends are the same in other states so helps validate our data/results. Bethea asked are females that come out first hungrier? Blanton said there may be years when pregnant females don't go into the mud. Corbett said knowing that females are usually sold at lower price, should we focus our research on management measures into protecting female crabs given that they would help recruitment? Burch said there's already a 5-inch limit on females, we don't catch many females in our area. Corbett said it could be bushel limits, area limit, etc. Corbett asked for clarity if wanting to find measures with highest impact on population but lowest impact on fishery means doing measures that would have lower crabber impact but spread out to everyone in fishery or doing measures that may have higher impact on crabbers but on smaller portion of crabbers. Blanton reiterated advantage of being able to identify sex and there's a portion of fishery good at targeting females that other crabbers can't get to because you have to chase them as they move. Blanton said if a crabber hasn't made their money by Labor Day, they aren't really a crabber. Any crabs caught after Labor Day are bonus crabs to help try to get more money, but bulk of the annual income for a crabber should be made between first peelers and Labor Day. Crabbers feed a lot of crabs too in their baited pots, the smaller ones that can move in and out of the pots. If you can manage in a unique way and distribute burden across fishery is the better approach.

Corbett asked if we looked at female reduction in harvest, how would effort change? Do you think the crabbers would shift to male crabs? Blanton said effort may shift slightly but not to the extent we would predict. Need to determine daily baskets, 10-15? 80-100 dollars a basket is a good day of work. Depends on crew size, smaller crews are better, why run 4-5 heads a boat. It will vary by the crabber and the region. Less volume more money is the best approach. Don't mess with junky white crabs. I don't keep white crabs. No dead crabs, volume is what some look for. Not me. Blanton said what's sustainable to state and resource is different than what's sustainable to the fisher's pocketbook and operation. Corbett asked how bushel limit would affect crabbers when there are some that may not use bushels? Blanton and Burch said it wouldn't be a problem we cull every day. Blanton said NC is only state you can dump a pot straight into a box without culling. Corbett said NC has some of the least restrictive harvest of blue crabs. Burch asked if other states fisheries have rebounded with stricter management. Corbett said VA is not overfished and overfishing is not occurring. Burch asked how big sponge crabbing is in NC. Corbett said substantial in some locations. Blanton said unfortunately a handful of people will be impacted in very

negative way; we don't know the impact of being in pot on sponge crabs. They may drop their eggs when potted up together. Bushel limit may not effectively manage sponge crabs if sponge is impacted.

Corbett said if were to set a bushel limit on females, there may be an effort shift to males, do we need to set high limits on males to keep that effort shift and potential landings increase from occurring? Blanton said males limit themselves because of energy expenditure and aren't actively potting and pursuing food as much, so landings won't increase as much as effort might. As the females move to the inlets for the winter, they need food, and they pot. The males don't move and settle when it gets cold. They have personality as they shed too, a Jimmy don't care! Especially as he gets old. He doesn't want to fight; the rusty crabs just want to lay low. The market price is lower and fishing is less frequent.

Corbett asked if people would go to longer soak times if limits were in place? Burch said depending on the amount of pots. Blanton said not less, but different. The longer they sit the dirtier they get with sponge, moss, barnacles and the product is less valuable. Sometimes it just regulates itself. When crabber are chasing females they are constantly moving their pots. Talk to buddies on where fishing is good. Blanton said the crab population was a lot bigger in early days and crabbers didn't have to be as good at crabbing. Burch said it's good that DMF is going to docks and meeting with people because crabbers aren't going to come to DMF. Burch asked for documents to be more geared toward public, in layman's terms, because it was hard to read. Blanton said asking every fisher what they would want to do, you'd get a different answer every time. Corbett said that's one of the reasons we go to the docks. Bissette said Blanton would be fantastic for an outreach video on the crab fishery. Blanton said he's passionate about crab fishing. "Crabbing with Blanton". Corbett said he's been reaching out to crabbers that have been in the industry for a long time. Bissette told Burch that any suggestions she has for ways to communicate these complex ideas to fishermen and public would be welcome and he can send AC members any documents or information they need

Wilgis want to put emphasis on females and if there is any way to manage them that would be great if we can do it without too much hardship. Corbett wanted to get ACs feedback on managing orange vs. brown sponge crabs. Would they want to look at sponge crab as a whole or by color? Burch and Blanton said they wouldn't know how that would work with colors and don't want to get into color management. Blanton said sponge crabs are always a mess once they come out of crab pots. Either allow them to keep or not keep, doesn't understand management by color.

### **ISSUES FROM AC MEMBERS**

No issues were provided by the AC. Bissette noted will be emailing the AC to schedule a potential meeting in December rather than January to discuss the Oyster and Hard Clam amendments. Which will need to occur in person due to the court of appeals issues. And at the next meeting the committee can approve the April and September minutes. Blanton called meeting adjourned at 8:07 pm.