Committee Reports

Marine Fisheries
ENVIRONMENTAL QUALITY

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Governor

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Secretary

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Director

MEMORANDUM

TO: Marine Fisheries Commission
Northern Regional Advisory Committee

FROM: Katy West
Holly White
Division of Marine Fisheries

DATE: April 22, 2016

SUBJECT: Northern Regional Advisory Committee Meeting April 7, 2016

The Northern Regional Advisory Committee met at 6 p.m. on Thursday, April 7, 2016 at the Department of Environmental Quality Washington Regional Office. The following attended:

Advisers: Sara Winslow (Chair), Glenn Barnes, Raymond Pugh Jr., Riley Williams, Gilbert Trip, Everett Blake, Keith Bruno, Michael Blanton, Steve Bradshaw, and Jim Rice

Absent: Dell Newman

Staff: Kathy Rawls, Catherine Blum, Michelle Duval, Tina Moore, Jason Rock, Corrin Flora, Trish Murphey, Lee Paramore, Charlton Godwin, Joseph Facendola, Nancy Fish, Steve Murphey, Odell Williams, and Holly White

Public: Jerry Schill, Charles Carawan, Sharon Carawan, Charlie Beasley, Gilbert Baccus, Jimmy Noslos, Dossey Pruden, Chad Hemilright, Carl Mann, Reggie Bishop, Luke Midgett, John Midgett, Forrest Oakes, Eric Brals, Steve Braddy, Gregory Terrance, Jeremy Baccus, Donald Baccus, Chase Baccus, Chris Simpson, Robert Bass, Joey Swanner, Steve Midgette, Lee Morris, Perry Wood Beasley, Lauren Berry, Wayne Burch, Terry Pratt, Jimmy Nobles, Bill Rich, Blaudia Cahoon, Lyle Cahoon, Rusty Poole, Larry Gill, Patrick Clarke, Jerry Warren, Tara Forema, Dennis Foreman, Wiley Van Pelt, Cory Carawan, Calli Carawan, Josh Spencer, Wayne Twiford, Wayne Twiford III, Hunter Stuart, Scott Ankney, Gene Ashton, Kim Fong, Carroll Fong, Cameron Whitaker, Justin Revere, Rick Caton, Brent Fulcher, Jonathan Fulcher, Brian Hodges, John Silver, Zeb Mayo, Josh Halsey, Adam Spencer, Jared Jarvis, Jessica Jarvis, Phil Jethro, Anthony Sawyer, and Harvey Sawyer

An additional 17 members of the public signed in but their names were not legible.

Sara Winslow, serving as chair, called the meeting to order.

MODIFICATIONS TO THE AGENDA

There were no modifications to the agenda.

Motion by Steve Bradshaw to approve the meeting agenda. Seconded by Jim Rice. Motion passed unanimously.

APPROVAL OF MINUTES

There were two modifications to the April 9, 2015 Northern Regional Advisory Committee meeting minutes:

1. Remove Sara Winslow from the list of Advisers present at the April 9, 2015 meeting.
2. Correct spelling error in the 1st paragraph on page 3. "She also reviewed the environmental factors for both species ~~se~~ as well as the different threats to the environments of both species."

Motion by Jim Rice to approve the April 9, 2015 Northern Regional Advisory Committee meeting minutes with two corrections 1) remove Sara Winslow from the list of Advisers present and 2) correct a spelling error in the 1st paragraph on page 3. Seconded by Everett Blake. Motion passed unanimously.

REVIEW OF THE DRAFT ISSUE PAPER REDUCING SHELLFISH LICENSE OYSTER HARVEST LIMITS STATEWIDE

Joe Facendola, fishery management plan co-lead gave a presentation on the draft issue paper "Reducing Shellfish License Oyster Harvest Limits Statewide." He explained that the Commission at its meeting in February made a motion to reduce the bushel limits on oysters for shellfish license holders to 2 bushels per person/ 4 bushels per vessel statewide. This management strategy (for the entire state as opposed to just the southern area) was not presented to the public therefore the Commission requested that this be presented to the regional committees for their input. Facendola, reviewed the North Carolina Division of Marine Fisheries and committee recommendations as well as the Marine Fisheries Commission motions made at the February meeting.

Facendola provided background on the Shellfish License, described landings and participants data grouped by waterbody of harvest (4 regions), and license holder data grouped into 5 regions by county of residence of license holder. He noted that a license holder may have landings come from multiple harvest regions. He noted that not all license holders sell their catch. The southern region had the highest number of shellfish licenses sold and highest percentage of total licenses sold with trip ticket landings. He noted that some individuals just sell clams. Sixteen percent of the licenses sold show public bottom oyster trips. The number of licenses sold, peaked in 2002 and again in 2011. In 2015, 27 percent of Shellfish License holders' landings had trip ticket landings for oysters off public bottom. The increase in landings in bushels appear to be increasing due to the Shellfish License holders. Annual average number of trips by Shellfish Licenses holders with landings is also increasing. Roughly thirty-nine percent of the public hand harvest oyster trip ticket landings statewide come from Shellfish License Holders fishing in the southern and central areas. In the southern region the number of Standard Commercial Fishing License holders has stayed relatively stable; however, the overall number of participants has increased. Overall, we are seeing a decrease in the number of bushels per trip.

In the central region the Standard Commercial Fishing License participants has remained somewhat steady. There is also a slight decline in the number of bushels per trip in this region as well. In the Pamlico and Northern regions there is relatively small growth in the number of participants. Facendola indicated that the removal of oysters from the Shellfish License would eliminate recreational use of the Shellfish License to land commercial limits of oyster and potentially reduce commercial harvest pressure and impacts (greatest in the southern region). Facendola expressed enforcement concerns as well. He reviewed the three options for the committee to vote on which included: Status quo, reduce the Shellfish License oyster bushel limit to a lower specified amount statewide, and reduce the Shellfish License oyster bushel limit to a specified amount regionally.

Jim Rice pointed out that commercial Shellfish License landings are derived from trip tickets and estimates of recreational landings from Shellfish License holders are not available. He noted that the point of issuing a license is to know who the fishers are so effort and harvest data can be verified. He asked if there were people the Division could talk to in order to estimate their landings (for oysters harvested with a Shellfish License for personal consumption). Facendola replied there is a group of recreational fishers that we can talk to, but for the recreational harvest estimate as a whole we currently do not have a way to calculate that. Keith Bruno clarified that we were only talking about harvest restrictions for Shellfish License holders, not Standard Commercial Fishing License holders. Facendola replied that was correct. Riley Williams wanted to know if the Shellfish License holders were commercial or recreational. Facendola replied that sixteen percent of the licenses sold show public bottom oyster trips.

Keith Bruno said that the fifty dollar Shellfish License promotes black market harvest of oysters. He thought that the issue of harvest limits for Shellfish License holders by region and the removal of oysters from the Shellfish License should be split into two different issues. Jim Rice said that the concern is there is not a cap on harvest for Shellfish License holders and this is effecting oyster harvest from the part of the state with the most Shellfish License holders. Rice pointed out that it will be a lengthy process to remove oysters from the Shellfish License, requiring legislative action. Rice recommended reducing the number of bushels harvested by a Shellfish License holder as an interim measure.

Michael Blanton asked what the recreational harvest allowance is without a Shellfish License. Facendola replied that it is one bushel per day and two bushels per vessel. The discussion moved briefly into enforcement. Jim Rice questioned why there would be a negative associated with regional management for enforcement. Facendola explained that would be due to the boundary separating the regions. Odell Williams, Marine Patrol, clarified that enforcement is based on possession limits. Keith Bruno explained that different possession limits are currently in play for Pamlico Sound oyster dredging operations and did not see where additional burden would be placed on law enforcement if possession limits for Shellfish License holders were split by region.

Everett Blake wanted to know if the Division has looked into requiring annual harvest data from people requesting Shellfish Licenses similar to what WRC requires for game permits, for example Blake provides data to the Wildlife Resource Commission each year that helps him attain a certain license for a duck blind or a permit for the following year. Blake asked if the

Division could require the same data submittal in order to issue an annual license. Jim Rice commented that he has to report what he takes on an annual basis in order to meet the requirements of his scientific collection permit issued by the division. The big argument, Rice notes, with recreational licenses is that you need to know who your user groups are so you can query them whether it's by a phone survey or data reporting as a condition of renewal. He says that it has become increasingly easy to do these queries. Facendola responded that getting oysters put on the recreational marine fishing license has been a challenge, and that it will also require legislative action. Facendola explained that the intent of the Shellfish License was not for use as a recreational license. Rice questioned that comment noting that the price of the license is only fifty dollars.

Keith Bruno made a motion to advise the Marine Fisheries Commission to get the legislative action together to remove oysters from the Shellfish License. He recommended that the harvest of oysters be defined by user groups as commercial and recreational. Harvest by each user group should be monitored in order collect information on harvest. The motion was seconded by Jim Rice.

Nancy Fish clarified that the Commission has already voted on this issue and they are only requesting input on to reduce the possession limit for oysters for Shellfish License holders statewide or only in the southern region (south of the 58 bridge). Tina Moore also clarified that the Committee had made a similar motion in December. Rice said that the Commission could choose to ignore the motion, as they frequently do, and this Committee works to provide the Commission with more information than they request.

The motion passed unanimously.

Riley Williams made a motion to support Option 3, reducing the possession limit for Shellfish License holder south of the 58 bridge to 2 bushels per person and 4 per vessel. Everett Blake seconded the motion.

Blanton requests that the possession limit for shellfish holders be enforced statewide in order to prevent overharvest in the northern region. He believes that this would make it fair across the board. The Shellfish License holders with commercial landings could work towards obtaining a commercial license.

Michael Blanton made a substitute motion of the motion by Riley Williams to advise the Marine Fisheries Commission to adopt a statewide possession limit of 2 bushels per person not to exceed 4 bushels per vessel for Shellfish License holders harvesting oysters from public bottom (consistent with the commission motion passed at the February 2016 meeting). The motion was seconded by Everett Blake. The motion passed, 9-1.

PUBLIC COMMENT

Gene Ashton, asked how you can regulate the numbers of something that you don't have actual numbers of, in relation to numbers of oysters harvested by the Shellfish License holders. Mr. Ashton suggested to make Shellfish License holders call in harvest, similar to what you have to do when you kill a deer. Mr. Ashton wants to see the data collected before actions are taken.

Facendola replied that the harvest estimates we have are derived from trip tickets, if harvested recreationally or for personal consumption we do not know the amounts. Facendola noted a decline in the number of bushels landed per trip as participation and the number of licenses sold increases, illustrates that there is a problem. He also stated that the division has a long-term goal of creating a fishery independent index of oyster abundance.

Jerry Schill, North Carolina Fisheries Association, requested mirroring what the Southern Regional Advisory Committee recommendation to implement specific restrictions on Shellfish License holders south of the 58 bridge, not state wide.

RECOMMENDATIONS TO THE MARINE FISHERIES COMMISSION FOR THE SHELLFISH LICENSE

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REVIEW OF BLUE CRAB TRAFFIC LIGHT AND MANAGEMENT MEASURES

Jason Rock, Blue Crab fishery management plan co-lead gave an overview of the Blue Crab Traffic Light. He described the difference between qualitative and quantitative indicators as well as what the colors of the traffic light mean. Rock indicated that the Traffic Light was implemented in 2013 with Amendment 2 of the Blue Crab Fishery Management Plan. He described the indicators, management thresholds and management levels as well as the management triggers. He described the three year timeframe, noting that the timeframe was set in the Fishery Management Plan by the commission (and recommended by Division) to account of annual variability as well as providing safeguards for the stock. The adult abundance was tripped in 2015, reaching the 50 percent threshold. This was the third consecutive year that adult abundance was exceeded. The recruit abundance was also tripped in 2015 (75 percent threshold); this was the fifth consecutive year. The production trigger was not tripped in 2015 (44 percent Red).

Michael Blanton started off the discussion asking Jason Rock to clarify what the traffic light colors red, yellow, and green mean. He indicated (pointing to the crowd) that they do not understand where the colors fall concerning abundance estimates. Rock went through each of the indicators and described surveys incorporated, base years, and scaling used for each in order to qualify as red, yellow, or green. Blanton asked for further clarification of the traffic light indicators. Rock explained broadly that the Division conducts surveys and we compare our catch number or length frequencies to an average number from the set of base years (1987-2009). Rock additionally explained for any given year, that a bar would be 100% yellow if the number is

equal to the average for the base years. If the number is above the average the amount of yellow would decrease and the amount of green would increase. If the number is below the average the yellow would decrease and the red would increase.

Keith Bruno asked how the Division collected the numbers to put into the model to get the colors. He wanted to know who collected the samples and how they were collected. Rock explained that most of the numbers come from the different trawl surveys that the Division carries out. Sara Winslow explained that the data are collected from standardized sampling programs with set stations, and set periods of time that have been prosecuted from 1987 until present. Depending on the survey, the station location is fixed or random. This is also just surveys relative to recruits. Bruno moved the discussion on to how other data is collected, and used the example of the independent gillnet survey that is a random sample in areas where commercial fishermen do not work because of little to no catches. Winslow explained that many of the surveys, using the example of the Divisions' Program 120 sampling, are conducted in designated nursery areas. Steve Bradshaw asked if the surveys were conducted at the same time every year. Rock responded that they were.

Bruno moved the discussion back to the types of surveys other than drag/trawl. Rock explained that the Division uses different trawl surveys as well as commercial fish house sampling. Bruno explained that when staff are at his fish house he doesn't want them measuring the Jimmy crabs because they are worth the most money and are very fragile but he does allow them to measure Culls and Sooks. He asked if that would skew the results of the fish house data. Rock explained for the traffic light, the length at 50% maturity, is looking at the commercial female crabs. Blanton said that you cannot age a blue crab and the only thing that they have to go off of is the female whether it is mature of immature. Bruno then asked how the Division is calculating relative abundance. Rock explained that only data from the trawl surveys are used for that estimate.

Bruno described the crab harvest over the past two years. He said that two years ago crabs were terrible. Last spring crabbing was slow, but the week before the fourth of July the crabs started to show up in North Carolina, Virginia, and Maryland. He asked where those crabs came from because the data didn't show that they were there. He also said that the landings were not as high as they could have been because the markets were so flooded that the fish houses could only buy crabs a few days per week. He thinks that these lay days could have accounted for another 500,000 to 1,000,000 pounds. He has a hard time wrapping his head around the presentation because of what he has seen in the crab harvest at his fish house. He also said that with the increased gill net regulations, more crab pots have shown up in the water.

Everett Blake noted that there is a lot of red on the graphs but he does not see the relation in the landings or production. He said that for him personally he has caught more recreational crabs last year than he has in the past two years. Raymond Pugh echoed that commercial trip tickets from Dare County show that they are catching so many crabs that they cannot get rid of them. He just cannot see where there is a shortage of crabs. Bruno asked if there is any chance that the Division is wrong. Rock replied that there is always a chance. Rock also pointed out that the management plan requires that the Marine Fisheries Commission do something but does not specify what they have to do.

Bruno suggested that the (Northern) Advisory Committee send a strong message to the Commission that the sky is not falling in the crab industry. Winslow advised that regardless of what this Committee advises to the Commission, that each of the public in attendance should attend the next Commission meeting and comment.

Riley Williams commented that there is difference in someone that gets paid per hour to collect this data and someone that relies on it for their living. Williams personally does not feel comfortable with the Divisions numbers. If he was shown how many times we sampled and when we sampled then the colors would make more sense to him. Winslow explained that all of this information is contained in the Fishery Management Plan for Blue Crab. Williams questioned if it was done as it is outlined. Winslow replied that it was.

Blake asked if the Division could move to pot sampling. Blanton said that he has no faith in a summer trawl survey. He said that when these surveys are conducted crabs are extremely active, swimming fast, have a higher metabolism, and increased environmental factors (hypoxic or dead water) effect catch. He does not feel that a trawl is the correct method to survey crabs in the middle of the summer. He supports a winter dredge survey of dormant crabs. He feels that this is a better way to survey crabs. He said the summer trawl surveys are designed for finfish not crabs. Blanton requested that the committee ask the Commission to change the surveys used for crabs.

Jim Rice asked Rock if the Division collects water quality data at the sampling sites. Rock replied that they did. Rice asked if the Division ruled out data if there is evidence of hypoxic conditions at the site. Rock replied no. Winslow also pointed out that the surveys are conducted from March through October, not just during the summer.

Next Rock went through the Traffic Light Adaptive Management Measures (moderate and elevated for the adult and recruit abundances). Rock gave examples of what type of management measures could fall under the broad category. One option would be to increase the minimum size limit for male and immature female crabs. In doing so, going to 5.25 inches would be an estimated 35 percent reduction in landings (0 percent culling tolerance, 5 percent in rule). Going to 5.75 inches would give an estimated 52 percent reduction. Going to 6 inches, would be roughly a 69 percent reduction. Recoupment would be likely happen as crabs grow.

Another option would be to eliminate the harvest of v-apron crabs, immature hard crab females; however, this would have minimum reductions and recoupment would likely happen as crabs grow. Reducing the tolerance of sublegal crabs to a minimum of 5 percent, would have minimal reductions.

Moderate management measures also include removing escape ring exemptions for eastern Pamlico Sound and Newport River. Increasing the cull rings to 2 3/8 – 2 ½. Rock indicated that two studies looked at cull ring size and how it affected catch. The first study, catch rate of sublegal males was reduced by increasing cull ring size, legal males and mature females were maintained, body length of minimally legal male crabs was not less than the current minimum cull ring size.

Another gear modification would increase number of cull rings from 2 per pot. Rock also noted that it could be required that the cull ring be located near the floor of the upper chamber; 60 percent of sublegal crabs escaped in the first hour.

An adaptive management measure (recruit moderate) such as establishing a seasonal size limit on peeler crabs is another option. Establishing a 3.25 inch minimum size would yield roughly a 4.8 percent reduction, going up to 3.75 minimum size would yield roughly a 19 percent reduction. Another management measure would be to restrict trip level harvest of sponge crabs (tolerance quantity, sponge color). The committee could also chose to close crab spawning sanctuaries from September 1 through February 28 (now March 1 through August 31). Rock indicated that the sanctuaries are mostly in the northern part of the state. Another option is prohibiting the harvest of sponge crabs. The largest impact would be the Pamlico area, statewide it would be roughly a three percent reduction. Eastern Pamlico Sound would be impacted the hardest. This measure would require sponge crab excluders in specific areas. Rock noted that once eggs are damaged, the crabs typically release the eggs as some studies have indicated. Another management option would be to expand the existing and/or expand new crab spawning sanctuaries. The size of the new sanctuaries would vary with inlet size.

The harvest with dredges (currently around Oregon Inlet) could also be limited. Rock noted that the dredge landings mostly have been coming from oyster dredges (~2k lbs. /year). Another option would be to move the crab trawls back to the shrimp trawl lines in Pamlico and Neuse rivers; moving down toward the mouth of the rivers. Season closures are another adaptive management option for the recruit elevated scenario, closures could occur during periods where a lot of are sponge crabs are present in April and May (based on fish house data). Other season closures include (also related to peak sponge crab abundance). Gear modifications in the crab trawl fishery include increasing the tail bag minimum mesh to four inches statewide and also falls in the recruit elevated category. Some studies have shown a reduction in the number of sublegal crabs as you increase tail bag mesh size. Rock asked the committee to consider all the options listed and noted the members could also present options not listed.

Blake verified that because all of the traffic lights have been triggered the Commission has to do something. Rock replied that was correct but the severity of action is not defined in the FMP. Gilbert Trip said since something has to be done, the Committee should recommend the maximum reduction at a minimum expenditure to the commercial fishermen. Bruno partially agrees with the Trips' statement but does not think there needs to be a reduction, status quo is the least burdensome on the fishermen. Bruno recommends eliminating the possession of V-apron (immature female) hard blue crabs. He thinks that even though they would require more time culling they are easy to identify and remove. Additionally, he says that the crab is not worth as much so culling these V-aprons will not hurt the bottom line. Pugh asked about sponge crabs. Rock stated that Virginia only allows harvest of orange or yellow sponge (prohibit black and brown seasonally) whereas North Carolina allows harvest of all sponge colors.

The discussion moved to crab landings. Winslow stated that crab landings have remained relatively stable over the last five or six years, and Bruno added that landings had increased in the past three. Winslow continued that effort has increased due to attrition in the gill net fishery. Winslow said that if the population is growing and increasing the harvest would increase because

the fishing effort is increasing. Bruno contributed some of this to new crab fishermen not being familiar with crabbing, because they were from another commercial industry and also to the market being flooded (lay days).

Williams wanted to know if prohibiting the possession of V-apron crabs would mean no red or white line crabs. He also added that at this point in the season, adding any management measure involving cull rings would be burdensome to the fishermen. Rock said that he thought a cull ring management measure would not be implemented until next year because of the burden to the fishermen to modify pots.

Blake asked Bruno if the crab trawl line and shrimp trawl line could be the same. Bruno didn't know many crab trawlers, so he couldn't comment but he knew that a lot of fishermen trawl out of Engelhard, North Carolina during the spring/late winter. Blake thought that since the trawl numbers were low then that could be a management measure to entertain. Blanton then asked Rock what the Southern Advisory Committee recommended. Rock replied that the Southern advisory committee recommended 1) reducing the cull tolerance to 5% and gear modification but did not specify the type of modification, and 2) prohibiting the harvest of V-apron and black sponge crabs.

Pugh asked when crabs spawn. Rock replied they spawn from the spring through the fall, peak spawn is in spring.

Bruno wants the Committee to word something that says that we have so many conflicting reports of crab abundance as compared to the Divisions crab reduction. As a Committee we could not possibly recommend anything in good faith to do to crabs. Rice stated that the Commission is going to do something and that we have the opportunity to present something to influence them and possibly minimize the reductions. Bruno is only comfortable with recommending prohibiting V-aprons. Blake says that prohibiting V-aprons would help recruitment and suggest that we need to explore additional data gathering measures. Williams wants to clarify at what point are they going to identify immature crabs. Blanton recommends adding "hard crab".

Blanton said the percent of trips over the culling tolerance level is an issue. He thinks that crabbers need to fix the percent of trips over the current tolerance threshold of 10% and supports a 5% culling tolerance. He thinks that using a cull box will help. He said that the Committee needs to make a strong recommendation because the Commission will. Blanton also supports adding cull rings or changing the location of cull rings. The discussion moved to cull ring placement and phasing it in over a period of time. Most fishermen agreed that location of the ring makes a difference.

Keith Bruno made a motion to recommend the Commission prohibit the harvest of V-apron crabs, consistent with moderate management measure option A3 and keep a 10% cull tolerance across the board. Everett Blake seconded the motion.

Blanton does not support this motion because it is not enough of a reduction for the Commission.

The motion carried 9-1.

Bruno wanted to create a motion that would request the Division re-tool the surveys used for blue crab management. Rice explained that most fisheries do not have as substantial of a data set as the blue crab. He said that twenty years was a substantial amount of time. If this data isn't adequate then he recommended to the crabbers to suggest what would be. Bruno said that the Division needs to look into a winter dredge survey. Rice said that everything was fine with the data until something was a problem. Bruno stated that nobody cared about the data until there was a problem and then they didn't support the data.

Keith Bruno made a motion to recommend the commission investigate re-tooling the data collection system for the blue crab industry and work with the industry to identify a more appropriate sampling approach (ex. winter dredge survey). Riley Williams seconded the motion. The motion passed unanimously.

Michael Blanton made a motion to recommend the commission implement a 5% culling tolerance, eliminate the harvest of V-apron hard crabs, and add two additional cull rings. Glen Barnes seconded the motion.

Steve Bradshaw made a motion to amend the current motion to add install at least one cull ring within 1 full mesh of the bottom of the apron/stairs of the upper chamber of the pot, effective January 15, 2017.

> **Amended motion to recommend the commission implement a 5% culling tolerance, eliminate the harvest of V-apron hard crabs, and add two additional cull rings. Install at least one cull ring within 1 full mesh of the bottom of the apron/stairs of the upper chamber of the pot, effective January 15, 2017.**

Trip asked if there would be a size to the cull ring. Blanton responded that the cull ring would be phased in. Bruno does not see how we can vote this one in when we already have the 10% voted in and if both pass this it sends a mixed message to the Commission.

The motion failed, with a tied vote of 5-5.

Steve Bradshaw made a motion to add two additional cull rings with at least one cull ring within 1 full mesh of the bottom of the apron/stairs of the upper chamber of the pot, effective January 16, 2017. Jim Rice seconded the motion. The motion passed unanimously.

PUBLIC COMMENT

Dave Futrell, commercial crabber in Pamlico River, he questioned the Divisions lack of confidence with the data and using this data to implement management measures on blue crabs. He thinks that 1) sporadic weather events, 2) most crabbers are not trawlers, and 3) we have a good collection of data with trip ticket system. He thinks that the data we have across the state looks good and doesn't show a problem. He doesn't understand why we are using survey data we are not confident with to enact management measures.

Charlie Beasley, Dealer (OBX Seafood), he said that just a few crabbers (10) caught millions of dollars' worth of blue crabs from the Pamlico Sound since November of 2015, trip ticket data will show you. He described that the shed starts in Albemarle Sound in May. They catch them in June (females) and they become dormant in July. Sometime around mid-August they just reappear. In 2015, in the first of August the crabs appeared and had another shed, he set his peeler pots. Talking to the guys around the dock he said that they were going to have a big fall in 2015. Last fall in one day Wanchese said they sent 2,500 bushels north in one day. In Engelhard, the crab house was buying 380, 100 pound crates per day and was having to turn guys away. He moved his pots to Hatteras Inlet in November, and they work the flood tide and water temperature at 43 degrees. The set their pots along that temperature mark through February. A lot of crabbers depend on crabbing around Hatteras Inlet in the winter, if crabbing in that sanctuary was restricted it would affect many people that are making their living on the crabs coming in the inlet.

Jerry Warren, wanted to talk about data on page 23 of the division website (he did not clarify what document he was referring to on the division website), referring to the annual number of license holders. He recalled the number of license issued and the number of licenses used and by how many participants from 2000 to present. He said that the number of crabbers are not increasing. Mr. Warren then read a letter from his boss **Wayne Dunbar**, commercial crabber, he has been crabbing for 38 years. He requested recreational fishermen be able to keep 1 red drum over 28 inches. He thinks that the cownose ray population increase is effecting the harvest of crabs. He opposes size limits on peelers, reducing tolerance of sub-legal crabs, expanding spawning sanctuaries, closed seasons. He supports eliminating V-apron possession (excluding pink and red line crabs).

Gene Ashton, says that crabbers have changed the fishing practice from quantity to quality. They target high dollar crabs. When picking houses closed, the demand for quantity moved to target value. He then asked the average age of the staff conducting the survey, saying that the majority were in their 20's. Adviser Winslow said that the staff member age conducting the survey ranges from 20 to 60 years old.

Jimmy Nobles, commercial crabber Pamlico River, he said that the management measures presented is not what the Blue Crab Plan Development Team discussed. He said that there are a definite number of crabs and the more pots that are put out means that there are just more people sharing the crabs. He also advised that all public present should go to the Commission meeting.

Gilbert Baccus, he says that we can't control the crab and has issues with the staff conducting the study. Some years you catch hardly anything and other years with abundance. Environmental factors effect catch and crab pots are easy to find, for purchase, this year. Usually you are calling around to find crab pots for purchase and now people are calling asking how many do you want to buy. It's an expensive venture to get in.

Paul Bule, recommended amending the fishery management plan for blue crab, resending the traffic light management for blue crab and returning to a total allowable catch based on the three high years of production (1996-1998).

David Gallop, commercial crabber in Columbia, believes that the surveys have large gaps in them because the surveys have changed a lot. He thinks that crabs are migrating a lot later and thinks that the data is not good except for the trip ticket landings. He does not support a 5% cull tolerance, not in favor of prohibiting V-aprons without a 1% cull tolerance. He wants the management process improved.

Jerry Schill, North Carolina Fisheries Association, there were 45 crab processing plants in 1987 and about 6 today. Things have changed with the inability to move from fishery to fishery. North Carolina used to brag about how diverse our fishery was. The diversity was also a conservation component. There were people that got into crab fishing because they were forced out of what they did before for economic reason, now it's because of regulations. The informal recommendation from the North Carolina Fisheries Association would be to mirror the Southern Advisory Committees recommendation.

Perry Wood Beasley, North Carolina Watermen United, he says the crab fishery is sustainable. He does not trust the data or samples. He said that division said that was a problem with recruit in 2006 and in 2008 they caught a lot of crabs. Currently, there are 1,109 crabbers in the state now and only 3% of the crab harvest is from sponge crabs. He says that there have been more crabs caught with less crabbers. He asked for how many test sites we have for samples, he checked and it was 104. He said that he gets reports of bad techniques. He recommends including water quality in management. He recommends a commercial team, with grant funds, that gets paid to troll beside us with crab trawl gear not mongoose nets to catch crabs not finfish. He supports prohibiting V-aprons because they have no meat and are illegal to sell up the road.

Terry Pratt, commercial fishermen, doesn't trust the data or stop light method. He recommends that the Committee request that the Commission revisit the management of blue crabs with the stop light method. He requests a method that is more representative of the real world.

Watson Stewart, commercial crabber, thinks that he is raising the little crabs because they feed off of the bait in the pots and use the pots for shelter from predators. He doesn't understand the trip ticket system. When you have lay days due to harvest in other states or flooded markets. How do you get crab loss when you cannot work? The crabs are there but you can't catch them.

Lauren Berry, commercial crabber, do we take out outliers from the data. Rock replied that we would remove outliers. She was referencing the old assessment where the increase jumped dramatically. She also said that in the literature it says that it takes a crab 60 seconds to get out of the pot. She attributed that time to them feeding. She supports a grant to grow crabs in the shedders for release into a hatchery.

Forrest Oaks, commercial crabber in Columbia, says if we don't recommend some the Commission will do it for us.

Mandy Hooper, thinks it's time to ask the commission to look at a water quality and predators to the stock.

RECOMMENDATIONS TO THE MARINE FISHERIES COMMISSION FOR BLUE CRAB MANGEMENT MEASURES

Keith Bruno made a motion to recommend to prohibit the harvest of V-apron crabs, consistent with moderate management measure option A2 and keep a 10% cull tolerance across the board. Everett Blake seconded the motion. The motion carried 9-1.

Keith Bruno made a motion to recommend the commission investigate re-tooling the data collection system for the blue crab industry and work with the industry to identify a more appropriate sampling approach (ex. winter dredge surveys). Riley Williams seconded the motion. The motion passed unanimously.

Steve Bradshaw made a motion to add two additional cull rings with at least one cull ring within 1 full mesh of the bottom of the apron/stairs of the upper chamber of the pot, effective January 16, 2017. Jim Rice seconded the motion. The motion passed unanimously.

NATIONAL MARINE FISHERIES SERVICE 2016 RECREATIONAL COBIA SEASON

Michelle Duval, Executive Assistant for Councils gave an overview of the NOAA Fisheries 2016 Recreational Cobia season. Duval reviewed the Coastal Migratory Pelagic Amendment 20B and the event that led up to the June 20th closure. The presentation gave details of recreational harvest as well as additional information on size limit and bag limits and how they may prolong the season.

Since 1993, the fishery has been managed by NOAA. Duval described the catch limits and accountability measures. Noting that there are now two stocks of cobia; only one stock was identified in the old assessment. The average weight of fish has risen from 2013-2015. Duval also noted that there were targeted trips in 2015. Most recreational trips only had one fish and most all trips had fish greater than the minimum size of 33 inches fork length. The seasonal distribution of the landings are different for each state. North Carolina peaks in May/June, Virginia peaks in July/August. Overall the percent of landings and total number of pounds increased for all states; however, the percentages varied by state. The majority of harvest comes from private boats sight casting. In 2015, 82 percent of the harvest has occurred in state waters.

Next Duval reviewed the federal statutory requirements (annual catch limits, accountability measures, and averages used to determine annual catch limits). If only 2013 landings were used she noted that the fishery would close June 27. With one fish bag limit (commission recommendation), closure date would have be June 29. Duval noted that different years lead to different closure dates. This year NOAA choose to use the 2013-15 average, thus the June 20th closure date. The MFC requested that NOAA look at how an increase in size limit and lowering the vessel limit will affect the closure date. A May 23 start date was used for North Carolina. The date at which regulatory changes takes place really effects the days gained.

NOAA also looked at a combination of the two (vessel and size limits). Duval noted that whether you went with one or two fish that it really did not expand the fishery by much. A three fish vessel limit, would max out the season to June 30. NOAA used a May 1st start date for the North Carolina and Virginia combined analysis. If North Carolina puts regulations in before May

23 and Virginia puts regulation in before May 1, we could go to a 40 inch size limit with a two vessel limit and fish until July 3rd.

Next Duval reviewed the purpose of the interjurisdictional fishery management plan, describing the management measures in state waters. Duval noted that North Carolina can implement more strict measures or the state can challenge the federal measure with a simple majority. Next Duval reviewed the MFC Cobia management options, giving the pro and cons. Duval also noted that regardless of the option that the commission chooses, they may still want to appoint a compliance advisory panel. Next Duval reviewed the timeline (upcoming federal and state meetings) and asked for recommendations for the 2016 recreational cobia season.

Bradshaw said that based on the data everything was fine with cobia and the size of fish were increasing. They (NOAA Fisheries) even say that cobia are not being overfished. Rice wanted to know what the allowable catch target was before it was adjusted. Duval replied that it was 1.4 million pounds when Florida was included in the biological boundary, but now the boundary has been moved to the GA/FL boarder. Rice asked if we have information on size at age (sexual maturity). Duval replied that cobia are sexually mature at 31 inches. Winslow supports working with Virginia to extend the cobia season.

Duval told the Committee that the Southern Advisory Committee voted to complement the federal closure of June 20 in state waters.

Trip recommended to keep the current cobia minimum size limit at 2 fish per person until the ACL is met. Duval described the 45 day lag period in wave data, so it would be difficult to track when the ACL was met. Blake asked what the ramifications were for non-compliance. Duval said that we could end up with a shorter 2017 season because the quota would be recalculated for overharvest.

Everett Blake made a motion to recommend the Commission maintain the current minimum size limit (33 inches) and one fish per person possession limit through June 20, 2016. After June 20, 2016 implement a two fish per vessel possession limit, becoming out of compliance with Federal Regulations. Jim Rice seconded the motion. The motion carried 9-1.

Everett Blake made a motion to recommend that the Commission appoint a compliance advisory panel to help the North Carolina fishermen recoup the reduction in pound of allowable catch from the cobia reduction. Keith Bruno seconded.

Blake withdrew this motion, allowed by Keith Bruno.

Everett Blake made a motion to recommend the Commission request NOAA Fisheries reconsider the biological boundary between the Gulf and Atlantic cobia stocks. Steve Bradshaw seconded the motion. Motion carries unanimously.

PUBLIC COMMENT

Rick Caton, commercial fishermen from Hatteras, has been in the cobia fishery since he was 18 years old and is 58 years old now. He has problems with the numbers and pounds harvested in the presentation. If cobia is not overfished with no overfishing then why are we doing anything. Ocracoke, Hatteras, Oregon Inlet are big players in the cobia fishery. He has never been interviewed by an MRIP sampler for cobia in all of his years of fishing. He wants an updated economic impact statement. In the last 9 years he saw more cobia spawning. He wants to know if that is taken into account. He says that a vessel limit of 2 does not support their fishery. He supports in going out of compliance with the federal government and rising the size limit to between 37 or 40 inches. He opposes the captain and mate being excluded from the vessel possession limit.

Bill Gorham, passed out materials about the cobia reduction. He said that Virginia is being treated unfairly because they had no members working on the South Atlantic Amendments 18 and 20 that effects cobia. He also talked about discrepancies in minutes from previous South Atlantic Fishery Management Council Statistical Science Committee meetings concerning cobia. He supported going out of compliance with the federal regulations and need for additional data.

Cameron Whitaker, commercial fisherman from Hatteras, said he has never been sampled for and MRIP survey. He supports the state going out of compliance with the SAFMC.

RECOMMENDATIONS TO THE MARINE FISHERIES COMMISSION FOR 2016 RECREATIONAL COBIA SEASON

Everett Blake made a motion to recommend the Commission maintain the current minimum size limit (33 inches) and one fish per person possession limit through June 20, 2016. After June 20, 2016 implement a two fish per vessel possession limit, becoming out of compliance with Federal Regulations. Jim Rice seconded the motion. The motion carried 9-1.

Everett Blake made a motion to recommend the Commission request NOAA Fisheries reconsider the biological boundary between the Gulf and Atlantic cobia stocks. Steve Bradshaw seconded the motion. Motion carries unanimously.

The Meeting adjourned at 11:00 p.m.

Enclosures

Cc:

Catherine Blum	Jess Hawkins	Gerry Smith
Mike Bulleri	Dee Lupton	District Managers
Scott Conklin	Nancy Marlette	Committee Staff Members
Dick Brame	Katie Mills	Marine Patrol Captains
Braxton Davis	Phillip Reynolds	Section Chiefs
Charlotte Dexter	Jerry Schill	

Marine Fisheries
ENVIRONMENTAL QUALITY

PAT MCCRORY
Governor

DONALD R. VAN DER VAART
Secretary

BRAXTON DAVIS
Director

MEMORANDUM

TO: Marine Fisheries Commission
Southern Regional Advisory Committee

FROM: Trish Murphey
Chris Stewart
Division of Marine Fisheries

DATE: Apr. 25, 2016

SUBJECT: Southern Regional Advisory Committee Meeting

The Southern Regional Advisory Committee met at 5:30 p.m. on Wed. Apr. 6, 2016 at the Division of Marine Fisheries Central District Office, 5285 Highway 70W, Morehead City. The following attended:

Advisers: Charles Griffin, Pam Morris, Ron McPherson, Chris Medlin, Randy Proctor, Bob Lorenz

Absent: Fred Scharf, Tom Smith, Amy Dickson, Phillip Smith, Chris Hunt

MFC: Chairman Sammy Corbett and Alison Willis

Staff: Trish Murphey, Chris Stewart, Kathy Rawls, Joe Facendola, Jason Rock, Michelle Duval, Tina Moore, Forrest Nelson, Corrin Flora, Nancy Fish, Catherine Blum, Carter Witten, Gary Wright

Public: David Bush, Brent Fulcher, Federico Creekmore, Glen Skinner, Wayne Dunbar, Ken Seigler, Charlie Renda, Jr., Michael Shutak, Carolyn Wood, Dale Seaford, Cathy Fulcher, Andrea O'Neal, Steve Weeks, Charlie Renda, Jan Willis, Lauren Salter

Pam Morris, serving as chair, called the meeting to order. Morris reminded the audience that this committee provides advice to the Marine Fisheries Commission and that this committee does not make rules. She reminded the public to sign up to speak.

MODICATION TO THE AGENDA

No motion was made to approve or modify the agenda.

APPROVAL OF MINUTES

Randy Proctor made a motion to approve the Dec. 21, 2015 minutes. The motion was seconded by Charles Griffin. The motion passed unanimously.

REVIEW OF THE DRAFT ISSUE PAPER REDUCING SHELLFISH LICENSE OYSTER HARVEST LIMITS STATEWIDE

Joe Facendola, Fisheries Management Plan co-lead gave a presentation on the draft issue paper "Reducing Shellfish License Oyster Harvest Limits Statewide. He explained that the commission at its meeting in February made a motion to reduce the bushel limits on oysters for shellfish license holders to 2 bushels per person/ 4 bushels per vessel statewide. This management strategy was not presented to the public therefore the commission requested that this be presented to the regional committees for their input. Facendola reviewed the Division and Advisory Committee recommendations as well as the Marine Fisheries Commission motions made at the February meeting. Facendola provided background on the Shellfish License, described landings and participants data grouped by waterbody of harvest (four regions) and license holder data grouped into five regions by county of residence of license holder. He noted that a license holder may have landings come from multiple harvest regions and that not all license holders sell their catch. The southern region had the highest number of shellfish licenses sold and highest percentage of total licenses sold with trip ticket landings. He noted that some individuals just sell clams with a shellfish license. Sixteen percent of the licenses sold show public bottom oyster trips, 32 percent show landings for any shellfish species. The number of licenses sold, peaked in 2002 and again in 2011. In 2015, 27 percent of shellfish licenses holders had trip ticket landings for oyster off public bottom. The increase in landings in bushels seem to be increasing due to the Shellfish License holders. Annual average number of trips by Shellfish Licenses holders with landings is also increasing. Roughly 39 percent of the public hand harvest oyster trip ticket landings statewide come from shellfish license holders fishing in the southern and central areas. In the southern region the number of Standard Commercial Fishing License holders have stayed relatively stable; however, the overall number of participants has increased. Overall, we are seeing a decrease in the number of bushels per trip. In the central region the Standard Commercial Fishing License participants has remained somewhat steady. There is a slight decline in the number of bushels per trip in this region as well. In the Pamlico and Northern regions there is relatively small growth in the number of participants. Facendola indicated that the removal of oysters from the shellfish license would eliminate recreational use of the Shellfish License to land commercial limits of oyster and potentially reduce commercial harvest pressure and impacts which is greatest in the southern region. Facendola expressed enforcement concerns as well. He reviewed the three options for the committee to vote on which included: Status quo, reduce the Shellfish License oyster bushel limit to a lower specified amount statewide, and reduce the Shellfish License oyster bushel limit to a specified amount regionally.

Bob Lorenz asked why the shellfish license was originally established. Morris indicated that it was done to benefit shell fish lease participants who had others working their leases. Lorenz asked if 39 percent was really all recreational. Facendola, indicated that the 30 percent in the southern region was just the percent of the total hand harvest oyster landings from shellfish license holders. Lorenz asked if you remove oyster, what could be harvested. Facendola indicated, scallops and clams. Chris Medlin, noted that people in his area typically got the license because they were going through hard times. He added that most do not have boats and he would

hate to see these guys pushed out. Lorenz asked if it made more sense to get a true count of the numbers oysters taken and maybe not knock out the recreational guys. Morris indicated that if you have paid for a license and have not used it; taking it away is not right. Nancy Fish, Marine Fisheries Commission liaison clarified that the commission is asking the committees to comment on if they should extend the two bushel limit statewide verses south of the Highway 58 Bridge. Morris indicated the commission chose not to go with what the Oyster/Clam Fishery Management Plan Advisory Committee decided when first asked and that her opinion has not changed. Tina Moore, Fisheries Management Plan co-lead reminded the committee of the motions made at their last meeting in December. She noted that they voted to eliminate oysters from the shellfish license and that they did not vote on the two bushel limit in the south. Moore also indicated that they voted to expand sampling as well.

Facendola next reviewed the pros and cons of each option. Lorenz asked if we could manage oysters like what is done with crabs (i.e., traffic light), noting the southern region of the state would likely have a red light, the central a yellow and both the Pamlico and northern areas a green light. He felt that option 3 would be best. Asking, why penalize everyone if the problem is localized in the southern region. Morris agreed and noted that what the original committee motion went with something along those lines.

PUBLIC COMMENT

No public comment

RECOMMENDATIONS TO THE MARINE FISHERIES COMMISSION FOR THE SHELLFISH LICENSE

Bob Lorenz made a motion to support option 3 (Reduce the Shellfish License oyster bushel limit to a specified amount regionally) that reduces the southern region defined as south of the Highway 58 Bridge to two bushels per license (four bushels per vessel). The motion was seconded by Chris Medlin. The motion passed unanimously.

REVIEW OF BLUE CRAB TRAFFIC LIGHT AND MANAGEMENT MEASURES

Jason Rock, Blue Crab fishery management plan co-lead gave an overview of the Blue Crab Traffic Light. He gave a description of the difference between qualitative and quantitative indicators as well as what the colors of the traffic light mean. Rock indicated that the Traffic Light was implement in 2013 with Amendment 2 of the Blue Crab fishery management plan. He described the indicators, management thresholds and management levels as well as the management triggers. He described the three year timeframe, noting that the timeframe was set by the commission (and recommended by Division) to account of annual variability as well as providing safeguards for the stock. The adult abundance was tripped in 2015, reaching the 50 percent threshold. This was the third consecutive year that adult abundance was exceeded. The recruit abundance was also tripped in 2015 (75 percent threshold); this was the fifth consecutive year. The production trigger was not tripped in 2015 (44 percent Red). Next Rock reviewed the individual indicators for each component of the traffic light. Rock finished the presentation by showing how the traffic light tracked with the commercial hard crab landings 1987-2015.

Chris Medlin asked what changed from 1996-97. Rock indicated that there were several hurricanes; however, as of late we have not had too many. Morris asked if the division factored in the reduced number of commercial fishermen in the analysis. Rock indicated that effort data is not factored in; however, he did look at it. Rock noted that effort, number of trips, number of pots has remained stable for the last 10 years. Morris asked about independent data. Rock indicated the data comes from independent survey data. Morris asked if the 1990s were taken into account. Rock indicated that during the 1990s there were more trips; however, the number of pots was not as high. Morris noted that in the 1990s people were fishing over 2,000 pots each and indicated that there is much less effort in Core Sound now. She wanted to be sure that we are not penalizing crab fishermen because of biased data. Rock noted that when there was more effort there was more green years in the traffic light. However, landings data are not part of the traffic light and that they do not influence the results. Lorenz noted that he saw in the National Fishermen that 3 million plus pounds of blue crabs were harvested last year; the second biggest harvest in the last few years. He was under the impression that things were good. Rock indicated that the landings are half what they were in the 1990s; however, last year was a good year. Medlin noted that fishermen in his area have indicated that there has been a decline and that they suggest we eliminate sponge crabs, limit pots to 200-300 per fishermen, make Rich/Banks Channel a sanctuary, close south of Core Sound in February, and get more ghost pots out of the water. Medlin noted that this only represents the thoughts of fishermen in the Surf City / Topsail area. Both Lorenz and Medlin questioned why we still allow the harvest of sponge crabs. Morris indicated that in the 1950s a law was put in place to stop taking sponge crabs. Later this was rescinded, because the female crabs settle in grass beds and the scientists at the time indicated that only three crabs could support the fishery. Harvest in the Outer Banks would be severely limited if sponge crabs could not be harvested. Commission Chair Sammy Corbett wanted to clarify that the pot clean up lasted 11 days in the southern portion of the state and that no ghost pots were found following the end of the season; noting that he and Louis Daniel, Past Director, went out and could not find any along the ICW. Commissioner Corbett also commented on how the indices were calculated, noting that the data did not come from crab pots or shrimp trawls, but from several of the division's independent sampling programs as well as dependent fish house data. Rock described further how the fish house data were collected. Medlin asked if only three crabs could populate the sound. Rock indicated that on paper yes, but due to high mortality at that phase it would not be very likely.

Next Rock went through the Traffic Light Adaptive Management Measures (moderate and elevated for the adult and recruit abundances). Rock gave examples of what type of management measures could fall under the more broad measures. One option would be to increase the minimum size limit for male and immature female crabs. In doing so, going to 5.25 inches would be an estimated 35 percent reduction in landings (0 percent culling tolerance, 5 percent in rule). Going to 5.75 inches would give an estimated 52 percent reduction. Going to 6 inches, would be roughly a 69 percent reduction. Recoupment would be likely happen as crabs grow. Another option would be to eliminate the harvest of v-apron crabs, immature hard crab females; however, this would have minimum reductions and recoupment would likely happen as crabs grow. Reducing the tolerance of sublegal crabs to a minimum of 5 percent, would have minimal reductions. Moderate management measures also include removing escape ring exemptions for eastern Pamlico Sound and Newport River. Increasing the cull rings to 2 3/8 – 2 ½. Rock indicated that two studies looked at cull ring size and how it affected catch. The first study, catch

rate of sublegal males was reduced by increasing cull ring size, legal males and mature females were maintained, body length of minimally legal male crabs was not less than the current minimum cull ring size. Another gear modification would increase number of cull rings from 2 per pot. Rock also noted that it could be required that the cull ring be located near the floor of the upper chamber; 60 percent of sublegal crabs escaped in the first hour. An adaptive management measure (recruit moderate) such as establishing a seasonal size limit on peeler crabs is another option. Establishing a 3.25 inch minimum size would yield roughly a 4.8 percent reduction, going up to 3.75 minimum size would yield roughly a 19 percent reduction. Another management measure would be to restrict trip level harvest of sponge crabs (tolerance quantity, sponge color). The committee could also chose to close crab spawning sanctuaries from September 1 through February 28 (now March 1 through August 31). Rock indicated that the sanctuaries are mostly in the northern part of the state. Another option is prohibiting the harvest of sponge crabs. The largest impact would be the Pamlico area, statewide it would be roughly a three percent reduction. Eastern Pamlico Sound would be impacted the hardest. This measure would require sponge crab excluders in specific areas. Rock noted that once eggs are damaged, the crabs typically release the eggs as some studies have indicated. Another management option would be to expand the existing and/or expand new crab spawning sanctuaries. The size of the new sanctuaries would vary with inlet size. The harvest with dredges (one currently around Oregon Inlet) could also be limited. Rock noted that the dredge landings mostly have been coming from oyster dredges (~2k lbs. /year). Another option would be to move the crab trawls back to the shrimp trawl lines in Pamlico and Neuse rivers; moving down toward the mouth of the rivers. Season closures are another adaptive management option for the recruit elevated scenario, closures could occur during periods where a lot of are sponge crabs are present in April and May (based on fish house data). Other season closures include (also related to peak sponge crab abundance). Gear modifications in the crab trawl fishery include increasing the tail bag minimum mesh to four inches statewide and also falls in the recruit elevated category. Some studies have shown a reduction in the number of sublegal crabs as you increase tail bag mesh size. Rock asked the committee to consider all the options listed and noted the members could also present options not listed.

Lorenz noted that with all the available options presented it was a daunting task to make a motion. Lorenz indicated that he would like to limit bottom disturbance and to protect spawners. Lorenz asked Rock how many times a sponge crab can spawn. Rock indicated that once fertilized, a female crab can keep producing offspring throughout the year. Lorenz also asked about the planktonic stage of crabs. Rock indicated that there is a megalope stage and is distributed around the inlets. Rock indicated that they can have multiple sponges in the year. Medlin asked if they could have more sponges after being caught in a pot. Rock indicated yes they could have more. Corbett commented that he and fishermen in his area do not keep sponge crabs. Corbett also noted that he and other fishermen do not keep v-apron crabs either. He also does not have a problem with the five percent or three percent cull tolerance. The smaller crabs are not worth as much. Corbett went on to say, there are more pots, even though there are less crabbers/participants. He also noted that he would like to see the Amendment process started. Corbett clarified that the sponge crab excluder is more or less the terrapin excluder. Noting that he used them while working on a Sea Grant project. He saw a 100 percent reduction in stone crabs and he catches/sell a lot of stone crabs; thus his fear in going to excluders. As with flounder, seasonal closures will cripple the industry. Corbett also commented that season

closures will put the crab houses out of business and North Carolina will likely be importing of crabs from Virginia.

Morris, noted that the central area is quite different than the southern area. Core and Pamlico sounds are different; noting there are several members from this region who would like to talk. Morris opened the floor for public comment.

PUBLIC COMMENT

Glen Skinner – Commercial fisherman (crabber) from Carteret County - Really do not have an option he supports, noting that they are all valid options. He asked the committee strongly consider the diversity of the state, if you take sponge crabs away you will kill some areas. Please make your recommendation specific to each area.

Wayne Dunbar – President of Pamlico Co. Fisherman Association who has 38 years of crabbing, crabs are an annual crop (much like shrimp), he makes 90 percent of his living with crab pots. Pollution is the problem, let sport fishermen keep one drum over 28 inches (they take too many crabs, as well as cownose rays). As far as increasing the size limit of males and immature females; he is opposed to increasing the size limit for males (less money for everyone). He is opposed to a seasonal size limit for peelers; citing that size does not matter for soft crabs. In regards to reducing tolerance limits, it puts a burden on crabbers; we currently throw the little ones over. In regards to v-apron crabs, he is for this as it excludes pink and red line peeler crabs; this is a good idea. Restricting all harvest of sponge crabs, this will hurt everyone and excluders are bad as well. I am opposed to season closures opposed (February is high dollar time of year). He is opposed to expanding sanctuaries (limits crabbers even more). He is opposed to season and gear closures, we will face problems like what happened in Virginia (the price goes down after the market is flooded on opening day; the price fell below $0.80). Supply and demand is crab management in a nut shell. This year oystering got so bad, many went back to crabbing. We need to stay flexible, no more closures are needed. He opposes any gear modifications in the crab fishery. Alton Parker told him to be careful what you ask for, some of the rules he helped make are now causing me trouble. There is nothing wrong with the crab population. Last year we had one best years since the hurricanes. We had lay days due to many crabs on the market. Some scientists wants to justify their job. Crabs are an annual crop, regulations will not make a difference.

Ken Siegler – Commercial crabber – The excluder will eliminate stone crab market. The division is confused about the spawning areas, citing that crabs do not spawn directly in inlet areas, they are looking for grass to rub eggs on right off the shoals. He knows from experience. Spawning occurs outside the ocean front, tides are too great by inlets. “Transport” from recruitment abundance to adult abundance is limited due the red drum population (the crabs are being eating before they can be adults). Schools of red drum have wiped out the crabs. This has been seen in Virginia. Red drum were eating all the peelers and sponge crabs. Nobody is looking into this problem. We need to control the red drum population.

Brent Fulcher – 3rd generation commercial crab processor/dealer from Carteret/Craven County, Chair of North Carolina Fisheries Association - If you take sponge crabs out of the mix it will

not change anything; it will not increase production. Look at Virginia and Maryland, the do not allow harvest and things are no better there. He asked how the division got at the reduction from peelers. Noting that it does not relate to biomass. The problem is with management, big landings do not relate to CPUE due to the lack of participants (look at Cedar Island). There is less gear in most regions now than what was seen in the past. V-apron crabs is a good move, past that you will hurt the fishery. Look at the predation on crabs. Look at the huge landings in the shrimp trawls as bycatch in the 90s; that has now been reduced. The bycatch provides a good food source in past years, reductions in bycatch is related to reduced landings. Look at the Gulf States, the bycatch provides an additional food source. In regards to cull ring and their use in certain areas, there is another life phase/morphology of immature crab (Corbett – "Hickory Sook") that does not get any larger than three inches. The smaller rings were originally removed to exclude these crabs to limit the proliferation of these smaller crabs. Morris commented that she agreed with Brent and that the cull rings and sponge crab laws were rescinded because they were useless laws.

RECOMMENDATIONS TO THE MARINE FISHERIES COMMISSION FOR BLUE CRAB MANAGEMENT MEASURES

Morris noted again that certain regions will be hurt more than others. Morris went on to say that around Drum Inlet you find dead crabs everywhere; noting that they die shortly after they spawned, they only live 18 months. Morris did not want her people to be damaged by something that is not reality. Lorenz indicated that he was taking the other side and that with all due respect he trust the division's science over professional experience. Lorenz asked Rock to speak up, if he believes different than what has been said. Lorenz went on to say that he likes ideas of protecting spawners and that he does not agree with A1 due to other states' size restrictions. Lorenz said he likes A2, A3, R2, R4 and possibly R7. This is a starting point, his bias is to protect the spawners as much as possible. Corbett asked Lorenz to further detail his thought on restricting the level of sponge crabs with R2 and how it was different than what is in R4; what is his reasoning? Lorenz stated that this is the simplest way to start in his opinion. Corbett noted that if you put the excluders in, that you might as well do it all. If excluders are forced to be put in pots, the industry will shut down. Randy Proctor noted that we are mandated to do something. He asked Corbett and Fulcher what they would do. Corbett noted the v- apron rule is good, he does not keep sponge crabs. However, Fulcher uses them at the picking house. Corbett went on to say that R4 (excluders) will put everyone out of work. Proctor asked Fulcher what is the most tolerable solution. Fulcher noted that the industry is diverse and is regionally specific, you need to look at more than just the resource. In the 1990s there were 40 plus picking houses, now there are eight. Production is down. If there is no market for them the landings will be down. You have to look at other forms to sell the product, thus the industry needs year around access. Fulcher noted that the v-bellies would be a good solution and as far as sponge crabs goes he is not in favor and that has not helped Virginia. Fulcher went on to say that sponge crabs are off the table as far as he is concerned. He further noted that crab trawl production is not what it used to be, the bottom is stagnate and the crabs are not migrating. If you expand your sponge crab area this may work. It appears to be working. Production has been stable since 2000, effort is down, but this does not tell the whole story. There will be peaks and valleys in the landings. Something happened in the late 1990s, no plants, no production, nowhere to sell crabs. The shrimp trawl industry is down, there have been major hurricanes. Too much management has become a problem, changing the industry. We need to look at a shorter periods of time. Proctor also noted that clean water is

needed, but we have to do something. Morris reminded the committee can choose their own path with this matter and that they do not have to follow the division's recommendations.

Rock asked if it would help if he reviewed each of the Adaptive Management Measures. Morris suggested that we break down what the committee can vote on. Rock noted that they can vote on the moderate and elevated management measures in the adult and recruit abundance characteristics. Lorenz noted that the size limit was not a viable option right now. Proctor agreed. Lorenz, Proctor, and Ron McPherson indicated that they agreed with A2 and A3. Charles Griffin asked if this was statewide or regional, indicating that he would like to see regional recommendations. Rock indicated that Commission would have to motion to apply these regionally. Morris noted that many of the fishermen in each region already have a gentlemen's agreement, thus it may not be needed. Rock indicated the management measures would apply statewide as indicated in the fishery management plan. Griffin stated that he is good with A2 and A3. Medlin stated he was good A3 and asked with A2, what percentage of crabbers come in with more than 5 percent and if it will have an impact. Corrin Flora, Blue Crab Fishery Management Plan co-lead indicated that 13.2 percent of the trips come in with more than five percent v-apron immature crabs. Medlin indicated that he was good with A3. Proctor makes a motion to go with A2 and A3,

Randy Proctor made a motion to reduce the tolerance of sub-legal size blue crabs to a minimum of 5 percent and directed the Marine Fisheries Commission to look at gear modifications to reduce sublegal catch and to eliminate harvest of v-apron immature hard crab females. The motion was seconded by Ron McPherson. The motion passed unanimously.

Rock asked that they go back to and look at the gear modification part. Morris indicated that committee understanding was that the commission would look into gear modification to reduce sublegal crab; however, the committee did not vote for specific ones. Both Proctor and McPherson agreed with this clarification.

The 'R' options were discussed next. Randy asked that they eliminate R6, R3, R5, and R4. The committee asked that size limit of peeler crabs also be taken off the table. Sponge crabs are the issue. Medlin noted that they should get rid of R1 and R6. McPherson noted that if you make it illegal to take sponge crabs it will not matter he is hearing; thus, why is this a topic, it limits crabbers, many don't take them. Griffin requested that they remove R1, R3, R5, R6, and R7. Medlin agreed to drop R1, R3, R5, and R6 but he would like to discuss R2 and R4. Morris reviewed the recommendation to take R1, R3, R5, R6, and R7 off the table. Lorenz indicated that he did not want to limit peeler crabs due to their value. Lorenz also asked what the modifications would be in R7. Rock indicated that would include a tail bag mesh increase from three to four inches, to reduce sub-legal crabs, noting that some would lose a percentage of catch and have to get new tail bags. Overall the committee was agreeable to removing R2 and portion of R4. Proctor asked about black sponge crabs. Rock noted that brown and black sponges are the later stages sponges. Lorenz asked more about excluders and how it limits sponge crabs. Morris noted that it limits stone crabs too. Corbett noted that in his experience, excluders also reduces the number of high value jimmy crabs. The discussion focused on the harvest of sponge crabs. Medlin asked what would be the easiest to enforce, and in regards to cull tolerance, what would

be the easiest to enforce percentage or color. Marine Patrol Major Dean Nelson explained that it would be fairly easy to do. Glen Skinner, indicated that the market does not like the black sponges due to ammonia content. Virginia does not allow fishermen to the take of brown and black sponge crabs. Morris noted it would be too hard to tell the difference between brown and black. Griffin indicated that he would like a regional breakdown. He asked about what the Northern Committee decided. Morris indicated that the Southern Committee is the first to vote and noted that Core Sound has the majority of the sponge crabs, thus it is not as a big of an issue for people in the northern portion of the state. Morris indicated that up north, they have more 'whale' and 'dick' crabs. Proctor stated that he is ok with eliminating black sponge crabs.

Randy Proctor made a motion to designate no take on black sponge crabs with a cull tolerance of 5 percent. Ron McPherson seconded the motion.

Discussion of the motion followed. Griffin asked how long would the rule be in effect. Rock indicated that they would be in place for 3 years until the triggers fall back. Morris stated that it will never happen. David Bush, noted that the color could change overnight. Bush asked they consider a percentage of black. Lorenz stated that he has trouble voting for this motion, noting that it is too soft of a management measure and that he would prefer something more restrictive for sponge crabs like R2 with a regional component. He indicated that he cannot believe we still allow the take of sponge crabs; noting that it is for the good of the resource and that North Carolina is the only state that allows this. Morris agrees with the regional aspect. However, we are our own state. They process our crabs, they still have issues with their crabs with the no sponge regulations. Let us separate the state, the central region of the state does not like or need it. Proctor asked Lorenz about some sponges being taken regionally or if it was all or nothing. Lorenz indicated that he would like to include all sponges.

Motion passes 4-2.

NATIONAL MARINE FISHERIES SERVICE 2016 RECREATIONAL COBIA SEASON

Michelle Duval, Executive Assistant for Councils gave an overview of the NOAA Fisheries 2016 Recreational Cobia season. Duval reviewed the Coastal Migratory Pelagic Amendment 20B and the event that led up to the June 20th closure. The presentation gave details of recreational harvest as well as additional information on size limit and bag limits and how they may prolong the season. Since 1993, the fishery has been managed by NOAA. Duval described the catch limits and accountability measures. Noting that there are now two stocks of cobia; only one stock was identified prior to the assessment. The average weight of fish has risen from 2013-2015. Duval also noted that there were more target trips for cobia in 2015. Most recreational trips only had one fish and most all trips had fish greater than the minimum size of 33 inches fork length. The seasonal distribution of the landings are different for each state. North Carolina peaks in May/June, Virginia peaks in July/August. Overall the percent of landings and total number of pounds increased for all states; however, the percentages varied by state. The majority of harvest comes from private boats sight casting. In 2015, 82 percent of the harvest has occurred in state waters. Next Duval reviewed the federal statutory requirements (annual catch limits, accountability measures, and averages used to determine annual catch limits). If only 2013 landings were used she noted that the fishery would close June 27; including the North Carolina one fish bag limit (commission recommendation), closure date would have be June 29. Duval

noted that different years lead to different closure dates. This year NOAA choose to use the 2013-15 average, thus the June 20th closure date. The Commission requested that NOAA look at how an increase in size limit and lowering the vessel limit will affect the closure date. A May 23 start date was used for North Carolina. The date at which regulatory changes takes place really effects the days gained. NOAA also looked at a combination of the two (vessel and size limits). Duval noted that whether you went with one or two fish in combination with a size limit increase, that it really did not change the projected closure date by much (maximum July 6). A three fish vessel limit in combination with an increased size limit, would max out the season to June 30. For the North Carolina and Virginia combined analysis, if North Carolina puts regulations in on May 23 and Virginia puts regulations in on May 1, we could go to a 40-inch size limit with a two fish vessel limit and fish until July 3rd, or until July 15th with a one fish vessel limit. A 45-inch size limit and a one-fish vessel limit would result in no closure. Next Duval reviewed the purpose of the Interjurisdictional Fishery Management Plan, describing the management measures in state waters. Duval noted that North Carolina can implement more strict measures or the state can challenge the federal measure with a simple majority. Next Duval reviewed the Commission's Cobia management options, giving the pro and cons. Duval also noted that regardless of the option that the commission chooses, they may still want to appoint a compliance advisory panel. Next Duval reviewed the timeline (upcoming federal and state meetings) and asked for recommendations for the 2016 recreational cobia season.

McPherson asked about how the lengths were collected for the recreational fisheries and about the percentage of undersize fish. How was that number calculated? He indicated that he sees more undersized fish and thinks the numbers are off. Duval indicated that the numbers are just those fish that are harvested, based on at dock interviews and phone surveys. This is what is brought back to the docks. McPherson asked if the 900,000 pounds was extrapolated. Duval explained that it is estimated by Marine Recreational Information Program (MRIP) national protocol. Lorenz noted that all this reminds him of the black sea bass. He asked if he was wrong; that in 2015 lots for fish were caught, mostly big fish. The CPUE was the same, thus it appears stable and healthy to him. He asked, if this is true, what is the problem? Duval noted that federal law requires that there is a quota regardless if overfishing is happening; this assures we do not overfish. It may be time to update the stock assessment to determine if we have had good recruitment since 2011. Lorenz stated that he is worried that the commercial quota will be blown out of the water. Duval noted that it could happen. Duval noted that there is not a federal commercial cobia permit currently, but there is a federal charter/for-hire permit required to fish in federal waters. . Griffin noted that commercial guys do not typically target cobia while netting and long lining. He suggested if there was a regulation to set an equal amount of bycatch to keep two cobia that may work; this is merely a suggestion. Duval noted that some are concerned, a charter boat guy will buy a Standard Commercial Fishing License to keep two. McPherson noted that you cannot do that. Once a crew comes out, it is a charter, noting that you cannot use a commercial license at that point; this will not be problem. Medlin worried that some will try to cheat, thus changing trips mid trip. Medlin asked how long we have to pay this overage back. Duval noted that this is not a payback. The season is merely being shortened to make sure we do not go past the annual catch target. Next year we have the same annual catch limit (620,000 pounds) and annual catch target (500,000 pounds); however, the length of the season could be shortened again if the annual catch limit is exceeded in 2016. The average 2015 and 2016 harvest will be used to determine if the 2016 recreational annual catch limit was exceeded.

Duval noted that the South Atlantic Council is working to change this accountability measure as soon as possible. Morris noted that in North Carolina the cobia season around the Cape is May to June, so would it not be better to accept the June 20 closure and be done with it.

RECOMMENDATIONS TO THE MARINE FISHERIES COMMISSION FOR 2016 RECREATIONAL COBIA SEASON

Bob Lorenz made the motion to advice the Marine Fisheries Commission to complement the federal management measure in state waters for Cobia. The motion is seconded by Randy Proctor.

Discussion of the motion followed. McPherson indicated that he does not like it because he takes people on bottom fishing charters all the time, noting that people like catching and taking home big fish. He catches cobia more outside of June (August-September), thus limiting what his charters can keep. Medlin indicated that people gaffing cobia off the piers would be a problem because no one would use the nets. Duval asked the committee how they felt about an increase in the minimum size limits to increase season. Duval noted that the actions were for 2016 only with hopes to extend the season as much as possible. She stated that you would still be allowed to catch them; however you just could not keep them. Lorenz noted, why bother for one day. Morris agreed and worried that an increase in size limit would remain and would not go away. She suggest that the Commission not comply because it is only one year. McPherson asked that if number of pounds for 2016 were averaged with 2015 and it came out to be less than the 620,000 pounds then we would be ok. Duval, noted that she still has a few questions about how this will work, but because 2015 harvest was so high, that average would likely still exceed the 2016 annual catch limit. Proctor agreed with Chris about cobia on the pier and worried that this will be a problem noting that drop nets won't work for pier fishermen. Can we allow them as an exception? It was noted that no one gaffs big drum off piers, there was a big run off the Topsail piers this year and that if the word is out; no one will do it.

The motion passed 6-1.

PUBLIC COMMENT

Charlie Renda, Jr. – Member of Finfish Committee - We do not have a Joint Enforcement Agreement, we are a sovereign state, thus we do not have to comply, and most cobia are caught in state waters. This is a joint matter with eight states and we have been given a quota. The combination of the recreational and commercial catch will hurt the commercial catch. The recreational fish are not getting measured and counted like the commercial guys. Every commercial fish is accounted for. The recreational guys catch needs to be accounted for, especially the private fishermen. The estimation of 630k is just a guess. Combine these estimates with the commercial catch, is bad. Do not conform. We are the only place with no Joint Enforcement Agreement. Duval corrected a few comments Renda said, noting that the data are not combined. The accountability measure is what you are thinking about, not the data. If the total ACL is exceeded, the accountability measures get triggered. The commercial ACL was not exceeded, the recreational harvest was. They are not combined into one big quota. Renda did not

agree. Duval indicated that she would talk with him after the meeting. Morris indicated that she agreed and that we did not have to comply with this.

MARINE FISHERIES COMMISSION UPDATE

Fish review the agenda for the next Marine Fisheries Commission meeting to be held in Morehead City May 18-20, 2016. On the agenda are the Oyster/clam Shellfish License, Blue Crab Traffic Light, Cobia, reviewing several issue paper rules with voting in August. The Total Allowable Landings (Catch) TAL of southern flounder for pound nets by waterbodies will be presented at the May meeting. The will be other topics discussed as well.

Ron asked for a copy of the press release for what happened at the February Commission Meeting.

PLAN AGENDA ITEMS FOR NEXT MEETING

The next meeting will be July 6, 2016 in Morehead City. We met twice in row in Wilmington, thus the next meeting will be Morehead. Things will be back to normal afterwards. Morris commented for the record on red drum. She asked about the status of the Red Drum fishery management plan. Catherine Blum, Fishery Management Plan and Rules Coordinator, stated that the stock assessment was going to the ASMFC board in May. She also noting that the timeline has not been established and that the stock assessment is still undergoing peer review. We will know more in May. Morris stated that she thought the red drum were a scourge to other species. She stated that she felt that they have been not overfished for a while and the division has said they are recovered. She stated that the management measures need to be reviewed because of the predation impacts to other fisheries. She would like to see the slot limit and commercial limits reconsidered, among other things.

McPherson asked about recreational southern flounder closure. Chris Stewart, division biologist, stated that it would close October 16th and will open again on January 1st the following year.

The meeting adjourned at 9:35 PM.

Enclosures

Cc:

Catherine Blum	Jess Hawkins	Gerry Smith
Mike Bulleri	Dee Lupton	District Managers
Scott Conklin	Nancy Marlette	Committee Staff Members
Dick Brame	Katie Mills	Marine Patrol Captains
Braxton Davis	Phillip Reynolds	Section Chiefs
Charlotte Dexter	Jerry Schill	

Marine Fisheries
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MEMORANDUM

TO: Marine Fisheries Commission
Shellfish/Crustacean Advisory Committee

FROM: Trish Murphey
Anne Deaton
Division of Marine Fisheries

DATE: April 28, 2016

SUBJECT: Shellfish/Crustacean Advisory Committee Meeting

The Shellfish/Crustacean Advisory Committee Meeting met at 6 p.m. Thursday, April 14, 2016 at the Division of Marine Fisheries Central District Office, 5285 Highway 70 West, Morehead City, N.C. The following attended:

Advisors: Joe Shute, Ted Wilgis, Mark Hooper, Martin Posey, Mike Marshall, Tony Tripp, Bruce Morris, Adam Tyler, Janet Rose, Perry Beasley

Absent: Jim Hardin

Staff: Trish Murphey, Anne Deaton, Kathy Rawls, Katy West, Dean Nelson, Catherine Blum, Jason Peters, Garry Wright, Jason Rock, Corrin Flora, Jeff Dobbs, John McConnaughey, Nancy Fish, C.J. Alley, Steve Murphey, Tina Moore

Public: Jerry Schill, Pam Schill, Frank Helms, Brenda Helms, Glen Hadder, Chuck Laughridge, David Kielmeier, Glenn Skinner, Kenny Rustick, Forrest Oakes, Mike Blanton, Alison Willis, Randy Milam Jr., Gary Cannon, Bradley Styron, Dan Wheats, Tara Foreman, Patrice Clarke, Dennis Foreman, Josh Spencer

Joe Shute, serving as chair, called the meeting to order. He reminded the advisors that only management options for blue crab would be discussed at the meeting.

MODIFICATIONS TO THE AGENDA

Mark Hooper made a motion to accept the agenda. Martin Posey seconded the motion. The motion passed unanimously.

APPROVAL OF MINUTES

Mark Hooper made a motion to approve the minutes. Janet Rose seconded the motion. The motion passed 4 to 1 with 2 abstention.

REVIEW OF BLUE CRAB TRAFFIC LIGHT AND MANAGEMENT MEASURES

Jason Rock presented the blue crab traffic light update. Rock provided an overview of the traffic light, discussed indicators, colors, the three characteristics, and thresholds used in the traffic light. He provided the results of the traffic light and that the adult abundance had exceeded the 50 percent threshold for the third consecutive year. He also provided a comparison of annual patterns in the traffic light indices and the commercial landings, illustrating similar patterns. Janet Rose asked how the data for the traffic light was obtained. Rock replied that it was based on fishery independent trawl surveys and fish house sampling. Perry Beasley commented that the trip ticket data was not being used and stated that he did not believe that the independent trawl survey data was an accurate measure of abundance, especially for small crabs. He thought that the number of crab pots being fished may not be accurate but that the trip ticket data was, and that should be used in the assessment. He added that he thought the fishery independent data were bad, and the commercial industry as a whole did not believe it. He suggested that observers be used on crab pot boats. Rose asked how the fish house data are collected. Rock replied that the catch is subsampled after it is graded. Mark Hooper asked for clarification on length at maturity. Rock explained that length at maturity is the size at which 50% of female crabs are mature. Hooper stated that you need to consider the market and the weather. He believed that the traffic light needed to be more refined. Tony Trip commented that he had to turn crabbers away this season because there were so many crabs being harvested. Adam Tyler had concerns over the crabs that are being discarded and therefore not sampled at the fish house. Rose was concerned that the traffic light does not paint the whole picture.

Rock then presented the suite of adaptive management measures available for consideration based on results of the traffic light analysis. These include moderate management level management for the adult abundance characteristic and the elevated management level for the recruit abundance. Beasley commented that due to few picking houses, there is very little harvest of sponge crabs, and is therefore self-limiting. Hooper stated that in 2015 there were no sponge crabs harvested. Rock confirmed that they saw no sponge crabs in the fish house sampling as well.

PUBLIC COMMENT

Jerry Schill, North Carolina Fisheries Association, commented that if fishermen have faith in the process they will abide by the regulations. However the fishermen do not have faith or confidence in the Marine Fisheries Commission and Division of Marine Fisheries, primarily due to the southern flounder management decisions. He recommended that the committee share the recommendations of the other advisory committees, and to recommend minimal management measures to the Commission. He also recommended that the division have a workshop for the commercial industry explaining the data collection methods to improve industry understanding. He advocated for industry observers go on division independent sampling trips. He explained that one of the main issues limiting the number of picking houses in the state is stringent requirements on the H-2B visa program (allows nonimmigrant workers to temporarily work in the US for seasonal or intermittent employment). North Carolina has diverse fisheries and a lot of fishermen are moving into crab potting. Lastly, he recommended that the division look into the effects of blue catfish predation on blue crab abundances.

David Keilmeier, commercial crabber, asked what sponge crab excluders look like. Rock explained that they are a rectangular ring with a slightly smaller opening than a terrapin excluder. Keilmeier commented that he crabs commercially in several states and has seen moratoriums on sponge crabs have a positive impact on blue crab populations. He stated that it seemed like there were more crabs. He recommended that the Commission consider eliminating sponge crab harvest. He talked about the larval work done by Duke Marine Lab and that larvae travel many miles at sea. Crabs produce 800 million eggs. He wonders if climate is playing a role. He suggested experimenting with different harvest zones where sponge crabs are absent, and see if there are differences. He said there is less effort in other states and other states do not have the processors like we do.

Glenn Skinner, commercial crabber from Carteret County, said that crabbers are concerned about predation on blue crabs from a variety of species, especially red drum, rock fish and catfish. He stated that he had seen a study on red drum and that 51 percent of the diet was blue crabs. He recommended the Commission explore the issue.

Gary Cannon, commercial fisherman, said he had never seen a fish house sampler, or the trawl boat used for sampling. He stated that when the trawl lines were moved out, it killed the bottom. He commented that the market is bad because of Virginia. Now there are no crab pots in the areas indicating no crabs there as well. He stated there are no crab pots like there used to be. He did not support taking sponge crabs away. Rather, he suggested the theft of pots needs to be addressed. He did not think the current management measures make sense. He recommended the removal of those under an assigned standard commercial fishing license, and that part timers should not be allowed in the crab pot fishery to reduce effort from being eligible to fish commercially. Shute told him that the definition of a commercial fisherman will be discussed by the commission in the near future.

Bradley Styron, commercial fisherman, stated that he understood that something needed to be done but expressed his concern that the possible management measures presented by the division were draconian and overkill. He did not want a 3.5 million dollar industry wrecked. Do not stop all crab sponge harvest. He recommended a moratorium on the commercial harvest of black sponge crabs and v-apron crabs in the hard crab fishery. He also recommended that the division consult the industry to improve data collection methods. Do not operate on perception but on reality. Go to fishermen who know about fishing.

Tara Foreman, crab picking house owner and crab dealer, stated that she runs the largest picking house in North Carolina. She buys 80,000 crabs a day and she had never been sampled by division fish house samplers until she called and requested them to come. She stated that she did pick sponge crabs in 2015 and disagreed with statements made previously that there were no sponge crabs harvested in 2015. She also commented that increasing the size to 5.25 inches a day would put them out of business.

Adam Tyler asked who makes the division's nets used for the trawl sampling. Rock replied that the nets were made by professional net makers and a division employee with many years of experience.

VOTE ON RECOMMENDATIONS TO THE MARINE FISHERIES COMMISSION FOR BLUE CRAB MANAGEMENT MEASURES

Trish Murphey, Southern District Manager read through the recommendations from the Southern and Northern Advisory Committees.

Mike Marshall made a motion to recommend to the Commission to adopt the measures of no v-apron hard crabs and no black sponge crabs with a 5% tolerance for both excluding v-apron peelers. Janet Rose seconded the motion. Motion passed 8 to 1.

Beasley commented that he thought cull ring repositioning was the best management measure. Martin Posey expressed his confusion as to whether fishermen want to harvest black sponge crabs. Tony Tripp responded that the black sponge crabs are not desirable, but are difficult and time consuming to cull.

Perry Beasley made a motion to recommend to the Commission to use two cull rings (same legal size) but to reposition one ring within one full mesh of the bottom of the apron/stairs of the upper chamber of the pot, effective January 16, 2017. Martin Posey seconded the motion. The motion passed 8 to 1.

Hooper stated his concerns of water quality. He asked about what other divisions within the Department of Environmental Quality are doing to address land based issues. He felt that the department is falling back on regulations. Anne Deaton explained that a request to investigate this as a priority issue should be made through a Coastal Habitat Protection Plan Steering Committee. Hooper added that the Coastal Habitat Protection Plan should address primary nursery areas, water quality and habitat of our near shore waters. Posey commented that we need to know more about what the juvenile crabs are doing and what is impacting them; water quality, predation, or land changes.

Mark Hooper made a motion to recommend to the Commission to request that the Coastal Habitat Protection Plan Steering Committee look at division blue crab recruit abundance data, ask what the EMC and CRC have done to improve habitat and water quality conditions for blue crab and develop a suite of options that the EMC and CRC could implement to improve water quality habitat conditions in those areas. Tony Tripp seconded the motion. The motion passed unanimously.

Rose asked about the different studies on blue crab and if the division consult with Sea Grant on the Traffic Light. Rock stated that we did not consult with Sea Grant. However we use their studies as well as other studies in the process. Kathy Rawls, Section Chief Fisheries Management added that when the division develops fishery management plans, we look at all the literature.

Bruce Morris asked if we looked at studies done prior to hurricanes Irene and Isabelle. Crabs used to be on the west side of the sound, now they are on the east side because of flushing, they have moved from one side to the other. He stated that there should be more cooperative use of the fishermen as a tool to get better data. Ted Wilgis asked about funding and if it were needed. He stated his concern of no directed sampling program for our biggest fishery.

Bruce Morris made a motion to recommend to the Commission to request the division incorporate the cooperative use of commercial fishermen as observers as a tool for better data collection. Use crab pots as an additional sampling gear. Janet Rose seconded the motion.
Motion withdrawn.

Bruce Morris made a motion to recommend to the Commission to request division observers on commercial crab boats to collect data to assist with the Blue Crab Traffic Light assessment. Tony Tripp seconded the motion. The motion passed 6 to 3.

Hooper suggest that we look more at the industry and the habitat. He suggested to take fishery dependent data and make it better by taking into account changes in fishing effort due to market variability, storms, picking houses, closed seasons, etc.

Mark Hooper made a motion to recommend to the Commission to request division staff analyze the 21 years of commercial fishery data, refined by taking into account socio-economic information such as storms, prices, picking house availability, etc. that affects fishing effort, and align it with 21 years of division fishery independent data and summarize in a report. Adam Tyler seconded the motion. The motion passed 8 to 0 with 1 abstention.

Adam Tyler made a motion to recommend to the Commission to request division staff look at the effect of predation by striped bass, red drum, cow nose rays, or other species on blue crabs. Seconded by Martin Posey. The motion passed 8 to 0 with 1 abstention.

MARINE FISHERIES COMMISSION UPDATE

Anne Deaton gave an update on the Commission. She reviewed changes in the cobia recreational bag limits. She discussed the Oyster and Clam Fishery Management Plans and the need to bring a shellfish license issue back for public comment. The Coastal Habitat Protection Plan was approved by the Marine Fisheries Commission, and CRC, and conditionally approved by the EMC if some edits are made. After the EMC approves the edits, the plan will be sent the Department of Environmental Quality secretary and Joint Legislative Commission on Governmental Operations for final approval. She also told the committee that the Commission will be convening a subcommittee to discuss defining commercial fishermen.

Tony Trip made a motion to recommend to the Commission to look at dealer requirements and how they are enforced and if changes are needed. The motion was seconded by Mark Hooper. The motion passed 5 to 3 with 1 abstention.

Chairman Shute stated that this may be included in the discussion of defining commercial fishermen.

MEETING ARRANGEMENTS

Murphey reminded the committee that the next meeting was scheduled for July 14th, 2016. Hooper asked if the committee was going to meet regularly. Murphey stated that it is dependent on the commission requesting advice on an issue, but to pencil this date in your calendar.

Shute adjourned the meeting.

Cc:

Catherine Blum	Jess Hawkins	Gerry Smith
Mike Bulleri	Dee Lupton	District Managers
Scott Conklin	Nancy Marlette	Committee Staff Members
Dick Brame	Katie Mills	Marine Patrol Captains
Braxton Davis	Phillip Reynolds	Section Chiefs
Charlotte Dexter	Jerry Schill	

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MEMORANDUM

TO: Marine Fisheries Commission
Finfish Advisory Committee

FROM: Kathy Rawls
Lee Paramore
Division of Marine Fisheries

DATE: April 15, 2016

SUBJECT: Finfish Advisory Committee Meeting

The Finfish Advisory Committee met on Wednesday, April 13, 2016 at 5:30 p.m., at the Department of Environmental Quality Regional Office, Washington, N.C. The following attended:

Advisers: Sammy Corbett (Marine Fisheries Commission), Thomas Brewer, Jeff Buckel, David Clem, Brent Fulcher, Charlie Renda, Ken Seigler, Leland Tetterton, and Scott Whitley

Absent: Mike Wicker (Marine Fisheries Commission), Sara Winslow

Commissioners: Chuck Laughridge, Joe Shute

Staff: Kathy Rawls, Lee Paramore, Michelle Duval, Nancy Fish, Catherine Blum, Katy West, and Sergeant Carter Witten

Public: Jerry Schill, Jon Worthington, Jake Worthington, C.R. Frederick, Rick Scarborough, Rick Caton, Martha Barnette Caton, John Welch, Robert Feldhay, Rick Smith, Reese Stecher, Aaron Kelly, Cameron Whitaker, Justin Revere, Joey VanDyke, Ches Tyson, Bill Gorham, Sean Hankinson, John Hankinson, Anthony Nevine, Paul Penke, Taylor Griffin

Sammy Corbett, serving as chair, called the meeting to order.

MODIFICATIONS TO THE AGENDA

There were no modifications to the agenda.

Motion by Ken Seigler to approve the meeting agenda. Seconded by Scott Whitley. Motion passed unanimously.

APPROVAL OF MINUTES

Motion by Charlie Renda to approve the April 15, 2015 Finfish Advisory Committee meeting minutes. Seconded by Jeff Buckel. Motion passed unanimously.

NOAA FISHERIES 2016 RECREATIONAL COBIA SEASON

Dr. Duval presented information on federal cobia management and potential state waters options to extend the 2016 recreational cobia season. She provided the latest available data from the National Oceanic and Atmospheric Administration Fisheries.

PUBLIC COMMENT

The committee received public comment on potential state waters options to extend the 2016 recreational cobia season.

John Worthington, of Dare County is a recreational fisherman and charter captain from Camden. He said his problem is that it seems all of sudden there is a crisis. Questioned how the recreational data were collected and said he had never been interviewed. There is an economic impact to these captains that has not been considered. One fish will not be enough for customers to pay for a trip. He said he cannot get a clear picture on how this data is collected, either from the federal or state level. He recommended going out of compliance with the federal requirements to close in state waters.

C.R. Fredrick, of Swansboro is a commercial fisherman. He said he is not up to date on cobia fishing, but he hates to see it affect the charterboat captains. He understands that since the Annual Catch Limit was exceeded last year, something needs to be done to save the species from overfishing. He said it is high time we track every fish coming out of the water. The same kind of thing as trip tickets for the commercial sector is needed in the for-hire sector. Commercial fishermen make up the smallest group, but have the largest burden of accountability. If we want to practice conservation, he suggested considering no discards being allowed. This would reduce mortality and make it easier to track what is going on.

Rick Scarborough, of Hatteras has been a charterboat captain since 1987 and was a commercial fisherman before that. He said not one time has he been approached at the dock by a sampler or for a study regarding cobia. He has been approached about speckled trout and other species, but not about cobia. The Magnuson-Stevens Act came up in presentation and it requires an economic impact study to be completed. He said he has not heard of one being done. He does not agree with increasing the size limit above 33 inches just to add only an extra day or two of fishing. He also does not agree with a vessel limit for just an extra couple of days. He does agree with a per person limit. He said the three-mile limit for state waters was put in place for a reason: the State should control fishing within three miles of shore. The federal government has crammed so many laws down North Carolina's throat in the past, like with weakfish. The numbers being gathered from the recreational sector do not have a backbone. They look great on paper, but they are not accurate. He said when he is contacted for the for-hire phone survey, they ask what was targeted, but not what was caught. The recreational cobia closure is going to take about half of his customers away; financially it is going to hurt. It will affect customers, marinas, tackle shops, etc. He recommended going out of compliance with the federal requirements.

Discussion ensued among the committee members about how the for-hire phone survey works.

Rick Caton, of Custom Charters stated North Carolina should go out of compliance and stay with status quo. If overfishing is not occurring, he asked why we are here. He said it seems we are only here to have a crisis to manage. He would appreciate if the Marine Fisheries Commission would consider the amount of money the charter boat captains pay for the various license and permit fees that are required. As a result of that investment, the captain and mate should not be excluded from the fishery. He said two of the national standards of the Magnuson-Stevens Act have been violated. One of the "cons" in the presentation of going out of compliance was the Secretary of Commerce could choose to regulate the fishery in state waters. He wondered why the state has the three-mile line if that is the case. Charterboat fishermen have already been denied red snappers, snowy groupers, and blueline tilefish and the limits allowed in other fisheries are a joke. He expressed concern about how Florida can have 800,000 or more pounds of allowable landings, but then seven other states have to share an allocation. He said the main participants in the fishery are in Georgia, South Carolina, North Carolina, and Virginia. How the landings are divided is not "fair and equitable" as referenced in the national standards. There is not an up-to-date economic impact study, so we are just grabbing in the air to implement something. There are plenty of study panels for species under the North Carolina Marine Fisheries Commission and the South Atlantic Fishery Management Council, but there is not one just for cobia. The South Atlantic Fishery Management Council has one for King Mackerel that covers cobia, but those species are very different. He restated there is not a problem. He reiterated the need to take into consideration the amount the captain and mate pay for licenses and said they should be able to keep one or two fish and not be shut out.

Reese Stecher, of Oregon Inlet is a charterboat captain. He distributed handouts to the committee with information on the national standards in the Magnuson-Stevens Act and recited a portion of them. "Fair and equitable" was a phrase of interest to him. He said Florida is going to get 66 percent of this quota and the rest will be divvied up among four or five states. He said the very agencies that made the rules are breaking them. He asked if an economic study has been completed. (Dr. Duval said yes, as part of what was adopted to put the accountability standards in place.) He made a comparison to children bickering with each other about changing rules in the middle of a game and said the federal government is breaking the rules they made. Next, Mr. Stecher cited information from SEDAR-28 (the stock assessment for cobia.) He said the document states the stock is not overfished and is relatively robust. Finally, he provided information from the April 7, 2016 Northern Regional Advisory Committee meeting of the Marine Fisheries Commission and cited that committee's recommendation to the commission. He questioned the recent separation of the Gulf and Atlantic stocks of cobia. He said the commission has to look out for North Carolina's interest.

Brent Fulcher clarified the staff in attendance work for North Carolina, not the federal government.

Cameron Whitaker, of Hatteras is in the charterboat sector. He said he is young, but his father has been involved in the fishery for a long time. He expressed concern about Virginia charterboat fishermen coming to North Carolina to fish, potentially causing the Annual Catch

Limit to be exceeded again this year. He said once you lose something in a fishery you never get it back. He said the charterboat sector can survive a one-fish limit, but not a closure.

Bill Gorham, of Southern Shores stated that he was representing charterboat captains, recreational fishermen, and commercial fishermen from Maryland to Hatteras Inlet. He has been working to find the root cause of this issue. He said he was tasked with reading the cobia stock assessment (SEDAR 28) and other related documents, which amounted to hundreds of pages of information. If this issue was science-based, fishermen would have to accept this because no one benefits from overfishing. Amendment 20B to the Coastal Migratory Pelagics Fishery Management Plan split the stock within Florida between the Gulf and Atlantic stocks of cobia. The Annual Catch Limit in 2015 has been exceeded at least half the time going back at least 10 years. He said the federal government knew there were going to be issues, but they did not lower the limits beforehand. He said there will be a lot of comments and discussion about the stock assessment and genetics defining where the line is between the two stocks. Commercial and recreational fishermen suggested the Florida-Georgia line based on tagging data. He provided a handout and focused the committee's attention on the potential federal closure date and the dates of peak harvest in Virginia. He said Virginia did not have adequate representation from the beginning of this issue because their representatives were not in attendance at meetings where these decisions were being made. He stated that the South Atlantic Fishery Management Council committee meeting minutes showed the federal government wanted to pursue a landings reduction and rolling closures in 2009. But the stock assessment was not approved until 2013. He asked how this was possible. Looking at the harvest in 2013 and 2014, there was a tremendous increase in Virginia; there was also a large increase in North Carolina. Regarding how the Annual Catch Limit was set, the federal government knew it would be exceeded and now we are faced with this closure. A limit of one fish per vessel at a 45-inch minimum size limit is the only way to avoid the closure. He said that is designed to favor the peak harvest time in Virginia.

Joe Shute, Marine Fisheries Commission commissioner posed a question to the audience from his vantage point as a charter captain. He said there was a similar problem in the early 1990s with bluefin tuna. North Carolina was proactive and set up a tagging system for the state. It showed a 40-45-percent decrease from the level the federal government showed. He asked if those in the audience would be opposed to a harvest tagging system for cobia. Recently, he supported a North Carolina for-hire logbook but it was not supported. Now, a federal for-hire logbook will be implemented in the near future. He said this is the same kind of thing; North Carolina has data that could help and a tagging system would provide that data. The industry is going to have to make up its mind, especially the younger participants. If we like it or not, the federal government is going to control cobia. A couple of fishermen in the audience provided general feedback to Commissioner Shute about the pros and cons of going out of compliance with the federal requirements and how reductions are calculated.

Jerry Schill, president of the North Carolina Fisheries Association, said he has never heard of the Secretary of Commerce intervening, especially on a fishery that is not overfished and where overfishing is not occurring. It is unprecedented to have a closure for a fishery in that condition. North Carolina Fisheries Association will submit formal comments on this issue separately before the upcoming commission meeting. North Carolina Fisheries Association

board members have discussed data collection numerous times. He said they discussed the recreational data and logbooks too. The lack of data is not from the commercial folks, but rather from recreational participants. There is always a question if data will hurt us or help, but in this case, more data would help. Separately, Mr. Schill discussed the invasive species of blue catfish. Nixon Fishery alerted the North Carolina Fisheries Association to part of the 2015 farm bill that will require on-site inspectors for any processing of catfish. That will affect fishermen, packers, and others. Blue catfish is an invasive species that is prolific and aggressive. Virginia is ahead of North Carolina on addressing this as an invasive species. North Carolina is aware of it, but is not doing anything about it yet. He would like to see this committee recommend the Marine Fisheries Commission ask the Division of Marine Fisheries to address this. If we are shut out of processing catfish in 2017, there is no incentive to fish for them. We need to kill all the blue catfish because they are an invasive species that will hurt natural stocks.

VOTE ON RECOMMENDATIONS TO MARINE FISHERIES COMMISSION FOR 2016 RECREATIONAL COBIA SEASON

There were no additional public comments, so the committee proceeded to discuss the issue. Mr. Fulcher asked the audience what they think will help them. He said good data is important. He asked Dr. Duval for the number of recreational and commercial cobia trips. Dr. Duval showed the corresponding slide from the presentation again. Chairman Corbett summarized the public comments for Mr. Fulcher and said the recommendation from the public was to go out of compliance with the federal requirements.

Mr. Renda said most of the harvest is in state waters. The closure is in federal waters. He suggested not worrying about it since all the fishing is in state waters. It will take a couple of years for the federal government to work through its process, so stay with status quo.

Mr. Fulcher said he is trying to balance accountability for the resource with what the audience has expressed. Chairman Corbett referenced previous discussions about logbooks. Mr. Fulcher described the ramp surveys and how the data is extrapolated. Mr. Renda said the director issued a proclamation in February to reduce the recreational limit of cobia down from two to one fish in February, so that shows we are trying to do the right thing and be accountable.

Mr. Seigler is concerned about the split of cobia off the east coast of Florida between the Gulf and Atlantic stocks. He asked why Florida is getting 66 percent of the Annual Catch Limit. Dr. Duval corrected the information and said Florida is not getting that amount. The data is being confused with data about the Gulf stock of cobia; she elaborated on the boundaries between the different populations of cobia. Dr. Duval reiterated that annual catch limits are required for all federally-managed species. She provided a comparison to when closures have been put in place in the past in various commercial and recreational fisheries when an annual catch limit is exceeded, not as a result of the condition of a particular stock.

Dr. Buckel said genetics were used to tell the difference between the Gulf and Atlantic stocks of cobia, even though you cannot tell the difference just by looking at the fish. Chairman Corbett said the debates about the stock assessment and genetics would be best continued at the Marine Fisheries Commission level.

Cameron Whitaker asked Chairman Corbett what the real impacts of going out of compliance would be. Chairman Corbett described some examples from his personal perspective of the consequences.

Mr. Tetterton focused the discussion on the Atlantic stock of cobia. Mr. Renda said the Annual Catch Limit dropped 10,000 pounds from 2015 to 2016 for both the recreational and commercial sectors. Even though that sounds even, from a percentage standpoint, it is not even. He expressed concern about going over in 2016 too and asked his fellow committee-members what they thought about not complying with the federal requirements.

Dr. Buckel was asked his thoughts by Mr. Fulcher. Dr. Buckel said the bottom line is the stock assessment was completed, reviewed by experts, and was deemed usable for management. It is a species that some folks feel cannot be overfished, but if you asked Gulf fishermen, they wish they had done more in the past because the stock is not what it once was there. A little short-term pain would probably be worth it in the long run. He supports the formation of a Compliance Advisory Panel; that would be ideal. Going out of compliance has the potential to come back and bite North Carolina by shutting the state down completely. If we focus just on 2016, we may be worse off in 2017. He said as the biologist representative, he tries not to get too much into management and just focus on the science.

Mr. Tetterton said he fished commercially off-shore several years ago. He said the charter boats had limits even back then. If we stay with a one-fish bag limit and keep fishing in state waters past the federal closure date and there is no tagging program or analysis, we need to do something to account for the fish. He suggested giving fishermen a certain number of tags that would have to be turned in to account for the harvest of cobia. That would help dispute the stock assessment information. He said we need some kind of data to keep up with what is caught.

Mr. Seigler said 80 percent of the catch is coming from recreational harvest, but there is no way to account for it. That is the problem. Mr. Whitley confirmed that North Carolina is dependent on the federal numbers. So we need our own numbers, or there is no way to combat that. Chairman Corbett said that problem happened recently with the need for a regional stock assessment for southern flounder. But even doing that may result in a stock assessment that is not usable for management.

Mr. Renda said the federal government goes with a one-size-fits-all approach. What Florida and North Carolina are doing are two totally different things. Just when the tourist season starts up, we are going to get shut down. He asked if there is a way to push the federal government for state quotas. Dr. Duval said the South Atlantic Fishery Management Council made a motion to do just that and look at state-by-state quotas though the Atlantic States Marine Fisheries Commission. That is probably the only way to pursue this because the federal process is cumbersome; working through the Atlantic States Marine Fisheries Commission is a more flexible process.

Dr. Buckel asked if appointing a compliance advisory panel would be part of developing state-by-state quotas at the Atlantic States Marine Fisheries Commission. Dr. Duval said yes; that would be the best way to develop some parity.

Mr. Fulcher said it is going to take a lot of horsepower to get the jurisdiction of the Atlantic and Gulf cobia stocks to be changed. Chairman Corbett said the focus of this committee is to give the Marine Fisheries Commission a recommendation about what to do for the 2016 season.

Mr. Renda made a motion to only go in compliance with the closure in federal waters, not state waters. (Dr. Duval read the regional advisory committee recommendations at the committee's request.) Mr. Renda withdrew his motion.

Mr. Tetterton asked Dr. Duval to clarify what happens in state waters after June 20 when the federal closure will occur and she reiterated the status. Mr. Whitley asked what the intent of the Marine Fisheries Commission was by reducing the bag limit to one fish in February. Commissioner Shute said it was to extend the recreational season. Mr. Seigler asked what impact time restrictions might have, for example closing Mondays and Tuesdays each week. Chairman Corbett said a motion could be made recommending North Carolina's representatives on the South Atlantic Fishery Management Council ask the National Oceanic and Atmospheric Administration Fisheries to request data be calculated based on particular requests like a day-of-the-week closure.

The committee continued to ask clarifying questions of Dr. Duval about how the federal closure date is calculated. Dr. Duval said the calculations rely on all states closing their waters when federal waters close to determine the federal closure date. Chairman Corbett entertained a motion from the committee.

Mr. Renda made a motion for status quo. Motion died for lack of a second.

Mr. Tetterton made a motion to maintain the 33-inch size limit and one-fish recreational bag limit through June 20. After June 20, implement a two-fish per vessel limit, going out of compliance with the federal closure. Seconded by Brent Fulcher.

The committee continued to discuss the issue. Mr. Fulcher continued to question the data and supported some type of tag system to obtain more data. He said we have to balance the resource and harvest for all sectors. Mr. Tetterton stated that there is not enough recreational data like there is for the commercial sector.

Dr. Buckel asked the committee to consider the possibility that the data on 2015 harvest is correct. He asked Dr. Duval what the scenario would be from the federal government’s perspective. Mr. Fulcher said Dr. Duval already said that the 2017 season would likely be shorter, but these guys will be out of business June 20. Dr. Duval clarified that the Annual Catch Limit will not change until after the next stock assessment; it is set in regulation. What would potentially change is the length of the next season; this is based on the average catch over three years for when the Annual Catch Target will be reached. Discussion about the data continued.

Dr. Buckel reiterated Mr. Seigler's suggestion of day-of-the-week closures; he also asked if there is precedent for sector allocations (for-hire, private, pier, etc.) Dr. Duval said there is precedent

and referenced 2014 management actions for the management of striped bass. Dr. Buckel asked his fellow committee-members if that is something worth pursuing.

Mr. Fulcher supported state-by-state allocations and recognized it is more difficult for North Carolina to obtain those if they go out of compliance with the federal requirements. In the meantime, we need more data. If we go out of compliance and we exceed the Annual Catch Target again, it is going to get worse.

Mr. Fulcher asked if Coastal Recreational Fishing License funds could be used for cobia data collection. Commissioner Shute said it would need to go through the committee for that fund, but he did not see a reason why it could not be considered. It would need to be put in the funding cycle for next year though based on the timing of that process.

Chairman Corbett called for the vote. The motion passed 6-2. (Mr. Buckel and Mr. Renda opposed; Chairman Corbett did not vote.)

Dr. Buckel asked about consideration for getting a group of stakeholders together to consider alternative management measures, such as prohibiting harvest on certain days of the week, or sector allocations. Dr. Duval reiterated that the Marine Fisheries Commission must vote to appoint a compliance advisory panel, as required by the North Carolina Fishery Management Plan for Interjurisdictional Fisheries [note: North Carolina Commission Chair appoints members to the Compliance Advisory Panel and all panel recommendations go through Finfish and regional Advisory Committees before being presented to the full North Carolina Commission for consideration].

Mr. Fulcher made a motion to request the Marine Fisheries Commission ask the National Oceanic and Atmospheric Administration Fisheries to reconsider the biological boundary between the Gulf and Atlantic cobia stocks. Seconded by Ken Seigler. Following a brief discussion, Chairman Corbett called for the vote. The motion passed 8-0. (Chairman Corbett abstained.)

Mr. Whitley made a motion to request the Marine Fisheries Commission investigate ways to obtain additional data on recreational cobia catch, including a tagging system as one option. Seconded by Mr. Tetterton. Following a brief discussion, Chairman Corbett called for the vote. Motion passed 8-0. (Chairman Corbett abstained.)

Mr. Tetterton made a motion to restore the percentage of the commercial Annual Catch Limit that was reduced more than the recreational Annual Catch Limit (so that the percentage reductions were equal.) Seconded by Mr. Render. Chairman Corbett clarified that Mr. Tetterton's intent was the reduction should have been made on a percentage basis, not a poundage basis; Mr. Tetterton concurred. Following a brief discussion, Chairman Corbett called for the vote. Motion passed 8-0. (Chairman Corbett abstained.)

Mr. Fulcher made a motion for the Marine Fisheries Commission to work with North Carolina's representatives on the South Atlantic Fishery Management Council to develop coastwide state-by-state allocations for cobia management. Seconded by Mr.

Seigler. Following a brief discussion, Chairman Corbett called for the vote. Motion passed 8-0. (Chairman Corbett abstained.)

MARINE FISHERIES COMMISSION UPDATE

Mr. Paramore provided a brief update on recent actions of the Marine Fisheries Commission. He reviewed the commission's actions at its February 2016 business meeting and March meeting that was held for the sole purpose of nominating additional candidates to be considered for North Carolina's obligatory seat on the South Atlantic Fishery Management Council. He added that the Atlantic States Marine Fisheries Commission approved a small amount of funding to support a regional southern flounder stock assessment which is beginning this year and is scheduled to be completed in 2017.

OTHER BUSINESS

Chairman Corbett entertained a motion about the earlier public comment pertaining to the invasive species of blue catfish.

Motion by Mr. Fulcher to send to the Marine Fisheries Commission concerns about the impacts of the invasive species of blue catfish. Seconded by Mr. Tetterton. Following a brief discussion, Chairman Corbett called for the vote. Motion passed 7-0. (Chairman Corbett abstained; Mr. Tetterton left by the time of the vote.)

Mr. Renda provided comments about red fish (red drum.) From 2004-2016 the stock status has been listed as "recovering." He would like to see some kind of movement. Chairman Corbett said we are waiting for the federal stock assessment first. Mr. Paramore said a report on the results of the assessment is expected to be presented to the Atlantic States Marine Fisheries Commission the first week of May.

Seeing no further business, Chairman Corbett adjourned the meeting at 8:25 p.m.

Cc:
Catherine Blum
Mike Bulleri
Scott Conklin
Dick Brame
Braxton Davis
Charlotte Dexter
Jess Hawkins
Dee Lupton
Nancy Marlette
Katie Mills
Phillip Reynolds
Jerry Schill
Gerry Smith
District Managers
Committee Staff Members
Marine Patrol Captains
Section Chiefs

Marine Fisheries
ENVIRONMENTAL QUALITY

PAT MCCRORY
Governor

DONALD R. VAN DER VAART
Secretary

BRAXTON DAVIS
Director

MEMORANDUM

TO: Marine Fisheries Commission

FROM: Tina Moore
Division of Marine Fisheries

DATE: April 12, 2016

SUBJECT: Oyster and Hard Clam Fishery Management Plan Advisory Committee Meeting

The Oyster and Hard Clam Fishery Management Plan Advisory Committee Meeting met at 6 p.m. Monday, April 11, 2016 at the North Carolina Division of Marine Fisheries, Central District Office, 5285 Highway 70 West, Morehead City, N.C. The following attended:

Advisers: Bob Cummings, Adam Tyler (via phone), Ted Wilgis, Jeff Taylor, Stephen Swanson, Ami Wilbur (via phone), Niels Lindquist, Joey Daniels (via phone)

Absent: Nancy Edens, Dell Newman, Lee Setkowsky

Staff: Tina Moore, Steve Anthony, Kathy Rawls, Joe Facendola (via phone), Catherine Blum, Nancy Fish, Steve Murphey, Jeff Dobbs, John McConnaughey, Garry Wright, Curt Weychert (via phone)

Public: Jerry Schill and David Keilmeier

Ted Wilgis, serving as chair, called the meeting to order.

MODIFICATIONS TO THE AGENDA

Jeffrey Taylor made a motion to accept the agenda. Bobby Cummings seconded the motion. The motion passed unanimously.

APPROVAL OF MINUTES

Cummings made a motion to accept the minutes. Niels Lindquist seconded the motion. The motion passed unanimously.

PUBLIC COMMENT

No public comments were offered.

REVIEW PUBLIC AND MARINE FISHERIES COMMISSION REGIONAL ADVISORY COMMITTEE'S INPUT ON THE ISSUE REDUCING SHELLFISH LICENSE OYSTER HARVEST LIMITS STATEWIDE

Plan Development Team co-lead Tina Moore presented the issue reducing shellfish license oyster harvest limits statewide. She referred the committee to the provided meeting materials and explained how the Marine Fisheries Commission, and the northern and southern advisory committees had voted on this issue. Moore explained that the committee could change its recommendation to the commission, but the previous motion from the committee's January 2016 meeting would need to be rescinded. Cummings asked for clarification on the southern region boundary. Moore answered that it is usually considered all waters south of the highway 58 bridge. Wilgis asked if landings were increasing. Moore replied that they were, but effort and number of participants had increased more significantly, leading to a lower catch per unit effort in the southern region.

Wilgis opened the floor for any questions or comments regarding the presentation. Adam Tyler asked if the issue would affect lease holders. Moore replied that it would not because the issue was only regarding public bottom. Cummings commented that he would like to return to status quo for the Shellfish License being inclusive of oyster harvest (separate issue) to protect shellfishermen without a Standard Commercial Fishing License. Stephen Swanson agreed with Cummings' comment. Tina explained that under the guidance of the commission, only the bushel limit issue was under discussion.

Lindquist asked how this season's commercial oyster harvest went in the southern region. Joe Facendola responded that due to high levels of rain, the season was quite short, but he did not have any specific harvest statistics available yet. Moore added that at the Southern Regional Advisory Committee meeting in December one of the members, who is a dealer, said the quality of oysters coming into his fish house was poor. Cummings said he saw poor quality too with a lot of undersized oysters in the catch and had to turn people away until they brought in more legal-sized catches.

Swanson made a motion to rescind the previous motion. Cummings seconded the motion. The motion failed 2 to 6.

Swanson said if there is a problem with the stock why not hold all license holders accountable and asked why there is no equity between license types. Facendola replied that the Shellfish License is open access to all state residents and difficult to track the landings of since a significant portion of the shellfish license holders do not have trip tickets for commercial landings; there is a cap on the number of Standard Commercial Fishing licenses.

Cummings asked if the decision made by the commission to pursue the elimination of oyster harvest under the Shellfish License, and the current issue would be disseminated to the public. He expressed concern that oystermen that currently harvest under the Shellfish License will need to obtain a Standard Commercial Fishing License, which he believed was difficult and time-consuming to accomplish. He further questioned if there were enough licenses left in the existing pool of commercial licenses to accommodate the oystermen who would need them. Adam Tyler replied that he believed there were approximately 3,000 still available in the pool and that likely has not declined since then. Tyler asked if the committee could recommend that the commission promptly disseminate the rule changes and outcome of the commission votes to the public in order to provide oystermen an appropriate amount of time to make accommodations for the

changes. He suggested sending a letter to all shellfish license holders about the changes that will be coming into effect. Wilgis replied that the question was best addressed in the next agenda item.

BRIEF OVERVIEW OF THE NEXT STAGES IN THE FISHERY MANAGEMENT PLAN PROCESS

Moore explained the next stages in the fishery management plan process to the committee. Both plans, if approved by the commission in May for the next steps, will go for further department and legislative review and if they pass, then through the rulemaking process for any of the preferred management options that require rule changes. Any suggested legislative changes are out of the commission's hands and will depend on whether the legislature decides to pursue the suggested changes. Final adoption of both plans is not scheduled until February 2017; we will need to get the word out in conjunction with these steps. The division publishes the plans on the websites and will issue a news releases about the changes. Wilgis asked how long it would take to determine if these changes to the shellfish license holders will show improvement or no improvement to the oyster stock. Facendola said it will take at least three more years, and more likely five years or longer to see the results of these changes.

OTHER BUSINESS

Swanson commented that he disagreed with the removal of the harvest of oysters from the Shellfish License. Wilgis asked if there was sufficient marine patrol to enforce the pending rule changes and if there was any resources that the Marine Patrol will need to help them with the enforcement. Swanson added that a non-harvest tag could be put on someone's catch because of inferior culling so they couldn't peddle the product. Fishermen should report to marine patrol more often when they see issues. We need more markets not less fishermen. Wilgis said those are issues that will need to be taken through the plan review process in the future.

MEETING ARRANGEMENTS

Moore mentioned to the advisors the handout that provides the commission preferred management options for all the issues in the two plans. Moore explained that the fishery management plan process for oysters and clams was wrapping up, and the next review would be in five years, unless something unexpected comes up to re-open the plan. This meant that no more meetings would be necessary for the foreseeable future for this advisory committee and Moore thanked everyone for their time and effort in providing their advice. Wilgis also thanked everyone and staff for preparing the information for this meeting.

Chairman Wilgis adjourned the meeting at 6:50 p.m.

/jmd

Cc:
Catherine Blum
Mike Bulleri
Scott Conklin
Dick Brame
Braxton Davis
Charlotte Dexter
Jess Hawkins
Dee Lupton
Nancy Marlette
Katie Mills
Phillip Reynolds
Jerry Schill
Gerry Smith
District Managers
Committee Staff Members
Marine Patrol Captains
Section Chiefs

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Secretary

BRAXTON DAVIS
Director

MEMORANDUM

TO: Marine Fisheries Commission
Sea Turtle Advisory Committee

FROM: Chris Batsavage
Division of Marine Fisheries

DATE: April 5, 2016

SUBJECT: Sea Turtle Advisory Committee Meeting

The Sea Turtle Advisory Committee met at 4 pm on Thursday, March 17, 2016 at the Department of Environmental Quality Regional Office at 943 Washington Square Mall, Washington, NC. The following attended:

Advisers: Bob Lorenz (Chair), Adam Tyler (Vice Chair), Matthew Godfrey, Craig Harms, Tricia Kimmel, Brent Fulcher, Troy Outland, Richard Peterson, and Chris Hickman

Absent: Charles Aycock

Staff: Chris Batsavage, Jacob Boyd, John McConnaughey, Evan Knight, Nancy Fish, Katy West, Garland Yopp, Phillip Reynolds, Sam Hayes, and Katie Mills

Public: Bill Foster, John Hudnall, George Leone, Glenn Hadder, Kenny Rustick, Adam Harris, Wade Austin, Cecil Simons, Roger Harris, Kerry Harris, Wayne Twiford, Steve Weeks, Jerry Schill, Wayne Twiford III, Wayne Twiford, Sr., Phillip Goodwin, Sr., Phillip Goodwin, Jr., Bradley Styron, Cathy Fulcher, David Bush, Sarah Finn (N.C. Wildlife Resources Commission), and Sara McNulty, Joanne McNeill, and Larisa Avens (National Marine Fisheries Service)

Marine Fisheries Commission: Alison Willis and Janet Rose

Bob Lorenz, serving as chair, called the meeting to order and asked the committee members to introduce themselves to the public before he provided opening remarks. He said that tonight's discussion about a pound net incidental take permit will be educational and there will not be any recommendations made by the committee. Lorenz also stated that the original Sea Turtle Advisory Committee discussed sea turtle interactions with pound nets. He also asked why National Marine Fisheries Service staff were in attendance and Chris Batsavage explained that staff from the National Marine Fisheries Service Office of Protected Resources offered to provide information about the incidental take permit process. In addition, Batsavage contacted staff from the National Marine Fisheries Service Southeast Fisheries Science Center office in

Beaufort, North Carolina to see if they were willing to present information on the sea turtle research they conducted from pound nets.

Lorenz also introduced and welcomed Marine Fisheries Commissioners Alison Willis and Janet Rose as well as the staff from the National Marine Fisheries Service.

MODIFICATIONS TO THE AGENDA

No modifications were made.

APPROVAL OF MINUTES

Richard Peterson motioned to approve the minutes of the September 17, 2015 Sea Turtle Advisory Committee meeting and was seconded by Adam Tyler—motion passes.

DISCUSSION OF POTENTIAL POUND NET INCIDENTAL TAKE PERMIT

Lorenz went over the order of presenters on information regarding a pound net incidental take permit.

Sara McNulty with the National Marine Fisheries Service Office of Protected Resources in Silver Spring, MD presented an overview, the purpose, and the requirements of incidental take permits under Section 10 (a)(1)(B) of the federal Endangered Species Act. Incidental take permits authorize a specific amount of "take" of Endangered Species Act listed species during otherwise lawful activities that do not have a federal link. Unauthorized takes are illegal. These permits also promote the conservation and recovery of Endangered Species Act listed species and develops partnerships for endangered and threatened species conservation. McNulty described how incidental takes are established, the conservation plan development, the applicant's responsibilities, and National Marine Fisheries Service's responsibilities. She also explained the implementation of the permit as well as potential permit modifications. She acknowledged that the permit application process can be lengthy (6 months to over 2 years) depending on the complexity of the permit.

Brent Fulcher asked how the National Marine Fisheries Service surveys the number of sea turtles, and McNulty answered that there are various types of surveys used to monitor sea turtles across the country including nesting beaches.

Fulcher followed up by asking if any of the surveys and monitoring have been interrupted by lack of funding, and McNulty replied that it depends on whether or not the monitoring is required and the purpose of the program.

Fulcher asked what is considered mitigation of incidental takes and McNulty responded that for sea turtles, it is the severity of the take (ex. dead interaction instead of live interaction). She continued by explaining the number of takes by a permitted activity is considered when determining if that activity poses jeopardy on the population.

Fulcher finished up by asking how long are scientific permits under the Endangered Species act and McNulty answered that they range from a couple of months up to 5 years. This time frame also applies to incidental take permits because much can change in a 5-year period.

Adam Tyler asked if state and federal fisheries agencies are required to have an incidental take permit for fisheries-independent sampling, and McNulty responded that a federal agency or a federally-funded activity requires a Section 7 consultation under the Endangered Species Act, but non-federal activities require an incidental take permit.

Craig Harms presented rationale for an incidental take permit for the North Carolina pound net fishery. He started by saying he is not advocating for an incidental take permit to restrict the fishery, and he recognizes the potential consequences an incidental take permit could have on the fishery. His reasons for an incidental take permit are the legal protection for pound net fishermen who have incidental sea turtle takes, a permit would allow for the collection of sea turtle abundance data by researchers that would result in better informed fishery management decisions, and a permit would facilitate collaboration with fishermen and researchers. He also stated that although sea turtle mortalities sometimes occur in pound nets, sea turtles captured in pound nets have fewer physiological effects than sea turtles captured in trawls and in gill nets.

Troy Outland asked if any research has been done on the impacts of sea turtles caught by recreational hook and line and Harms replied that Dr. Amanda Southwood-Williard with UNC-Wilmington attempted a study of the physiological effects of sea turtles caught on fishing piers, but she had a very difficult time collecting samples because these interactions are very rare and some of the fishing piers were not willing to cooperate.

Adam Tyler presented reasons why an incidental take permit is not needed for the North Carolina pound net fishery. He said mortality rates from pound nets were low compared to other gears and cited multiple references.

Harms asked what are the mesh sizes currently used for pound net leads and Tyler thought they ranged from 5 to 8 inches, stretched mesh. Outland added that pound nets in the Albemarle Sound region typically use 6-inch stretched mesh, but the mesh size will shrink due to the anti-fouling material applied to the leads.

Tricia Kimmel asked Tyler if he is saying that he would support pursuing an incidental take permit for the pound net fishery as long as a permit is also pursued for the recreational hook and line fishery or is he saying that an incidental take permit should be done for the recreational hook and line fishery instead, and Tyler responded that gears that pose the highest threat level for sea turtles should be prioritized for incidental take permit consideration instead of fisheries that provide the most research benefits with lower threat levels.

Joanne McNeill with the National Marine Fisheries Service Southeast Fisheries Science Center in Beaufort, North Carolina presented information on the in-water sea turtle surveys from pound nets. The pound nets were sampled from 1995 to 1997, 2001 to 2003, and 2007 to 2009. Sampling ceased after 2009 because sea turtle takes in the pound net fishery are not authorized under the Endangered Species Act. Nearly 2,300 sea turtles were recorded (mostly loggerhead

sea turtles) with only 50 mortalities. Green sea turtles accounted for the majority of animals entangled in the pound net gear, and consequently, the majority of the mortalities (44 out of 50). The occurrence of green sea turtle entanglements increased as the water temperatures decreased (below 16 degrees Celsius).

Fulcher asked if they correlated hurricanes or other adverse weather with sea turtle catch rates during the study periods and McNeill said they did not.

Chris Hickman asked if she thinks that the protection provided for the sea turtle hatchlings have contributed to the increased abundance of sea turtles, and McNeill deferred to Matthew Godfrey since her agency does not monitor nesting sea turtles. Godfrey said not much because the predation of sea turtle hatchlings is higher in the water than on the beaches. Hickman responded that the cumulative effect of protective measures for sea turtles has resulted in a higher abundance. Godfrey added that counting sea turtles on land is much easier than counting them in the water and based on recent nest counts, it appears that loggerhead and green sea turtles are increasing.

Fulcher asked if there are other methods, besides sampling pound nets, to sample sea turtles and McNeill replied that sea turtles are sampled from trawl gear in South Carolina and Georgia.

Fulcher followed up by asking if there are any gear modifications for pound nets that would reduce interactions and McNeill said her agency is pursuing a study to use sound deterrence to prevent sea turtles from entering pound nets.

Lorenz asked if most of the sea turtles caught in pound nets were juveniles and if so, why? McNeill responded that it is because there are many more juvenile sea turtles than adults in the sounds.

Tricia Kimmel presented an overview of sea turtle interactions in the Maryland pound net fishery and efforts by the Maryland Department of Natural Resources to obtain an incidental take permit. Her presentation was based on her experience as a biologist with the Maryland Department of Natural Resources. The agency had a sea turtle research project involving pound nets, but it ended due to the incidental takes being unauthorized. Loggerhead sea turtles accounted for the majority of the sea turtles examined from pound nets and there were no documented mortalities in this gear. The agency applied for an incidental take permit for sea turtles and shortnose sturgeon incidentally captured in pound nets, gill nets, fyke nets, crab pots, and eel pots. The biggest concern regarding the incidental take permit application was the lack of information to base the take requests. As such, the Maryland Department of Natural Resources chose not to pursue an incidental take permit.

Fulcher asked if the Maryland Department of Natural Resources consider the threat level of the different gears to sea turtle takes (gill nets and hook and line versus pound nets) and Kimmel responded that gill nets were included in the application, but that fishery occurs at a time when sea turtle abundance in Maryland's portion of the Chesapeake Bay is low.

Chris Batsavage presented things to consider if the division was to develop a pound net incidental take permit application. The main considerations were which species to cover, allowed take requests, observer coverage, potential gear modifications, available staff and equipment, and funding. Unlike the estuarine gill net fishery, there is not much data available on incidental takes of sea turtles or Atlantic sturgeon in pound nets, which poses a challenge for developing take requests. The existing staff and equipment in the division's Observer Program are fully obligated to the gill net incidental take permits, so additional staff and equipment would be needed to monitor and administer a pound net incidental take permit. And finally, incidental take permits require adequate funding, so a long-term funding source must be identified.

Fulcher asked how many times Virginia's pound net fishery has closed due to reaching their allowed takes, and Batsavage replied that Virginia's pound net fishery does not operate under and incidental take permit. Instead, federal regulations to reduce sea turtle interactions are in place for the Virginia pound net fishery.

Fulcher followed up by asking how you request allowed takes for the gill net fishery that, in retrospect, does not allow for the fishery to operate due to numerous closures from meeting the allowed takes, and Batsavage responded we have even less available information for the pound net fishery compared to the examples in the gill net incidental take permits with limited information. The division would need to work very closely with the National Marine Fisheries Service to develop allowed takes for the pound net fishery with very little available data from a fishery that could potentially have many takes. Batsavage added that the National Marine Fisheries Service cannot authorize more incidental takes than anticipated.

Hickman asked if a pound net incidental take permit is developed, would it impact the number of allowed takes in the gill net incidental take permits and Batsavage said it would not. Batsavage also stated that the division has no plans to develop a pound net incidental take permit application at this time.

Richard Peterson said since takes are already happening with few mortalities, then the take requests can be very high. In terms of funding, groups interested in the information gathered from the incidental take permit could provide volunteers to help monitor the fishery. Batsavage responded that the division would need to work with the National Marine Fisheries Service to develop allowed takes for the pound net fishery based on this, and volunteers for monitoring raise concerns regarding liability, adequate training, and experience. However, the division will need to explore different funding options than were considered for the gill net incidental take permits.

Fulcher asked if it was possible to apply for a research incidental take permit for the pound net fishery, and McNulty answered that a research incidental take permit for a fishery does not exist so the only options are the incidental take permit or for National Marine Fisheries Service implementing management measures for the fishery.

Harms added that it is a "catch 22" situation when it comes to protected species because there is not a stock assessment for these species, which is needed to develop appropriate take levels.

However, incidental take permits are needed in order to collect the needed data (unless Congress appropriates more funding for this effort).

The committee discussed the delisting criteria for sea turtles without accurate population estimates, which is a continued source of frustration to the fishing industries as well as the committee. Lorenz stated that perhaps the National Marine Fisheries Service could attend a future meeting to explain the delisting process.

Fulcher added that the commercial industry encouraged National Marine Fisheries Service Office of Protected Resources staff through political action to meet with them regarding incidental take permits and delisting criteria for sea turtles. A conference call recently occurred, but Office of Protected Resources staff have not agreed to a sit-down meeting with industry; however, they agreed to attend this meeting.

OUTPUT/SUMMARY OF POUND NET DISCUSSION

Lorenz asked Sara McNulty and Joanne McNeill to join the committee in the continued discussion and questions about a pound net incidental take permit.

Harms asked McNulty how would an incidental take permit application for pound nets be evaluated if the effect of takes are already minimal and would the agency want an application for this fishery or not? McNulty responded that the conservation plan could include things such as more frequent checks of gear that could help sea turtles without impacting fishing operations, and since these are illegal takes, they would review a permit application if the state submitted it. She added that they recognize the benefits of research and monitoring opportunities as well as legal protection for the fishery. The agency cannot require a state or other entity to apply for an incidental take permit.

Peterson asked if there is a way to develop an incidental take permit that would not result in the fishery closing and McNulty answered that she is not sure, but there needs to be a set of numbers or a goal for allowed takes that is based on best available science.

Tyler asked if there is a true stock assessment for any sea turtle species, and McNulty responded that status reviews are conducted every 5 years, but no stock assessment exists.

Tyler followed up by asking then how can allowed take numbers for incidental take permits be developed without stock assessments, and McNulty replied that take numbers for incidental take permits are related to takes observed in the fishery in the past (if available) and if those takes pose a risk to the overall population.

Lorenz asked who would do a population assessment for sea turtles and McNulty said they are jointly managed by the National Marine Fisheries Service and U.S. Fish and Wildlife Service so both agencies would be responsible.

Kimmel asked if take numbers increase based on more reports of interactions, should that be factored into the allowed takes, and McNulty said factors that are likely to happen should be considered, but the situation depends on the fishery.

Fulcher does not understand how there is no correlation between allowed takes and population size, and McNulty said that they have to rely on the available information, and since population size is not available, other sources must be used.

Fulcher asked what geographic area and sampling frequency are needed for a scientific permit, and McNeill responded that they have reporting guidelines and are required to stop if they encounter a dead sea turtle. McNeill added that the Southeast Fisheries Science Center has a permit that covers sampling activities throughout the Gulf of Mexico and the south Atlantic.

Lynwood Odom asked how far south pound nets are found and do other states have incidental take permits for pound nets and the committee replied North Carolina is the southern extent of the fishery and no pound net incidental take permits exist.

Tyler asked McNeill how the sea turtle aerial surveys work, and McNeill explained that the aerial surveys were one part of the research conducted for sea turtles (volunteer sighting reports and pound net research were the others). All three components have advantages and disadvantages. The airplane flew at 500 feet and researchers would document the sea turtles they observed, but species identification was difficult for all species except leatherback sea turtles.

Fulcher asked how sea turtles underwater are accounted for, and McNeill said satellite and radio telemetry tags on sea turtles are used to account for these animals.

Odom asked what the age range of sea turtles caught in pound nets and Larisa Avens responded that most are juveniles with most green sea turtles from ages 1 to 7 and Kemp's ridley sea turtles from ages 1 to 5. Odom asked if the adults are in the ocean and McNeill and Avens said yes.

PUBLIC COMMENT

Lorenz provided the public to comment and ask questions regarding the presentations.

Before the committee members provided specific comments on each option, Lorenz provided the public to comment on the potential amendment items.

Bill Foster commented that if the recreational fishery would ever have to comply with the same rules as the commercial fishery, the science would change. Accountability measures in the Magnuson-Stevens Act held the fisheries accountable for overharvesting, and fish species began to recover. The same rules should apply to the recreational fishery as the commercial fishery in order to get good science on sea turtles. The federal agencies tend to apply regulations to the commercial fishery to protect sea turtles but not on the recreational fishery. The number of sea turtle takes by the North Carolina recreational fishery far exceeds the takes in the pound net fishery.

Roger Harris said he opposes incidental take permits and anything else the government proposes.

Cecil Simons stated that the incidental take permits destroyed the estuarine gill net fishery and they will do the same to the pound net fishery.

Kerry Harris said that the incidental take permits regulated the estuarine gill net fishery to the point where fishermen are unable to fish. He had to purchase $18,000 worth of crab pots in order to support his family because gill net fishing is not a viable option under the incidental take permits. He is upset that a pound net incidental take permit is being considered. Lorenz said the committee chose to discuss the pound net incidental take permit, but it is not being promoted by the National Marine Fisheries Service. Harris continued that no one will deny that there are more sea turtles than before, and this is all about money. He asked how many allowed sea turtle takes National Marine Fisheries Service would recommend for a pound net incidental take permit. McNeill said if it was up to her, it would allow for an unlimited number of takes because of the minimal amount of mortality, but those decisions are not hers to make. McNulty declined to answer.

Wayne Twiford commented that he fishes pound nets in Currituck Sound and has never seen a sea turtle where he fishes. He added that a pound net incidental take permit would shut down the fishery in the lower portions of the sounds.

Steve Weeks asked McNulty, McNeill and Batsavage a number of questions including how many sea turtles were observed in large mesh gill nets and the number of trips observed by the Observer Program in 2015. Batsavage answered there were 47 observed takes out of 995 trips. Weeks followed up by asking Batsavage to confirm that 47 observed takes crippled the large mesh gill net fishery, and Batsavage reminded Weeks that these are observed takes and not the estimated takes based on observer coverage. Weeks responded that he is not talking about estimated takes. Weeks asked what changed 8 years ago that prevented National Marine Fisheries Service from researching sea turtles caught in pound nets and no one had a confirmed answer. After several more questions from Weeks, Lorenz reminded him that this is not a trial and to please move onto his comments. Weeks commented that each species has a recovery plan and the recreational hook and line fishery is considered a greater threat than pound nets in the recovery plans, especially for Kemp's ridley sea turtles. He passed out a table showing reported hook and line interactions that showed 41 reported sea turtle takes and only 9 from pound nets. He thinks the level of threat to sea turtles should be considered when it comes to considering incidental take permits.

Phillip Goodwin, Sr. stated he is against a pound net incidental take permit. He depends on the pound net fishery for his livelihood and it is a clean gear.

Bradley Styron said that he was on the Marine Fisheries Commission for 11 years. He agrees with Harms about collecting more information on sea turtles, but he thinks there are other ways to accomplish this besides and incidental take permit. An incidental take permit would cripple the fishery based on what the incidental take permits did to the estuarine gill net fishery. He claimed that Batsavage is already preparing information for a pound net incidental take permit

and Batsavage corrected Styron by saying he presented considerations for an incidental take permit, but that does not mean the division is moving forward with applying for one.

David Bush from the North Carolina Fisheries Association asked if there are other ways to collect sea turtle data, and McNeill said yes, such as National Marine Fisheries Service using gill nets to tag and release sea turtles in Cape Lookout Bight, but the data are limited. Bush asked Batsavage if the division updated the take numbers from the incidental take permits and Batsavage said no, but the Atlantic sturgeon incidental take permit requires the division to reexamine the expected takes after three years of observer coverage data, and the sea turtle incidental take permit requires an examination of loggerhead sea turtle takes compared to the allowed takes after three years. Bush followed up by asking Batsavage if we could justify requesting more sea turtle takes considering the numerous fishery closures the past few years, and Batsavage responded that the division would need to analyze the take numbers and would need to talk to National Marine Fisheries staff first; an increase in requested takes would also require a new application. Bush asked what it would take to initiate a new incidental take permit application now, and Batsavage was not sure who would make the decision. Batsavage said since this would require a new application, it opens up all aspects of the conservation plan to National Marine Fisheries Service review and to public comment, which is a long process and that the public opinion about the estuarine gill net fishery varies.

Adam Harris said he is completely against a pound net incidental take permit and wonders why it is being discussed now.

Fulcher asked Batsavage if the commercial industry arranged a meeting with the National Marine Fisheries Service Office of Protected Resources staff to discuss additional allowed sea turtle takes, would the division participate, and Batsavage answered that he would not oppose it if the discussion included an explanation of the process and if the National Marine Fisheries Service was willing to discuss the information they would need from the division in order to review a request for more allowed takes.

Lorenz offered Commissioners Willis and Rose and opportunity to comment and Willis declined.

Rose commented that her family is in the pound net fishery and speaking personally (not as a Commissioner), she agrees with the fishermen because they work with the division and they get slapped in the face every time. She also has concerns pursuing an incidental take permit if there are no other states with incidental take permits.

SEA TURTLE STRANDING DISCUSSION

Matthew Godfrey motioned to adjourn the meeting after the sea turtle stranding discussion and was seconded by Craig Harms—motion fails.

Godfrey led the discussion about the high number of green sea turtle strandings that occurred in Pamlico Sound last December. He handed out information that showed the weekly number of strandings in December compared to the rest of the year. The December strandings are usually the result of cold stun events, but last December was warmer than average and the number

stranded was very high. It was difficult to determine the cause of death due to the degree of decomposition. Necropsies did not indicate anything abnormal about the animals. Some people speculated that they were pound net strandings, but there was no evidence to suggest this. Virginia also witnessed a peak in green sea turtle standings in November, which is unusual. Since the sea turtles were necropsied, Godfrey was unable to collect samples from the animals, so there is no way to determine the cause of death. However, plans are being made to collect samples if this occurs again in the future to determine the cause of death.

Kimmel asked if the strandings in Virginia were concentrated in a particular area, and Godfrey replied that they occurred in the Chesapeake Bay region.

Harms commented that these sea turtle strandings would have been associated with a cold stun event if the air and water temperatures were normal last December.

Jacob Boyd asked what would the decomposition rate be for a sea turtle when the water temperatures are in the 60s (which occurred last December), and Godfrey said at least a couple of days to become moderately decomposed, so it is possible that they floated in from somewhere else.

OBSERVER PROGRAM UPDATE

In the interest of time, no presentation was given. The committee was asked to contact Batsavage or Boyd if they had any questions.

OTHER BUSINESS

Peterson and Lorenz asked if it is possible to meet more often and Batsavage said that it comes down to the available budget and staff availability. He will pass this request along to staff.

Peterson is concerned that the committee is not accomplishing much or reaching any conclusions, which is why he would like to meet more often.

Peterson asked if the committee could discuss agenda items via email, and Batsavage said that would violate the state's open meetings laws.

FUTURE MEETING TOPICS AND PLAN AGENDA ITEMS FOR NEXT MEETING

Fulcher commented that much information was presented that he will need to think about and Tyler agreed.

Lorenz said a future action item is for Batsavage to ask the division about discussing a new gill net incidental take permit application with National Marine Fisheries Service and to get a better understanding what it would take and the risks involved with requesting more sea turtle takes. Lorenz added that the committee could eventually make a recommendation to the Marine Fisheries Commission about whether or not to pursue an incidental take permit.

MEETING ARRANGEMENTS

The next meeting is scheduled for Thursday June 23, 2016 at the Department of Environmental Quality Regional Office in Washington, North Carolina.

The meeting adjourned at approximately 8:45 pm.

/cb

Cc:
Catherine Blum
Mike Bulleri
Scott Conklin
Dick Brame
Braxton Davis
Charlotte Dexter
Jess Hawkins
Dee Lupton
Nancy Marlette
Katie Mills
Phillip Reynolds
Jerry Schill
Gerry Smith
District Managers
Committee Staff Members
Marine Patrol Captains
Section Chiefs

Marine Fisheries
ENVIRONMENTAL QUALITY

PAT MCCRORY
Governor

DONALD R. VAN DER VAART
Secretary

BRAXTON DAVIS
Director

MEMORANDUM

TO: Marine Fisheries Commission

FROM: Wayne Johannessen
Division of Marine Fisheries

DATE: April 19, 2016

SUBJECT: Coastal Recreational Fishing License Committee Meeting

The Marine Fisheries Commission Coastal Recreational Fishing License Committee met at 2 p.m. on Tuesday April 19th, 2016 at the Division of Marine Fisheries Central District Office, 5285 Highway 70W, Morehead City. The following attended:

Committee: Mark Gorges (call in), Joe Shute, Rick Smith, Col. Jim Kelley

Advisory Members: Galen Maxwell, Alexander Rich, Richard Sear, Jan Willis

Staff: Dee Lupton, Suzanne Guthrie, Beth Govoni, Steve Murphey, Don Hesselman, Nancy Fish, Laura Lee, Kathy Rawls, Trish Murphey, Call in: Charlton Godwin, Anne Deaton

APPROVAL OF AGENDA AND MINUTES

Division of Marine Fisheries Col. Kelley called the meeting to order.

The meeting agenda was approved by consensus with no modifications.

The minutes from the December 14, 2015 meeting were approved by consensus with no modifications.

PUBLIC COMMENT

There was no public comment offered.

UPDATES

The committee received updates on the Coastal Recreational Fishing license sales report. The committee was updated on the status of on-going/previously funded Coastal Recreational Fishing License projects from 2007-2015 with semi-annual progress reports, Technical Monitor Reviews, and annual progress reports.

Commissioner Joe Shute questioned the Wildlife Resources commission Transaction Fee of approximately $7 million. Beth Govoni explained that the transaction fee is in the statute and is up to $2.00 (Beth later corrected the information that there is actually a Memorandum of Understanding (MOU) between the Division of Marine Fisheries and Wildlife Resources commission that dictates this fee. The fee cannot exceed $2 per the MOU).

ADDITIONAL-YEAR FUNDING PROJECTS

2007 update provided on the Five Year Plan projects with budgets and expenditures. Also Status of filled and vacant positions as of February 19, 2016.

2010 no projects need additional year of funding for fiscal year 2016 – 2017

2011 no projects need additional year of funding for fiscal year 2016 – 2017

2012 no projects need additional year of funding for fiscal year 2016 – 2017

The committee unanimously approved funding for two 2013 multi-year projects, requesting funding in the amount of $131,445 for fiscal year 2016 – 2017:

Mark Recapture Study of Cape Fear Striped Bass (2013-F-010) - $9,335
The Mark Recapture study is a four-year Division of Marine Fisheries project to research the sustainability of the Cape Fear River striped bass population.

Sources of Mortality and Movements of Weakfish (2013-F-011) - $122,110
Sources of Mortality and Movements of Weakfish is a four-year North Carolina State University project to study factors affecting weakfish stocks.

Motion by Rick Smith to approve the two 2013 projects requesting funding in fiscal year 2016 - 2017, seconded by Joe Shute, Mark Gorges approved - motion carried by consensus.

The committee unanimously approved funding for three 2014 multi-year projects, requesting funding in the amount of $265,576 for fiscal year 2016 – 2017:

Mortality for Southern Flounder (2014-F-015) - $137,216
The Mortality for Southern Flounder is a four-year University of North Carolina Wilmington project to provide direct estimates of mortality of Southern Flounder using combined telemetry and conventional tagging.

Carcass Collection Program (2014-F-016) - $7,750
The Carcass Collection Program is a three-year Division of Marine Fisheries project to establish coast-wide carcass collection program in order to collect data such as length, age and sex for recreationally important fish stock assessment models.

Multi-Species Tagging Program (2014-F-017) - $120,610
The Multi-Species Tagging Program is a three year Division of Marine Fisheries project to maximize tagging opportunities and optimized cost. The resulting tag-return data will provide

independent estimates of *F*, *M*, abundance/biomass, and migration rate and can be combined with traditional catch data to obtain precise and accurate results that improve management.

Motion by Joe Shute to approve the three 2014 projects requesting funding in fiscal year 2016 - 2017, seconded by Rick Smith, Mark Gorges approved - motion carried by consensus.

The committee unanimously approved funding for twelve 2015 multi-year projects, requesting funding in the amount of $708,578 for fiscal year 2016 – 2017:

Improving water temperature data recording for monitoring spotted seatrout cold stuns (2015-F-024) - $5,955
Improving water temperature data recording is a three-year Division of Marine Fisheries project to grant to begin a statewide water temperature logging program.

Full Time Law Enforcement Officer (2015-F-025) - $83,194
Full Time Law Enforcement Officer is a two-year Division of Marine Fisheries project to fund salary and purchase equipment for a full time law enforcement officer.

Temporary Tele-Communications Employee (2015-F-026) - $83,194
Temporary Tele-Communications Employee is a two-year Division of Marine Fisheries project to fund a temporary tele-communication employee for Marine Patrol.

Evaluation of Changes in Available Spawning and Nursery Habitats for River Herring in North Carolina (2015-F-032) - $48,299
Evaluation of Changes in Available Spawning and Nursery Habitats for River Herring is a two-year North Carolina State University project to fund the tracking of population growth of river herring.

Linking water quality, food quality, and larval fish condition to determine strategic habitat area quality (2015-H-036) - $80,506
Linking water quality, food quality, and larval fish condition to determine strategic habitat area quality is a four-year East Carolina University project to fund a study to determine strategic habitat area contribution to increased fish production.

Quantifying fish enhancement and erosion protection provided by marsh sills: "a living shoreline" alternative to bulkheads and revetments (2015-H-038) - $84,562
Quantifying fish enhancement and erosion protection provided by marsh sills: "a living shoreline" alternative to bulkheads and revetments is a two-year University of North Carolina at Chapel Hill project to fund a comprehensive evaluation of the recreational fish habitat services and erosion protection provided by marsh sills in comparison to revetments, bulkheads, and naturally occurring marshes.

Understanding and prediction the frequency and duration of hypoxic exposure in fish habitats in the lower Neuse River estuary (2015-H-041) - $98,275

Understanding and prediction the frequency and duration of hypoxic exposure in fish habitats in the lower Neuse River estuary is a two-year University of North Carolina at Chapel Hill project to fund a study to quantify and develop predictive models for salinity variability and the frequency and duration of hypoxic conditions.

Enhancing the quality of fish habitat and quantity of oysters by refining reef-restoration techniques (2015-H-042) - $107,077
Enhancing the quality of fish habitat and quantity of oysters by refining reef-restoration techniques is a three-year University of North Carolina at Chapel Hill project to fund a study to provide important guidelines for intertidal and subtidal reef restoration that will maximize the quality of the fish habitat.

Take a Kid Fishing (2015-P-030) - $25,000
Take a Kid Fishing is a three-year Take a Kid Fishing Foundation project to fund an annual event that provides disabled and disadvantaged youth an opportunity to go saltwater fishing while teaching them about ethical fishing practices, conservation and the ocean environment.

Improving fish production of artificial reefs by testing reef design and function (2015-P-033) - $85,758
Improving fish production of artificial reefs by testing reef design and function is a two-year University of North Carolina at Chapel Hill project to fund a study to assess how artificial reefs function to help the Division of Marine Fisheries continue to enhance, restore, manage, protect, and develop these reefs.

North Carolina Saltwater Fishing Tournament (2015-P-035) - $21,500
North Carolina Saltwater Fishing Tournament is a three-year Division of Marine Fisheries project to fund the continuation and improvement of this program which recognizes recreational anglers for exceptional catches of marine finfish.

North Carolina Recreational Fishing Digest (2015-P-037) - $36,750
North Carolina Recreational Fishing Digest is a two-year Division of Marine Fisheries project to fund the continuation of the annual publication for the Recreational Fishing Digest.

Discussion by Jan Willis of the Marine Fisheries Commission Advisory Panel to not fund the project:

Marine Fisheries Fellowship Program (2015-F-031) - $51,285
Marine Fisheries Fellowship Program is a five-year North Carolina State University project to fund the program which pairs M.S., Ph.D. students or recent graduates with biologists at North Carolina Division of Marine Fisheries.

Due to the current project studying the bycatch hotspots of the gillnet fisheries related to turtles and Atlantic sturgeon. The study being used to determine the potential effects of large and small mesh gillnet closures on sturgeon bycatch. Ms. Willis recommend do not fund based on a more suitable research project be chosen, suitable meaning “will enhance or improve the recreational

fishing experience or educate angles about salt water fishing". The project does not seem to have any benefit to the recreational fishing industry

Beth noted that the project was identified in the original proposal

Motion by Joe Shute to not approve funding of year two of the Marine Fisheries Fellowship Program (2015-F-031) in fiscal year 2016 - 2017, seconded by Rick Smith, Mark Gorges approved - motion carried by consensus.

Motion by Joe Shute to approve the other twelve 2015 projects requesting funding in fiscal year 2016 - 2017, seconded by Rick Smith, Mark Gorges approved - motion carried by consensus.

REQUEST FOR PROPOSALS

The 2016 Request for Proposals has been revised; division staff with consultation from Wildlife Resources Commission have reviewed the Coastal Recreational Fishing License request for proposal application and made recommendations to align with the Coastal Recreational Fishing License Strategic Plan.

Motion by Joe Shute to approve the 2016 Request for Proposal, seconded by Rick Smith, Mark Gorges approved - motion carried by consensus.

ADDITIONAL BUSINESS

Beth Govoni offered an update to the Committee on Division of Marine Fisheries Proposal 2016-H-052 *Developing methodology for assessing recreational fish use in Strategic Habitat Areas*. Vote for approval was differed in the December meeting to give the principal investigator time to re-evaluate the scope of sampling and field work in the proposal. Clarification has been provided by Anne Deaton, but due to the Coastal Habitat Protection Plan Biologist position currently being vacant she has requested the proposal be withdrawn from consideration and plans to re-submit the proposal in the upcoming 2016 Request for Proposals.

Division of Marine Fisheries Proposal 2016-F-035 *Validating and updating maturation schedules for better management of North Carolina fisheries* has requested a reallocation of funds. The current principal investigator has requested re-allocating the $30,301 in year 3 that was originally for the 11-month temporary technician. They would like to budget the funds for a temporary Biologist II in the following manner.

- Year 1 $12,120.40 (526 hrs.)
- Year 2 $12,120.40 (526 hrs.)
- Year 3 $6,060.20 (263 hrs.)

Staff who has since left the Division was planning to perform these duties. At this time, hiring a part-time temporary fish biologist II with reproductive fisheries biology experience instead of an 11-month temporary technician would greatly enhance to success of achieving the goals of this grant.

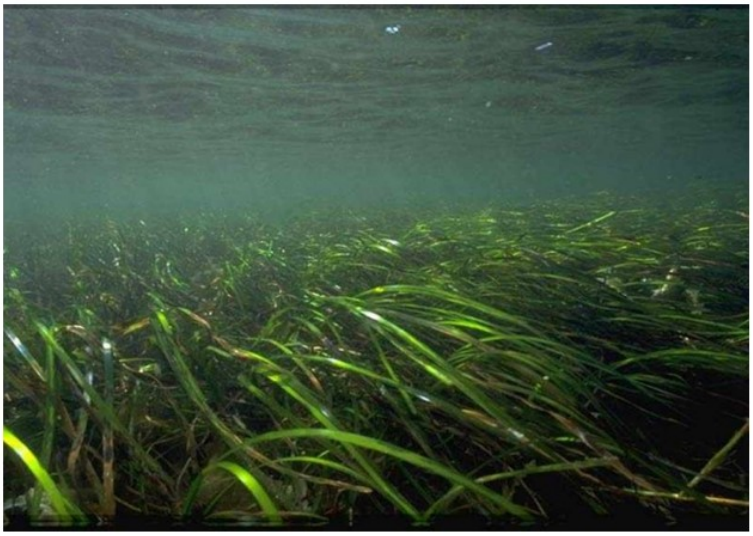
Motion by Mark Gorges to approve the budget revision which will require $12,120.40 added to year 1 and year 2, and $24,240.80 will be reduced in year 3, seconded by Rick Smith, Joe Shute - motion carried by consensus.

No Additional Business discussed.

Meeting adjourned at 3:08 p.m.

Enclosures

Cc:
Catherine Blum
Mike Bulleri
Scott Conklin
Dick Brame
Braxton Davis
Charlotte Dexter
Jess Hawkins
Dee Lupton
Nancy Marlette
Katie Mills
Phillip Reynolds
Jerry Schill
Gerry Smith
District Managers
Committee Staff Members
Marine Patrol Captains
Section Chiefs



NORTH CAROLINA COASTAL HABITAT PROTECTION PLAN

2016 Plan

NC Department of Environmental Quality

Protecting fish habitat from the headwaters to the sea...

NC Environmental Quality

North Carolina Marine Fisheries

Albemarle - Pamlico National Estuary Partnership

NC Division of Coastal Management

DWR Division of Water Resources

EXECUTIVE SUMMARY

This document is intended as a resource and guide compiled by Department of Environmental Quality staff to assist the Marine Fisheries, Environmental Management, and Coastal Resources commissions in the development of goals and recommendations for the continued protection and enhancement of fishery habitats of North Carolina. Implementation of any of the recommendations through specific rules or policies will involve further discussion with stakeholders as well as the balancing of competing ecological and economic values. By adopting this update, the commissions agree to cooperatively manage aquatic habitats towards the goal of coastal fishery resources long-term viability. The "Source Document" continues to be a work-in-progress as more scientific data, inventories, and indicators become available. G.S. 143B-279.8 requires that a Coastal Habitat Protection Plan (CHPP) be drafted by the Department of Environmental Quality, (renamed from Department of Environment and Natural Resources, effective July 1,2015), and reviewed every five years. The purpose of the plan is to recommend actions to protect and restore habitats critical to enhancement of North Carolina's coastal fisheries. This is the third iteration of the plan. The Marine Fisheries, Coastal Resources, and Environmental Management commissions are required to approve the plan recommendations.

The 2015 Coastal Habitat Protection Plan summarizes the economic and ecological value of coastal fish habitats to North Carolina, their status, and the potential threats to their sustainability. Goals and recommendations to protect and restore fish habitat, including water quality, are included. The appended Source Document, compiled by staff of the Department of Environmental Quality, provides the science to support the need for such recommendations. Throughout the plan, there are references to the chapter of the Source Document where more details and references can be found.

The 2015 plan and Source Document describe many of the accomplishments that have occurred since the first iteration of the plan in 2005. Most have been non-regulatory, collaborative efforts across divisions. Continued progress will require cooperation across additional agencies.

2016 Goals and Recommendations

Goal 1. Improve effectiveness of existing rules and programs protecting coastal fish habitats.

Includes 5 recommendations regarding enhancement of compliance, monitoring, outreach, coordination across commissions, and management of invasive species.

Goal 2. Identify and delineate strategic coastal habitats.

Includes 2 recommendations regarding mapping and monitoring fish habitat, assessing their condition, and identifying priority areas for fish species.

Goal 3. Enhance and protect habitats from adverse physical impacts.

Includes 8 recommendations on expanding habitat restoration, managing ocean and estuarine shorelines, protecting habitat from destructive fishing gear, and dredging and filling impacts.

Goal 4. Enhance and protect water quality.

Includes 8 recommendations to reduce point and non-point sources of pollution in surface waters through encouragement of Best Management Practices, incentives, assistance, outreach, and coordination. This applies not only to activities under the authority of the Department of Environmental Quality, such as development and fishing, but to all land use activities, including forestry, agriculture, and road construction.

The Coastal Habitat Protection Plan and Source Document can be viewed and downloaded from:
http://portal.ncdenr.org/web/mf/habitat/chpp/downloads

The 2016 North Carolina Coastal Habitat Protection Plan

North Carolina's approximately 2.3 million acres of estuarine waters comprise the largest estuarine system of any state along the Atlantic seaboard. Located at the confluence of warm southern and cool northern currents, North Carolina's waters support a high diversity of aquatic species and six distinct, but interdependent, marine habitats. These waters are vital not only for the state's important fish species, but also for fish that migrate along the east coast.

North Carolina, with its billion dollar commercial and recreational fishing industries, ranks among the nation's highest seafood producing states. Aquatic species important to these industries depend on sufficient quality and quantity of habitats in our rivers, sounds, and ocean waters. From shellfish beds in the lower estuaries, to swamps in the upper estuaries, fish habitats are at risk. Activities causing habitat loss and degradation threaten more than the fishing industry vital to North Carolina's economy. They also threaten coastal tourism, outdoor recreation, and residential development.

Recognizing the critical importance of healthy fish habitat, the NC General Assembly passed the Fisheries Reform Act (GS.143B-279.8), requiring three of the state's regulatory commissions - the Marine Fisheries, Environmental Management, and Coastal Resources commissions - to adopt a plan to protect and restore resources critical to North Carolina's fisheries. The Department of Environmental Quality (DEQ) developed a Coastal Habitat Protection Plan (CHPP) through a cooperative, multiagency effort. The CHPP was written by DEQ staff, adopted by the three commissions in 2004, and updated in 2010.

The CHPP is a guidance document providing the latest science on North Carolina's coastal fish habitats, their ecological functions, values, and threats, as well as goals and recommendations to protect, enhance, and restore fish habitat. By adopting the revised plan, the commissions are committing to implement these goals and recommendations. To this end, each DEQ division develops a biennial implementation plan that includes tangible and achievable actions to progress forward.

In this 2015 plan, there is information on past implementation progress, updated recommendations, and priority issues to focus actions. Background on the six fish habitats, their status, and pertinent threats are included. Full details are in the 2015 CHPP Source Document (**http://portal.ncdenr.org/web/mf/habitat/chpp/downloads**). A key to acronyms is provided at the end of this document.

Value of NC's coastal fish habitats: *

- 2013 Economic impact of NC fisheries: commercial - $305 million; recreational - $1.7 billion.
- Submerged aquatic vegetation produces food, improves water quality. In Bogue Sound, NC, pollution removal services value - $3,000/ac/yr. Ecosystem services of seagrass and algae - $7,700/ac/yr.
- Oyster reefs remove pollutants, increase fish production, stabilize shorelines – ecosystem services estimated $2,200 - $40,200/ac/yr, without value of fishery. Recreational fishing from reef restoration value estimated - $640,000/yr.
- Coastal wetlands provide storm protection valued at $25.6 billion/yr.
- Property values adjacent to open shellfish harvest waters are higher than next to closed waters.
- NC hard bottom fishery generated more than $4.2 million average annually for each of three years between 2011-2013.
- For every $1 invested in land conservation in NC, ~$4 return from natural resource goods and services.
- Beach property 80' wide ~35% more valuable than same property 79' wide.

* Refer to the Source Document for details and literature references.

Water Column | Submerged Aquatic Vegetation | Shell Bottom | Wetlands | Hard Bottom | Soft Bottom

CHPP Implementation

The overarching goal of the CHPP is to enhance fisheries by protecting and restoring important coastal habitats. The plan includes *recommendations* that fall under four broad goals and address issues such as minimizing habitat impacts from fishing gear and channel dredging, as well as reducing water quality impacts from point and nonpoint sources.

To fulfill these recommendations, each DEQ division and department develops biennial *implementation plans* that include tangible achievable actions. Implementation actions have varied over time based on needs and changing priorities. Implementation actions are carried out by DEQ, the Marine Fisheries Commission (MFC) and Division of Marine Fisheries (DMF), the Coastal Resources Commission (CRC) and Division of Coastal Management (DCM), the Environmental Management Commission (EMC) and Division of Water Resources (DWR), the Sedimentation Control Commission (SCC) and Division of Energy, Mineral, and Land Resources (DEMLR), and other partnering agencies. Implementation progress is tracked on a regular basis (Ch. 1).

In the 2015 CHPP, four *priority habitat issues* were selected for the focus of implementation plans. Suggested implementation actions for these issues were developed and are included in the plan. The four issues are oyster restoration, living shorelines, sedimentation, and developing metrics to assess habitat trends and management effectiveness (Ch. 12).

Department of Environmental Quality

DEQ is the lead stewardship agency for the preservation and protection of North Carolina's outstanding natural resources. The organization, which has offices from the mountains to the coast, administers programs designed to protect and enhance water quality, aquatic resources, public health, fish, wildlife, and wilderness areas.

The department is responsible for drafting the habitat plan. The CHPP Team, consisting of staff from DEQ divisions, draft the plan with guidance from the department.

DEQ implementation actions include those of the Albemarle-Pamlico National Estuary Partnership, Office of Land and Water Stewardship, and Division of Mitigation Services. Other participating state agencies include the Division of Soil and Water Conservation, NC Forest Service, Wildlife Resources Commission, and the Department of Agriculture and Consumer Services.

CHPP Steering Committee

The CHPP Steering Committee consists of two commissioners from each of the three commissions specified in the Fisheries Reform Act - MFC, CRC, and EMC. Their role is to review and approve of the draft plan, be an advocate for the plan to their full commission, meet regularly as a committee to discuss solutions for difficult and cross-cutting habitat and water quality issues, and review implementation progress to ensure that the plan is implemented.

CHPP Implementation

The primary divisions responsible for implementing CHPP recommendations are the Division of Marine Fisheries, Division of Coastal Management, Division of Water Resources, and Division of Energy, Minerals, and Land Resources (Ch. 1).

Division of Marine Fisheries

The division, under the rulemaking authority of the MFC, manages the commercial and recreational fisheries in North Carolina's estuarine and ocean waters. The division protects habitats through fishing gear rules, planning, research, and enhancement activities. The division's mission is to ensure sustainable marine and estuarine fisheries for the benefit of the people of North Carolina.

Division of Coastal Management

Under the rulemaking authority of the CRC, this division manages coastal development in accordance with the NC Coastal Area Management Act and the NC Dredge and Fill Law. The DCM works to protect, conserve, and manage North Carolina's coastal resources through an integrated program of planning, permitting, education, and research.

Division of Water Resources

The DWR's mission is to protect, preserve, enhance, and manage North Carolina's surface water and groundwater resources for the health and welfare of the citizens of North Carolina and the economic well-being of the state. This division functions under the rulemaking authority of the EMC.

Division of Energy, Mineral, and Land Resources

The division, under the rulemaking authority of the EMC, manages and provides technical assistance related to sediment and erosion control, stormwater management, mining, dams, and energy. The mission of DEMLR is to promote the wise use and protection of North Carolina's land and geologic resources.

Implementation Progress

Substantial implementation progress has been made over the past ten years, with some positive habitat signs evident. In addition, some fishery species' populations have rebounded or are showing strong signs of recovery. Examples include spotted seatrout, red drum, gag grouper, black sea bass, oysters, and bay scallops. While this advancement cannot be directly or solely related to habitat improvement, it is a positive indication for management overall. Some examples of implementation success are below (Ch. 1).

Oyster restoration

- Since 2005, oyster sanctuary development has greatly expanded. DMF has constructed 13 oyster sanctuaries in the Pamlico Sound system, each ranging from 5 - 60 acres of permitted area, and totaling 159 acres of developed reef (Ch. 3 & 12).
- Creation of an oyster shell recycling program provided additional shell material to supplement the division's shell planting activities. Recycled and purchased shell and rock material is used to create additional oyster reef habitat that supports the oyster fishery and provides fish habitat. The area of oyster reef created annually through shell planting varies based on funding and availability of material. Despite budget cuts, efforts continue through partnerships, grant funding, and mitigation contract work (Ch. 3 & 12).

Improving strategies to reduce nonpoint runoff

- EMC adopted coastal stormwater rules to reduce further degradation of receiving waters (Ch. 14).
- DWR and DEMLR incorporated low impact development techniques as acceptable Best Management Practice options for controlling runoff from development (Ch. 14).

Mapping and assessing habitat condition

- Since 2005, much progress has been made in submerged aquatic vegetation (SAV) mapping. Through a coordinated partnership of APNEP, DMF, DCM, DWR, and others, the entire coast was mapped in 2007-2008, with portions repeated in 2013 and 2015. A monitoring plan was developed to improve mapping methods in low salinity waters and to allow repeat mapping to evaluate change over time (Ch. 4).
- DMF accelerated estuarine shellfish bottom mapping (to a maximum water depth of 15 ft). Mapping is now over 95% complete (Ch. 3).
- DCM mapped the coastal estuarine shoreline and shoreline structures such as bulkheads and piers (Ch.8).
- DMF has developed and begun a process to identify a subset of strategic habitats, based on their condition and location. This will allow conservation measures to focus on priority areas (Ch. 13).

Implementation Progress

Managing shorelines

- DCM developed sediment criteria for beach nourishment and a Beach and Inlet Management Plan that provides guidelines for ocean beach nourishment to minimize ecological impacts and address socioeconomic concerns (Ch. 8).
- DCM has taken several actions to encourage greater use of living shorelines for estuarine shoreline stabilization. Working with DMF, DWR, and other agencies, DCM surveyed living shorelines for success, and agencies worked to simplify the permitting process. Outreach to multiple audiences through workshops, written material, and websites continues (Ch. 8).

Coordination and compliance

Regular CHPP Steering Committee meetings and CHPP quarterly permit reviewer meetings have greatly improved collaboration among divisions and problem solving on cross-cutting issues. New compliance positions were established in several divisions through appropriated funds, allowing greater assessment of compliance. However, due to budget shortfalls and resulting staff reductions over the past few years, divisions have maintained compliance monitoring through reorganization, reprioritization, and placing additional responsibilities on staff. (Ch. 1).

Research and outreach

- The Coastal Recreational Fishing License grant program funded multiple research projects that were identified as priorities in CHPP Implementation Plans or that will expand our understanding of the link between habitat condition and fish use (Ch. 1).
- The National Estuarine Research Reserve has produced educational materials on the value of different fish habitats and environmentally friendly shoreline stabilization techniques. The NERR also held workshops to promote living shorelines (Ch. 14).
- Several educational kiosks and displays on the value of fish habitat were constructed at a variety of museums and public access locations using Coastal Recreational Fishing License funds (Ch. 14).

Restoring fish passage

- In 2012, a rock ramp fish passage was constructed around Lock and Dam #1 on the Cape Fear River by the US Army Corps of Engineers to allow anadromous fish to migrate farther upstream to spawn. The work was done collaboratively with DMF, WRC, USFWS, and other partners (Ch. 9).

Goals and Recommendations

GOAL 1:

IMPROVE EFFECTIVENESS OF EXISTING RULES AND PROGRAMS PROTECTING COASTAL FISH HABITATS

North Carolina has a number of programs in place to protect coastal fisheries and the natural resources that support them. The Marine Fisheries Commission has adopted rules addressing the impacts of certain types of fishing gear and fishing practices that may damage fish habitats. The Coastal Resources Commission regulates development impacts on certain types of critical habitat, such as saltwater marshes and Primary Nursery Areas. The Environmental Management Commission has water quality standards that address pollution of all waters, from direct discharges to dredge and fill impacts. The Division of Energy, Mineral, and Land Resources addresses erosion and sediment control from land development or mining, and regulates energy activities. The Coastal Habitat Protection Plan identifies strategies that could continue to improve rule compliance, coordination of environmental monitoring, and outreach, which in turn will result in greater success in protecting critical fish habitats (Ch. 15).

RECOMMENDATIONS:

1. Continue to ensure compliance with Coastal Resources Commission (CRC), Environmental Management Commission (EMC), and Marine Fisheries Commission (MFC) rules and permits.
2. Coordinate and enhance:
    a. monitoring of water quality, habitat, and fisheries resources (including data management) from headwaters to the near-shore ocean.
    b. assessment and monitoring of effectiveness of rules established to protect coastal habitats.
3. Enhance and expand educational outreach on the value of fish habitat, threats from land use and other activities, and explanations of management measures and challenges.

4. Continue to coordinate among commissions and agencies on coastal habitat management issues.
5. Enhance management of invasive species with existing programs. Monitor and track status in affected waterbodies.

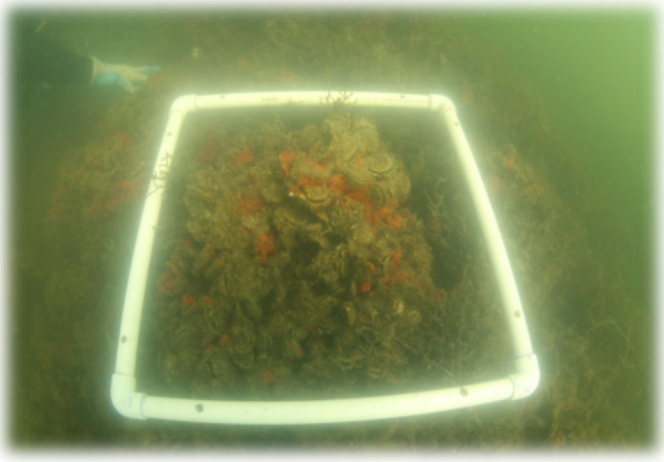
GOAL 2:

IDENTIFY AND DELINEATE STRATEGIC COASTAL HABITATS

Maintaining healthy coastal fisheries requires consideration of the entire ecosystem and the way different types of fish habitats work together. For example, coastal marshes help prevent erosion of shallow soft bottom habitat, which provides a food source and corridor for juvenile finfish. Shell bottom reduces sediment and nutrients in the water column, which enhances conditions for submerged aquatic vegetation. Together these habitats provide different functions for fish and protective stepping stones for their migration through coastal waters. Fragmenting these habitats, or damaging one of a series of interrelated habitats, makes it more difficult for aquatic systems to support strong and healthy coastal fisheries. The Marine Fisheries Commission identified a need to locate strategic habitats. These areas are a subset of all coastal habitats and consist of strategically located complexes of fish habitat that provide exceptional ecological functions ("best of the best"), or are particularly at risk due to vulnerability or rarity. These areas merit special attention and should be given high priority for research, monitoring, and possibly conservation (Ch. 15).

RECOMMENDATIONS:

1. Support assessments to classify habitat value and condition by:
    a. coordinating, completing, and maintaining baseline habitat mapping (including seagrass, shell bottom, shoreline, and other bottom types) using the most appropriate technology.
    b. selectively monitoring the condition and status of those habitats.
    c. assessing fish-habitat linkages and effects of land use and other activities on those habitats.
2. Continue to identify and field groundtruth strategic coastal habitats.



NC Fishing

GOAL 3:

ENHANCE AND PROTECT HABITATS FROM ADVERSE PHYSICAL IMPACTS

The CHPP identifies a number of ways in which fish habitats can be damaged by direct physical impacts. Some examples include filling of wetlands, navigational dredging of soft bottom habitat, destruction of shell bottom and hard bottom areas, damage to submerged aquatic vegetation by use of certain types of fishing gear, and physical obstructions that block fish movement to and from spawning areas. While large impacts can directly contribute to the loss of habitat functions, the accumulation of many small impacts can make a habitat more vulnerable to injuries from which it might otherwise recover quickly. In some cases, historic damage to a habitat can be mitigated through the creation of sanctuaries where the resource can recover. One such program involves creation of protected oyster reefs. In other cases, the cumulative impacts of multiple projects can be more effectively managed through comprehensive planning (Ch. 15).

RECOMMENDATIONS:

1. Expand habitat restoration in accordance with restoration plan goals, including:
    a. increasing subtidal and intertidal oyster habitat through restoration.
    b. re-establishing riparian wetlands and stream hydrology.
    c. restoring SAV habitat and shallow soft bottom nurseries.
2. Sustain healthy barrier island systems by maintaining and enhancing ecologically sound policies for ocean and inlet shorelines, and implement a comprehensive beach and inlet management plan that provides ecologically based guidelines to protect fish habitat and address socioeconomic concerns.
3. Protect habitat from adverse fishing gear effects through improved compliance.

Goals and Recommendations

GOAL 3:

ENHANCE AND PROTECT HABITATS FROM ADVERSE PHYSICAL IMPACTS

RECOMMENDATIONS:

4. Improve management of estuarine and public trust shorelines and shallow water habitats by revising shoreline stabilization rules to include consideration of site specific conditions, and advocate for alternatives to vertical shoreline stabilization structures.
5. Protect and restore habitat for migratory fishes by:
    a. incorporating the water quality and quantity needs of fish in water use planning and management.
    b. restoring fish passage through elimination or modification of stream obstructions, such as dams and culverts.
6. Ensure that energy development and infrastructure is designed and sited to minimize negative impacts to fish habitat, avoid new obstructions to fish passage, and, where possible, provide positive impacts.
7. Protect and restore important fish habitat functions from damage associated with activities such as dredging and filling.
8. Develop coordinated policies including management adaptations and guidelines to increase resiliency of fish habitat to ecosystem changes.

Seasonal restrictions on navigational dredging are an effective means of protecting fish during critical times of their lives, such as during spawning periods or when early juvenile fish are growing in nursery areas.

GOAL 4:

ENHANCE AND PROTECT WATER QUALITY

Clean water is essential to coastal fisheries. Water conditions necessary to support coastal fish include the right combination of temperature, salinity, and oxygen, as well as the absence of harmful pollutants. Achieving and maintaining good water quality for purposes of fish productivity requires management of both direct discharges to surface waters and nonpoint runoff from land activities. While there have been great improvements to water quality management, support through funding and technological advances is needed to sustain water quality as coastal uses increase. The CHPP recommends strategies to address water quality impacts by maintaining rule compliance through inspections, local government incentives, and developing new technology to reduce point and nonpoint pollution through voluntary actions. Maintaining the water quality necessary to support vital coastal fisheries will benefit not only the fishing industry, but also a large sector of the entire coastal economy built around travel, tourism, recreational fishing, and other outdoor activities (Ch. 15).

RECOMMENDATIONS:

1. Reduce point source pollution discharges by:
    a. increasing inspections of wastewater discharges, treatment facilities, collection infrastructure, and disposal sites.
    b. providing incentives and increased funding for upgrading all types of discharge treatment systems and infrastructure.
    c. developing standards and treatment methods that minimize the threat of endocrine disrupting chemicals on aquatic life.
2. Address proper reuse of treated wastewater effluent and promote the use of best available technology in wastewater treatment plants (including reverse osmosis and nanofiltration effluent), to reduce wastewater pollutant loads to rivers, estuaries, and the ocean.

3. Prevent additional shellfish closures and swimming advisories by:
    a. conducting targeted water quality restoration activities.
    b. prohibiting new or expanded stormwater outfalls to coastal beaches and to coastal shellfishing waters (EMC surface water classifications SA and SB) except during times of emergency (as defined by the DWR's Stormwater Flooding Relief Discharge Policy) when public safety and health are threatened.
    c. continuing to phase out existing outfalls by implementing alternative stormwater management strategies.
4. Enhance coordination with, and provide financial/technical support for, local government/private actions to effectively manage stormwater and wastewater.

Goals and Recommendations

GOAL 4:

ENHANCE AND PROTECT WATER QUALITY

RECOMMENDATIONS:

5. Continue to improve strategies throughout the river basins to reduce nonpoint pollution and minimize cumulative losses of fish habitat through voluntary actions, assistance, and incentives, including:
    a. improving methods to reduce pollution from construction sites, agriculture, and forestry.
    b. increasing on-site infiltration of stormwater.
    c. encouraging and providing incentives for implementation of Low Impact Development practices.
    d. increased inspections of onsite wastewater treatment facilities.
    e. increasing use of reclaimed water and recycling.
    f. Increasing voluntary use of riparian vegetated buffers for forestry, agriculture, and development.
    g. increasing funding for strategic land acquisition and conservation.
6. Maintain effective regulatory strategies throughout the river basins to reduce nonpoint pollution and minimize cumulative losses of fish habitat, including use of vegetated buffers and established stormwater controls.
7. Maintain adequate water quality conducive to the support of present and future mariculture in public trust waters.
6. Reduce nonpoint source pollution from large-scale animal operations by:
    a. Ensuring proper oversight and management of animal waste management systems.
    b. Ensuring certified operator compliance with permit and operator requirements and management plan for animal waste management systems.

For every $1 invested in land conservation in NC, there is estimated to be a $4 return in economic value from natural resource goods and services alone, without considering other economic benefits.

Priority Habitat Issue - *Oyster Restoration*

Oyster populations in North Carolina have declined by as much as 90% from historic levels. Overfishing, habitat destruction, disease, and pollution have contributed to the significant decline and slow recovery rates of oyster reefs. Recognized as an ecosystem engineer, oyster reefs are critical economically for the seafood industry, and ecologically for improving water quality and providing fish habitat. For 100 years, DMF has been "planting" oyster shell in open harvest areas to provide additional hard substrate for oyster recruitment. The planted shell soon becomes a living oyster reef, enhancing the oyster fishery and providing fish habitat. Since 1998, DMF has constructed 13 subtidal oyster sanctuaries where shellfish harvest is not allowed. Oysters growing in the protected sanctuaries serve as broodstock, providing larvae that recruit onto hard substrate in surrounding waters. Despite these efforts, oyster populations remain well below historic levels, fishing pressure increases, and water quality declines. Lack of additional funding to purchase and deploy hard material and conduct research limits the ability to expand oyster restoration activities. The CHPP Steering Committee considers this one of the most important activities that could be done to improve habitat and water quality in North Carolina's coastal waters (Ch. 12).

Proposed Implementation Actions

Cultch Planting

- ◊ Increase spending limit per bushel of shell to compete with other states.
- ◊ Develop a cooperative public/private, self-sustaining shell recycling program by providing financial incentives in exchange for recycled shell.
- ◊ Work with the shellfish industry to institute an "oyster use fee" to help support the cultch planting program.
- ◊ Identify alternative substrates for larval settlement in intertidal and subtidal reefs, including a cost-benefit analysis.
- ◊ Establish long term monitoring program to support future decision making.
- ◊ Utilize new siting tools and monitoring protocols to maximize reef success.

Hatchery Oyster Seed Production

- ◊ Explore options for increasing funds to support UNCW oyster hatchery.
- ◊ Identify regional genetic variability within NC.
- ◊ Improve availability of seed oysters genetically suited to respective regions.

Oyster Sanctuaries

- ◊ Identify alternative substrates for larval settlement in intertidal/subtidal reefs, including cost-benefit analysis.
- ◊ Identify the size and number of sanctuaries needed.
- ◊ Develop reefs that deter poaching by mechanical means.
- ◊ Utilize new siting tools to maximize reef success.
- ◊ Explore options for in situ sampling protocol to incorporate alternative construction materials.

Priority Habitat Issues - *Living Shorelines*

Living shorelines is the term used for a type of designed shoreline stabilization technique that incorporates live components such as marsh plants, frequently in combination with rock or oyster sill structures. Wetland and shell bottom habitat along the shoreline have declined in many areas due to natural erosion and vertical shoreline hardening with bulkheads. Living shorelines offer an effective alternative for protecting waterfront property, while restoring fish habitat and ecosystem services. Since 2005, progress has been made in documenting, through scientific studies, the benefits and limitations of living shorelines. Research in North Carolina has shown that living shorelines support a higher diversity and abundance of fish and shellfish than bulkheaded shorelines, effectively deter erosion, and survive storm events well. Outreach efforts have been done to increase awareness of this technique to the public and contractors. Nonprofit organizations and DCM have constructed several demonstration projects. Despite these efforts, approximately 60 living shorelines have been permitted coastwide, in contrast to 93 miles of bulkheads (based on 2012 DCM mapping). The CHPP Steering Committee requested that efforts continue to focus on encouraging living shorelines to protect property, restore shoreline habitat, and improve water quality (Ch. 12).

Proposed Implementation Actions

Outreach

- ◊ Seek funding and partnerships to increase the number of highly visible demonstration projects.
- ◊ Develop case studies that property owners can relate to that discuss site conditions, initial and ongoing costs, and performance of the structure.
- ◊ Actively engage with contractors, realtors, and homeowners associations in the design and benefits of living shorelines.
- ◊ Enhance communications, marketing, and education initiatives to increase awareness of, and build demand for, living shorelines among property owners.

Research

- ◊ Examine the effectiveness of natural and other structural materials for erosion control and ecosystem enhancement.
- ◊ Examine the long-term efficacy of living shorelines and vertical structures, particularly after storm events.
- ◊ Map areas where living shorelines would be suitable for erosion control.
- ◊ Investigate use of living shorelines as BMP or mitigation options.

Permitting

- ◊ Continue to simplify the federal and state permitting process for living shorelines.

Priority Habitat Issue - *Sedimentation*

Sedimentation in creeks, particularly in nursery areas, is a continuing concern. While a moderate amount of sediment input is necessary to maintain shallow soft bottom habitat that supports wetlands, excessive amounts can silt over existing oyster beds and submerged aquatic vegetation, smother invertebrates, clog fish gills, reduce survival of fish eggs and larvae, reduce recruitment of new oysters onto shell, and lower overall diversity and abundance of marine life. Pollutants such as toxins, bacteria, and nutrients bind to sediment particles and are transported into estuarine waters, where they can accumulate in the sediment and impact aquatic organisms. Sediment enters the upper estuary via runoff and ditching due to land clearing activities associated with agriculture, forestry, and development. Shoreline erosion, tidal inflow, and dredging also contribute sediment in the lower estuary. Studies in North Carolina indicate that relatively high sedimentation has occurred in the past. The effect on estuarine productivity is uncertain. More assessment on the extent and effect of sedimentation in coastal creeks and rivers is needed, along with current rates of sediment inputs, to determine the best way to address the issue (Ch. 12).

Proposed Implementation Actions

- ◊ Determine magnitude and change in sedimentation rates and sources over time at sufficiently representative waterbodies and regions.
- ◊ Determine the effect of sedimentation in the upper estuaries on primary and secondary productivity and juvenile nursery function.
- ◊ Encourage research for innovative and effective sediment control methods in coastal river basins.
- ◊ Encourage expanded use of stormwater BMPs and low impact development (LID) to reduce sediment loading into estuarine creeks.
- ◊ Partner with NC Department of Transportation to retrofit road ditches that drain to estuarine waters.
- ◊ Improve effectiveness of sediment and erosion control programs by:
  - ♦ Encouraging development of effective local erosion control programs to maintain compliance and reduce sediment from reaching surface waters.
  - ♦ Enhancing monitoring capabilities for local and state sediment control programs (e.g., purchase turbidity meters and train staff in their use).
  - ♦ Continuing to educate the public, developers, contractors, and farmers on the need for sediment erosion control measures and techniques for effective sediment control.

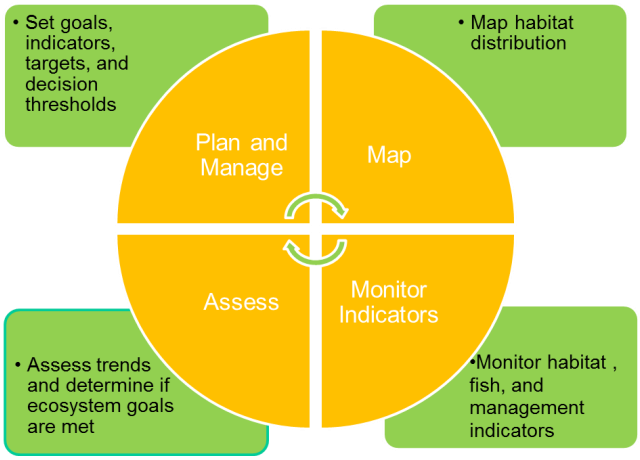
♦ Provide education and financial/ technical support for local and state programs to better manage sediment control measures from all land disturbing activities.

In 2014, 6,290 acres were impaired by turbidity for the aquatic life use support classification in coastal subbasins (DWR 2014 Integrated Report).

Priority Habitat Issue - *Developing Metrics*

Developing metrics to assess habitat trends and management effectiveness is the cornerstone of habitat protection and restoration. Without them, needed habitat conservation initiatives are unknown. Ecosystem-based management is the process where monitoring of ecosystem indicators is done to assess the condition of the resource and the effectiveness of management strategies; management actions are modified based on monitoring results. This process requires mapping all habitat to assess trends in distribution, developing and monitoring representative indicators to assess habitat condition, monitoring fish use of habitats in priority areas, and developing management performance criteria for measuring success of management actions. The DEQ has already initiated mapping and monitoring of some habitats, but has not established continual monitoring to evaluate management effectiveness. The Albemarle-Pamlico National Estuary Partnership established ecosystem indicators in 2012 to help determine the status of that system. The DMF has identified strategic coastal habitats in most of the coastal waters that are high priority for protection so that fish populations are sustained. More work is needed to establish a cyclic process to monitor, assess, and successfully and efficiently manage North Carolina's coastal resources.

The lack of quantified trends in habitat condition and success of management actions was identified as a priority concern of the CHPP Steering Committee (Ch. 12).



Proposed Implementation Actions

- ◊ Develop indicator metrics for monitoring the status and trends of each of the six habitat types within North Carolina's coastal ecosystem (water column, shell bottom, SAV, wetlands, soft bottom, hard bottom).
- ◊ Establish thresholds of habitat quality, quantity, or extent similar to limit reference points - or traffic lights - which would initiate pre-determined management actions.
- ◊ Develop indicators for assessing fish utilization of strategic coastal habitats.
- ◊ Develop performance criteria for measuring success of management decisions.
- ◊ Include specific performance criteria in CHPP management actions where possible.

The Fishery Reform Act requires the CHPP to describe, classify, and evaluate biological habitat systems, including wetlands, spawning grounds, nursery areas, shellfish beds, and submerged aquatic vegetation, and outstanding resource waters.

NC Coastal Habitats

North Carolina's coastal fish habitats provide crucial functions for the plants and animals living in them. This diversity of interconnected habitats provides food and shelter in which to reproduce and grow for a tremendous variety of fish, shellfish, and crustaceans. Protecting and restoring these habitats is essential to the survival of North Carolina's fisheries.

While poor water quality puts the habitats' ability to function and support fish populations at risk, physical damage caused by humans is also a serious threat. Conversion of wetlands by draining, filling, and water control projects are the major sources of wetland loss in eastern North Carolina. Shell bottom habitat along our coast has been decimated by a century of excessive mechanical harvests and diseases. More recently, dredging for navigation channels and marinas, as well as damage from bottom-disturbing fishing gear, threatens remaining shell bottom and submerged aquatic vegetation habitat and impedes establishment of those habitats. Submerged aquatic vegetation is also vulnerable to uprooting by boat propellers and to shading by docks and piers. These and other types of physical impacts affect the ability of fish habitats to sustain fisheries and increase their vulnerability to water quality problems (Ch. 2-7).

The CHPP identifies six fish habitats that need protection or enhancement:

- Water Column
- Shell Bottom
- Submerged Aquatic Vegetation (SAV)
- Wetlands
- Soft Bottom
- Hard Bottom

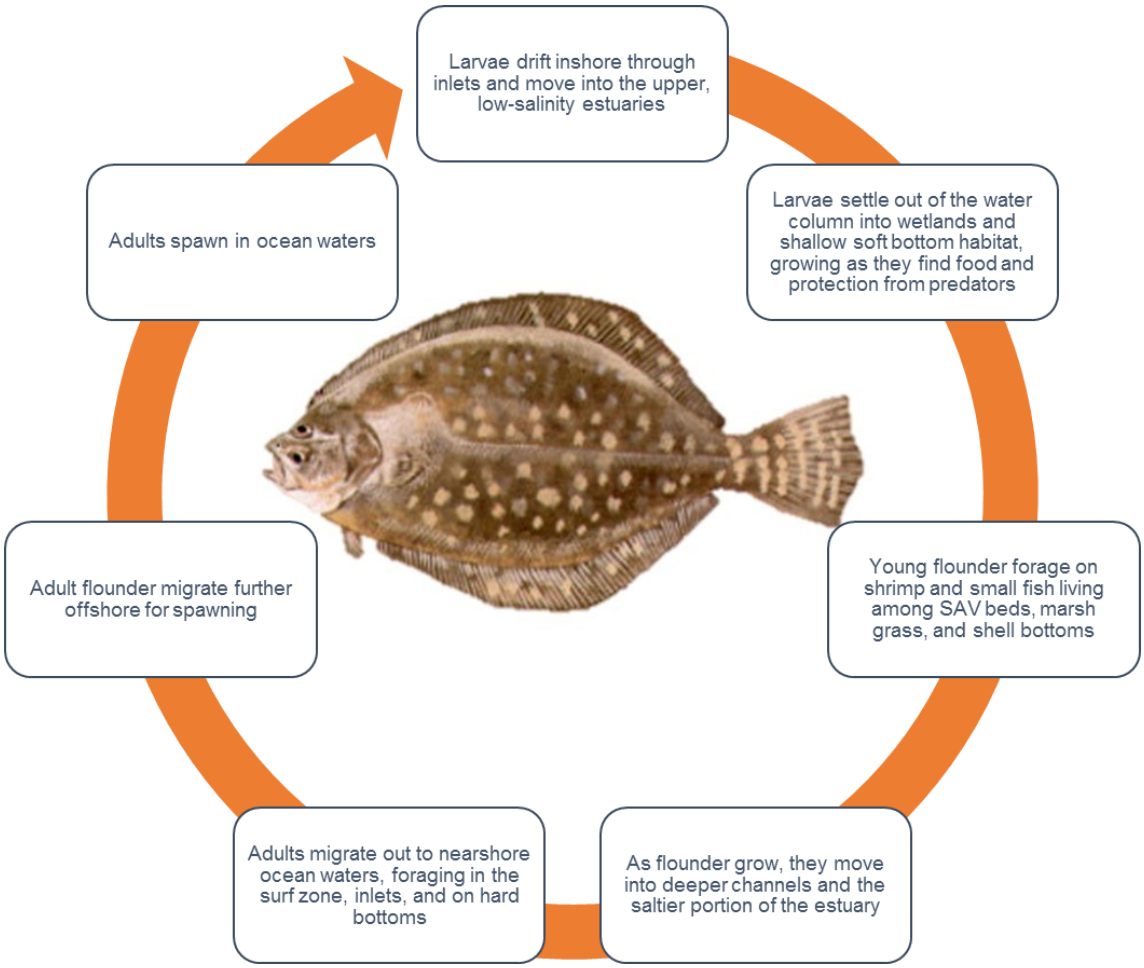
Habitats provide important functions for fish species.

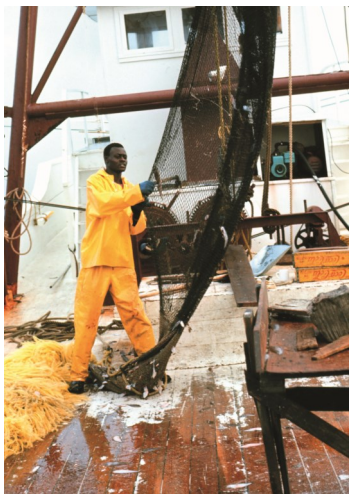
Refuge:	shelter for fish at various life stages and a place for plants and animals to attach
Nursery:	refuge and foraging habitat suitable for development of juvenile life stages of fish, shellfish, and crabs
Spawning:	conditions that allow adults to reproduce
Foraging:	presence and accessibility of food sources
Corridor:	connectivity for safe passage among foraging, spawning, and refuge areas

Habitat: "a place, or set of places, in which a fish or fish population finds the physical, chemical, and biological features needed for life."

NC Coastal Habitats

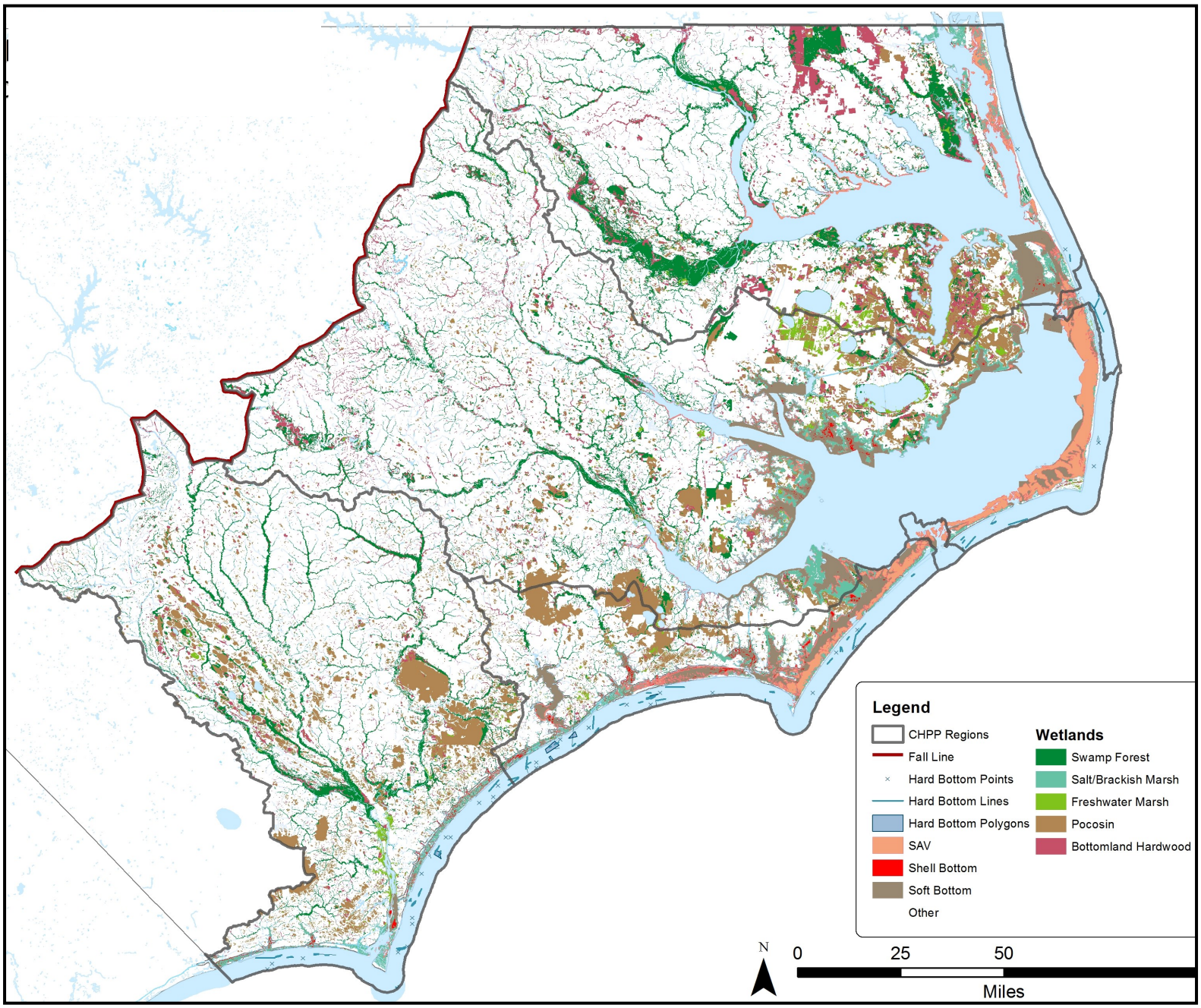
All fish habitats are integral components of the entire aquatic ecosystem because species require use of multiple habitats throughout their life history; the water column connects them all. Organisms occupy specific areas or habitats that meet their needs for each particular life stage. Certain areas, such as nursery areas, are especially important to fish production, and some, such as shallow grass beds, are particularly vulnerable to human impacts. To maintain a healthy coastal ecosystem that provides all the ecological functions necessary for North Carolina's coastal fish populations, it is more effective to address the entire system of interdependent habitats, rather than a single habitat type (Ch. 2-7).





The relationship between habitat conditions and populations of fishery species is complex. In the past, the decline of a particular fish stock was often attributed to overfishing. We know now that the quality and quantity of fish habitats is important to healthy fish populations. Habitat loss and degradation make fish populations more susceptible to overfishing and can cause a delay in recovery, even after management actions have successfully reduced fishing pressures. River herring and shortnose sturgeon are examples of species that have not recovered despite lengthy fishing moratoriums. Thus, the status of fisheries can be an indicator of impacts to fish habitats. Successful implementation of the CHPP recommendations is a necessary component for sustaining productive fisheries for future generations.

MAPPED FISH HABITATS OF COASTAL NORTH CAROLINA



Water Column - *The Most Essential Habitat*

Water column is the medium through which all aquatic habitats are connected, affecting all other habitats and the distribution and survival of fish. The water column includes riverine, estuarine, lacustrine, palustrine, and marine systems. Properties affecting fisheries resources and distribution include: temperature, salinity, dissolved oxygen (DO), total suspended solids (TSS), nutrients (nitrogen, phosphorus), chlorophyll a, pollutants, pH, velocity, depth, movement, and clarity. Within a river basin, these properties change as you move from the headwaters to the ocean (Ch. 2).

Fish distribution in the water column is often determined by salinity and proximity to inlets. The potential productivity of fish and invertebrates begins with energy and nutrient production at the base of the food chain. Productivity in the water column comes from phytoplankton, floating plants, macroalgae, benthic microalgae, and detritus.

Economic Benefits

U.S. commercial and recreational saltwater fishing generated more than $199 billion in sales in 2012, according to the Fisheries Economics of the United States. In North Carolina, the recreational and commercial fishery generated $1.87 billion in 2011.

Habitat Functions and Fish Use

The corridor between freshwater creeks or rivers and estuarine/marine systems is important to all fish, particularly species whose life spans more than one system, such as species that must migrate upstream to spawn (anadromous) or marine-spawning estuarine-dependent species.

Water column provides nursery habitat for juvenile pelagic species, such as bluefish and pompano, in the surf zone. Optimum physical and chemical properties, such as currents, temperature, and salinity determine survival and settlement of larvae. The water column is a food source for all size organisms, supporting microscopic plants and animals (phytoplankton and zooplankton), and prey species of all sizes.

The ability of the water column to provide predatory refuge varies relative to area, depth, water quality, and vegetation. Juvenile fishes are protected in shallow areas inaccessible to larger fish. Turbidity and DO can provide refuge for pelagic species by excluding predators that feed visually or are not tolerant of low DO.

FACT: 76,927 acres of coastal water column is designated as Primary Nursery Area. 82,000 acres is designated as Secondary or Special Secondary Nursery Area.

Habitat Profile

Water Column Functions

- Connects all habitat types
- Allows fish to move among habitats
- Surrounds and supports aquatic animals and habitats

How Fish Use the Water Column

- Transports eggs, larvae, and oxygen
- Nursery area for all fish species
- Foraging area for all fish species
- Spawning area for all fish species

Water Column - *The Most Essential Habitat*

Status and Trends

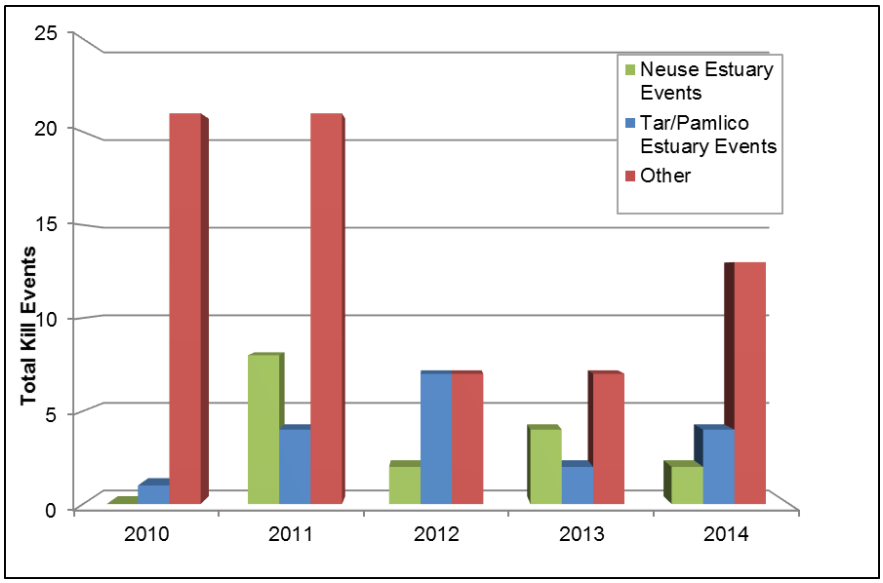
The condition of the water column is described by physical and chemical properties, pollution indicators, and the status of the fishery resources. However, evaluating the status and trends of water column characteristics is difficult. The number of monitoring agents, monitoring site distribution, frequency of data collection, and parameters measured are not conducive to comprehensive water quality assessments. Monitoring for microbial contamination of shellfish harvesting waters remains the most abundant measurement of estuarine water quality. Data collected from monitoring stations within the CHPP area include those from ±1,020 shellfish growing area stations, 240 recreational water quality stations, and ±256 DWR ambient stations. Water quality data from selected stations are shown in the CHPP Source Document.

The health of pelagic fishery species can be an indicator of water quality. Spanish mackerel, bluefish, and Atlantic menhaden are positive examples of species with improving or stable populations.

FACT: As of March 2014, over 442,106 acres of shellfish harvesting waters, or 20% of classified shellfish waters, were closed in North Carolina due to high levels of fecal coliform or the potential risk of bacterial contamination. As an adaptive measure to reduce permanent closures, 55,628 acres are conditionally opened and closed based on rainfall and sampling.

Threats to Water Column

Whether certain species will thrive and reproduce is strongly affected by conditions such as water clarity, DO, and nutrient levels. Fish kills and harmful algal blooms during the 1980s and 1990s were visible signs of coastal water quality problems. Most frequently reported species in fish kills are Atlantic menhaden, spot, flounder, and croaker. Large fish kills have diminished somewhat in recent years, but many coastal waters remain impaired. Excess sediment loading is the most common cause of impairment.



Human activities often change the chemistry of the water, reducing water quality. These changes can originate from point sources, such as industrial or wastewater discharges, or from non-point runoff from construction or industrial sites, development, roads, agriculture, or forestry. Any number of sources can result in pollutants and sediment entering surface waters. It is apparent when excess sediment clouds the water and fills a waterway, but beneath the water's surface, these particles clog fish gills and bury plants, shellfish, and other aquatic species.

All coastal habitats are connected by water. Clean water is essential to aquatic life.

Shell Bottom - *Building Reefs & Cleaning Water*

Shell bottom is unique because it is the only coastal fish habitat that is also a fishery species (oysters). Shell bottom is estuarine intertidal or subtidal bottom composed of surface shell concentrations of living or dead oysters, hard clams, and other shellfish. Oysters, the primary shell-building organism in North Carolina estuaries, are found throughout the coast, from southeast Albemarle Sound to the South Carolina border. The protection and restoration of living oyster beds is critical to the restoration of numerous fishery species, as well as to the proper functioning and protection of surrounding coastal fish habitats. Historically, restoration was managed for oyster fishery enhancement. Current efforts mix fishery and ecosystem enhancement with sanctuary development (Ch. 3).

Habitat Profile

Shell Bottom Functions

- Provides structure, shelter, and food source
- Filters pollutants and other particles from water
- Protects shoreline by slowing wave energy

How Fish Use Shell Bottom

- Place for oysters and other shellfish to attach
- Nursery area for blue crab, sheepshead, and stone crab
- Foraging area for drum, black sea bass, and southern flounder
- Spawning area for hard clams, toadfish, and goby
- Refuge for goby, grass shrimp, and anchovy

Economic Benefits

Conservatively, restored and protected oyster reefs provide up to $40,200 per acre per year (2012 dollars) in ecosystem benefits, including water filtration and sediment stabilization. The dollar benefit of the nitrogen removal service provided by oyster reefs was estimated to be $3,167 per acre per year (2014 dollars).

Habitat Functions and Fish Use

Shell bottom is widely recognized as essential fish habitat (EFH) for oysters and other reef-forming mollusks and provides critical fish habitat for ecologically and economically important finfish, mollusks, and crustaceans. In North Carolina, over 40 species of fish and crustaceans have been documented to use natural and restored oyster reefs, including American eel, Atlantic croaker, Atlantic menhaden, black sea bass, sheepshead, spotted seatrout, red drum, and southern flounder. Oysters are ecosystem engineers that alter current and flows, protect shorelines, and trap and stabilize large quantities of suspended solids, reducing turbidity by building high relief structures. The interstitial spaces between and within the shell matrix of oyster reefs are critical refuges for the survival of recruiting oysters and other small, slow-moving macrofauna, such as worms, crabs, and clams. Shell bottom is also valuable nursery habitat for juveniles of commercially and recreationally important finfish, such as black sea bass, sheepshead, gag grouper, and snappers. Additionally, shell bottom is important foraging ground for many economically and ecologically important species. The proximity and connectivity of oyster beds enhances the fish utilization of nearby habitats, especially SAV. Shell bottom contributes primary production indirectly from plants on and around it, but it is more important for its high secondary productivity contribution from the biomass of oysters and other macroinvertebrates living among the shell structure. This in turn supports a high density of mobile finfish and invertebrates, which was found to be more than two times greater than in marshes, soft bottom, and SAV.

Shell bottom areas include reefs made of living oysters or shells, located in the subtidal or intertidal zone of estuaries.

Shell Bottom - Building Reefs & Cleaning Water

Status and Trends

North Carolina oyster stocks declined for most of the twentieth century. Poor harvesting practices led to initial degradation and loss of shell bottom habitat in the Pamlico Sound area. After 1991, oyster stocks and harvests began to collapse from disease mortalities and low spawning stock biomass. Harvests began to rise again around 2002, and the trend has continued. Between 2000 and 2013, oyster dredging trips and hand harvest trips have risen substantially, with increasing harvest. A trend of stable or increasing spatfall coastwide is indicative of increasing larval availability, connectivity, and recruitment potential for restored and existing reefs. As of January 2015, there were 13 established oyster sanctuaries, with an additional two proposed.

Fact: Oyster beds were once so abundant that they were considered a navigation hazard.

Threats to Shell Bottom

Shell bottom habitat can be damaged by overharvesting, mechanical harvest fishing gear, navigational dredging, marinas and boating activity. Water quality degradation, especially toxin contamination, sedimentation, and hypoxia, can cause lethal or sublethal impacts. Shell bottom is occasionally susceptible to diseases and microbial stressors. The protozoan pathogen *Perkinsus marinus*, also called "dermo" has been responsible for major oyster mortalities in North Carolina. Monitoring of dermo disease by DMF shows a declining trend in prevalence, with an increasing trend in overall infection.

Boring sponge, sponges belonging to the genus *Cliona*, are found in North Carolina shell bottom habitats. Boring sponges compromise the integrity of shells and are linked to reduced reproductive viability and possibly increased oyster mortality rates. Two North Carolina oyster sanctuaries experienced dramatic population declines since 2012, coinciding with increasing percent cover of marine boring sponge. *Cliona* is endemic to North Carolina but has recently become more pervasive, especially on limestone marl rocks. To improve reef design in high salinity waters, DMF is conducting research on alternative substrates to identify materials that maximize oyster recruitment, growth, and survival, while offering high resistance to environmental stressors, such as *Cliona* boring sponge.

Shell bottom is considered to be one of the most threatened habitats because of its greatly reduced extent.

SAV - Underwater Gardens

Submerged aquatic vegetation (SAV) is a fish habitat dominated by one or more species of underwater vascular plants that occur in patches or extensive beds in shallow estuarine waters. The presence and density of SAV varies seasonally and inter-annually. A key factor affecting distribution is adequate light penetration; therefore, SAV occurs in shallow clear water. Sediment composition, wave energy, and salinity are also determining factors (Ch. 4).

Habitat Profile

SAV Functions

- Provides refuge for fish and other aquatic animals
- Serves as food for fish and waterfowl
- Produces dissolved oxygen
- Reduces wave energy and limits erosion
- Uses nutrients and traps sediments

How Fish Use SAV

- Nursery area for blue crab, pink shrimp, and red drum
- Foraging area for spotted sea trout, gag, and flounder
- Spawning area for spotted sea trout, grass shrimp, and bay scallop
- Refuge for bay scallop and hard clam

Economic Benefits

SAV habitat has a very high economic value due to the ecosystem services it provides. The estimated value of SAV and algal beds combined is $7,700/acre/year. This estimate takes into account services such as seafood production, wastewater treatment, climate regulation, erosion control, recreation, and others. The value of SAV for denitrification services (wastewater treatment) is estimated at $3,000/acre/year compared to approximately $400/acre/year for subtidal soft bottom. With North Carolina having the second largest expanse of SAV on the east coast, protection and enhancement of this valuable resource should be a high priority for the state.

Habitat Functions and Fish Use

Submerged aquatic vegetation is recognized as essential fish habitat because of five interrelated features – primary production, structural complexity, modification of energy regimes, sediment and shoreline stabilization, and nutrient cycling. Water quality enhancement and fish utilization are especially important ecosystem functions of SAV relevant to the enhancement of coastal fisheries. Seagrasses produce large quantities of organic matter. Many fish species occupy SAV at some point in their life for refuge, spawning, nursery, foraging, and corridors. SAV is considered essential fish habitat for red drum, shrimp, and species in the snapper-grouper complex. Spotted seatrout are also highly dependent on SAV, and bay scallops occur almost exclusively in SAV beds.

Due to its stringent water quality requirements, SAV presence is considered a barometer of water quality.

SAV - Underwater Gardens

Status and Trends

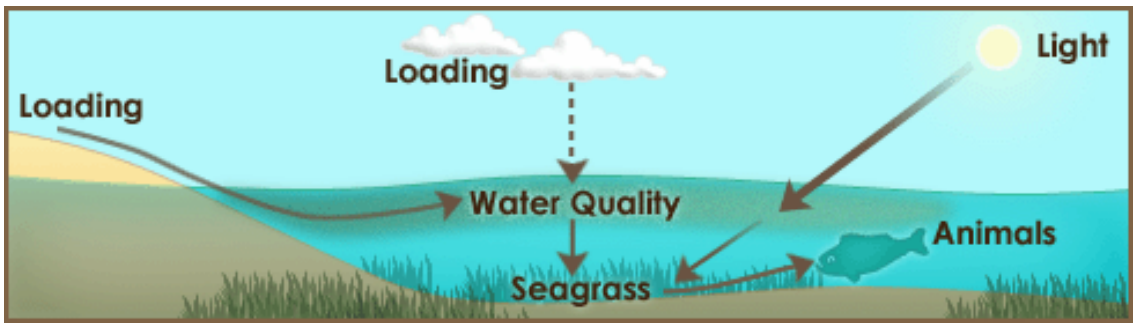
There has been a global and national trend of declining SAV habitat, with seagrasses disappearing at rates similar to coral reefs and tropical rainforests. In North Carolina, SAV loss has not been quantified, but anecdotal reports indicate that the extent of SAV may have been reduced by as much as 50%, primarily on the mainland side of coastal sounds. Mapping of SAV has been done by several entities since the 1980s, but often with different methods, and not coastwide. Comprehensive mapping of SAV habitat in coastal North Carolina was initiated in 2007 by a joint effort of federal and state agency and academic institutions. In 2013, mapping protocols for high and low salinity areas was developed so that mapping can be repeated approximately every five years on a rotational basis among five coastal areas. This mapping, in combination with sentinel sampling, will allow trends to be assessed. In 2013 high salinity SAV from Currituck Sound to Bogue Sound were mapped using aerial photography and field groundtruthing. In Albemarle Sound and Tar-Pamlico River SAV was mapped in 2014-15 using a newly developed method for low salinity turbid waters with side scan data and low light underwater photography for groundtruthing. In 2015, SAV south of Bogue Sound was mapped.

Fact: Over 150,000 acres of SAV were mapped in coastal North Carolina since 2000.

While a quantified change analysis is not yet available, preliminary review of core areas of SAV, such as behind the Outer Banks in Pamlico Sound and Core Sound, did not detect large changes since previous imagery for those areas in 2004. Expansion of SAV has been observed in Albemarle Sound and south of Bogue Inlet. Bay scallop abundance in the southern area is increasing in areas of expanding SAV.

Threats to SAV

Major threats to SAV habitat are channel dredging and water quality degradation from excessive nutrient and sediment loading. Natural events, human activities, and an ever-changing climate influence the distribution and quality of SAV habitat. Natural events include shifts in salinity due to drought and excessive rainfall, animal foraging, storm events, temperature, and disease. Submerged vegetation is vulnerable to water quality degradation, in particular, suspended sediment and pollutant runoff. Large amounts of algae and sediment make the water cloudy such that sufficient light cannot reach the plants, reducing their growth, survival, and productivity. Dredges and boat propellers can also have a direct effect on SAV habitat by uprooting and destroying the plants.

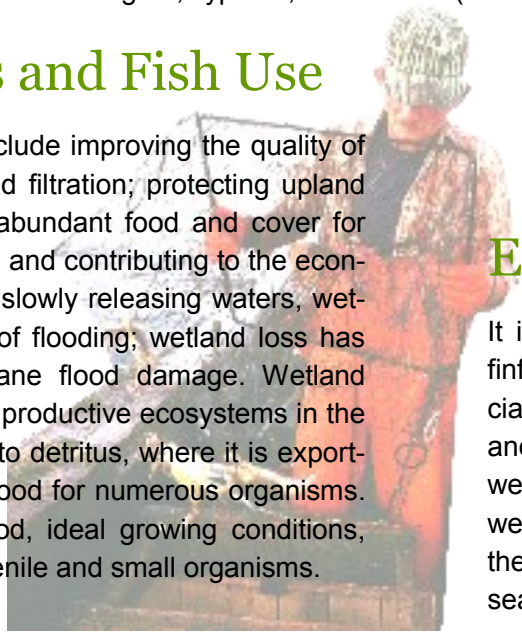


Wetlands - *Nature's Nurseries*

Wetlands are essential breeding, rearing, and feeding grounds for many species of fish and wildlife. They provide critical ecosystem services that contribute to healthy ecosystems and fisheries habitat. Coastal wetlands cover 40 million acres in the continental United States, with 81% in the southeast. Wetlands require the presence of water at or near the surface and vegetation adapted to wet soils. Wetlands occupy low areas, often marking the transition between uplands and submerged bottom, in areas subject to regular or occasional flooding by lunar or wind tides. Wetlands are vegetated with marsh plants such as cordgrass and black needle rush, or forested wetland species like sweet gum, cypress, and willows (Ch. 5).

Habitat Functions and Fish Use

Services provided by wetlands include improving the quality of habitats through water control and filtration; protecting upland habitats from erosion; providing abundant food and cover for finfish, shellfish, and other wildlife; and contributing to the economy. By storing, spreading, and slowly releasing waters, wetlands are linked to reduced risk of flooding; wetland loss has been linked to increased hurricane flood damage. Wetland communities are among the most productive ecosystems in the world. The plant matter decays into detritus, where it is exported to other waters and provides food for numerous organisms. Additionally, wetlands provide food, ideal growing conditions, and predator refuge for larval, juvenile and small organisms.



Economic Benefits

It is estimated that over 95% of the finfish and shellfish species commercially harvested in the United States, and over 90% in North Carolina, are wetland-dependent. Consequently, wetlands significantly contribute to the productivity of North Carolina's seafood and fishing industries.

Habitat Profile

Wetland Functions

- Provide refuge and food for fish and other animals
- Filter pollutants
- Trap sediments
- Shoreline erosion control
- Hold and slowly release flood waters

How Fish Use Wetlands

- Nursery area for blue crab, shrimp, and southern flounder, spot, and croaker
- Foraging area for spotted sea trout, red drum, and flounder
- Spawning area for river herring, killifish, and grass shrimp
- Refuge for blue crab and grass shrimp

The economic benefit of wetlands in providing flood control, stabilizing shorelines, and trapping and filtering pollutants has been extensively studied. By providing flood control and reducing shoreline erosion, wetlands protect coastal property. Wetlands also protect property by deterring shoreline erosion. Studies have shown that even narrow (7-25m) marsh borders reduce wave energy by 60-95%. These services explain why wetland habitat has been linked to reducing hurricane damage. One study estimated that the loss of 1 acre of coastal wetlands could result in a $13,360 loss in gross domestic product ($14,759 in 2014 dollars), and that U.S. coastal wetlands could provide as much as $23.2 billion/year (25.63 billion/year in 2014 dollars) in storm protection services.

Wetlands - *Nature's Nurseries*

Status and Trends

The 2015 CHPP Source Document summarizes wetlands within the CHPP region based on two data sources: the National Land Cover Dataset (NLCD) and the National Wetlands Inventory (NWI). According to the 2011 NLCD, there were ±3,759,729 acres of woody and emergent herbaceous wetlands within the CHPP regions. This represents a 2.7% decrease in woody wetlands and an 18.9% increase in emergent herbaceous wetlands since 2001. During the same time and area, developed land increased approximately 30%. The US Fish and Wildlife Service (FWS) has produced a NWI since the mid 1970s. The distribution of these wetlands is presented in Table 5.1 of the 2015 CHPP Source Document. Populations of spotted seatrout and red drum, two wetland-dependent species, have shown great improvements in the past few years.

Fact: Over 95 percent of the United States' commercially harvested finfish and shellfish are wetland dependent.

Threats to Wetlands

In the late 1800s and early 1900s, large amounts of wetland loss resulted from ditching and draining for agriculture and forestry. Over the years, wetland loss has occurred from dredging conversion to deep-water habitat for boat basins and navigation channels, followed by upland development, erosion, and shoreline hardening.

Statewide wetlands losses/gains and compensatory mitigation during FY 2012/13, 2013/14, and 2014/15. Data reflect permitting by DEQ and compensatory mitigation by DMS.

	Permitted gains and losses		
Linear feet of streams	**2012-13**	**2013-14**	**2014-15**
Losses	81,473.0	117,694.0	59,498.9
Gains	48,712.0	78,024.0	22,620.0
Net change	-32,761.0	-39,670.0	-36,878.9
Acres of wetlands			
Losses	203.6	98.9	102.1
Gains	197.8	59.9	104.5
Net change	-5.8	-39.0	2.4
Acres of riparian buffers			
Losses	75.6	48.0	56.1
Gains	37.9	21.2	18.2
Net change	-37.8	-26.9	-37.9

*Data provided by DWR and DMS

Wetland impacts are now regulated by numerous federal and state laws including the US River and Harbors Act, the US Clean Water Act, the NC Coastal Area Management Act (CAMA), and the NC Dredge and Fill Law, among others. Wetland filling for development and wetland loss due to erosion and rising water levels are currently the primary threats. Reduction of vegetated buffers can result in wetland loss and increased stormwater runoff. Legislative changes increasing thresholds for permitted impacts could contribute to additional freshwater wetland loss. Mitigation is required for larger wetland impacts. Offsetting historic wetland loss may now be possible through opportunities such as wetland restoration on conservation lands, creating marsh habitat on unused dredge disposal sites, and constructing living shorelines.

Coastal wetlands are critical nursery areas and serve as the primary buffer between land and water-based impacts.

Soft Bottom - *The Dynamic Habitat*

Soft bottom is unconsolidated, unvegetated sediment that occurs in freshwater, estuarine, and marine systems. Mud flats, sand bars, inlet shoals, and intertidal beaches are specific types of soft bottom. Grain size distribution, salinity, DO, and flow characteristics affect the condition of soft bottom habitat and the type of organisms that use it. Soft bottom covers approximately 1.9 million acres. North Carolina's coast can be divided into geologically distinct northern and southern provinces. In the northern province (north of Cape Lookout), the seafloor consists of a thick layer of unconsolidated mud, muddy sand, and peat sediments. The low slopes of the bottom result in an extensive system of drowned river estuaries, long barrier islands, and few inlets. The southern province has a thin and variable layer of surficial sands and mud, with underlying rock platforms, a steeper sloping shoreline with narrow estuaries, short barrier islands, and numerous inlets (Ch. 6).

Habitat Functions and Fish Use

Soft bottom is important as a storage reservoir of nutrients, chemicals, and microbes in coastal ecosystems, allowing for both deposition and resuspension of nutrients and toxic substances. The surface supports benthic microalgae, contributing substantial primary production to the coastal system. Estuarine soft bottom supports over 400 species of benthic invertebrates in North Carolina. Juvenile stages of species such as summer and southern flounder, spot, Atlantic croaker, and penaeid shrimp use the shallow unvegetated flats, which larger predators cannot access, as important nursery habitat. As fish get larger, they will venture out of protective cover to forage in soft bottom. Fishery independent data from shallow creeks and bays in Pamlico Sound documented 78 fish and invertebrate species. Eight of those — spot, bay anchovy, Atlantic croaker, Atlantic menhaden, silver perch, blue crab, brown shrimp, and southern flounder — comprised > 97% of the total nekton abundance. Soft bottom between structured habitat (SAV, wetlands, shell bottom) acts as a barrier to connectivity, which can be beneficial to small invertebrates by reducing predation risk. Fish and invertebrates that commonly occur in this habitat, including hard clams, flatfish, skates, rays, and other small cryptic fish such as gobies, avoid predation by burrowing into the sediment, thus camouflaging themselves from predators. Ocean soft bottom, particularly in the surf zone and along shoals and inlets, serves as an important feeding ground for fish that forage on benthic invertebrates. These predators generally have high economic value as recreational and commercial species, and include Florida pompano, red drum, kingfish, spot, Atlantic croaker, weakfish, Spanish mackerel, and striped bass. Many demersal and estuary-dependent fish spawn over soft bottom habitat in North Carolina's coastal waters.

Habitat Profile

Soft Bottom Functions

- Stores and recycles nutrients, chemicals
- Is a source of sand for other habitats
- Provides an area for marine animals to burrow

How Fish Use Soft Bottom

- Nursery area for blue crab, flounder, and croaker
- Foraging area for seatrout, red drum, and flounder
- Spawning area for shrimp, sturgeon, and kingfish
- Refuge area for hard clam, shrimp, and flounder

Soft bottom includes features such as mud flats, inlets, shoals, channel bottoms, and ocean beaches.

Soft Bottom - *The Dynamic Habitat*

Economic Benefits

Soft bottom benefits the economy by providing habitat for critical food sources, by cycling nutrients, burying pollutants, and dampening wave energy. Beaches are extremely valuable for tourism and recreation, including surf fishing, surfing, and beach going. One study, averaging data from seven North Carolina beaches, found the net economic benefits of a day at a beach ranged from $14—$104 for single day trips and $14 to $53 overnight stays. For example, the total average annual benefits of long-term beach nourishment was estimated to be $14,836,688 (2014 dollars) due to recreational and storm damage reduction benefits.

Status and Trends

Comprehensive mapping of soft bottom habitat has not been completed. The loss of more structured habitat, such as SAV, wetlands, and shell bottom, has undoubtedly led to gains in soft bottom habitat. The quality of soft bottom habitat is a better indicator of soft bottom status than quantity. The best available information on sediment quality comes from EPA's latest National Coastal Condition Report (NCCR IV). The report rated the coast from North Carolina to Florida at 3.6 (fair) overall, while sediment quality was rated 2 (fair to poor), which was lower than in previous reports. Sediment quality is based on toxicity, contaminants, and total organic carbon (TOC). The percentage of area determined to be in poor condition was 13%. The primary reason for the low rating was sediment toxicity. The quality of soft bottom habitat can affect species abundance and diversity. Sediments in soft bottom habitat can accumulate both chemical and microbial contaminants, potentially affecting benthic organisms and community structure. Tidal creeks are sensitive to various aspects of human development, but sensitivity depends on the size and location of the creeks. Because tidal creeks are the nexus between estuaries and land-based activities, potential for contamination is high. Intertidal creeks close to headwaters demonstrate greater concentrations of nonpoint source contamination than larger systems near the mouth. The degree of contamination also depends on the impervious cover surrounding the land.

Fact: Soft bottom covers about 2.1 million acres of estuarine and ocean bottom within state waters.

Threats to Soft Bottom

Soft bottom strongly influences the water column by the constant cycling of nutrients and sediments.

Inadequate information is available to determine the current condition of soft bottom. Many human activities aimed at enhancing the "coastal experience" can inadvertently degrade this habitat. The ecological functions provided by soft bottom can be altered by activities such as dredging for channels or marinas, shoreline stabilization, water churning in marinas, and use of certain types of fishing gear. Along the oceanfront, jetties form barriers to the movement of sand, altering the natural sediment cycle. Excess nutrient concentrations in coastal rivers, in combination with certain environmental conditions, can lead to no or low oxygen levels near the bottom, killing the benthic organisms in the sediment, which reduces food availability for larger invertebrates and fish. Sediment contaminated with toxins can affect reproduction and growth of shellfish and other aquatic animals. Soft bottom habitat is relatively resistant to a changing environment.

Hard Bottom - *Rocks, Reefs, and Wrecks*

Hard bottom habitat, also referred to as live bottom or reef, consists of exposed areas of rock or consolidated sediments that may or may not be characterized by a thin veneer of live or dead biota and is generally located in the ocean rather than in the estuarine system. Natural hard bottom is colonized to a varying extent by algae, sponges, soft coral, hard coral, and other sessile invertebrates. In South Atlantic waters, hard bottom can consist of exposed rock ledges or outcrops with vertical relief or can be relatively flat and covered by a thin veneer of sand.

Artificial reefs are structures constructed or placed in waters for the purpose of enhancing fishery resources. Because artificial reefs become colonized by algae, invertebrates, and other marine life, they provide additional hard bottom habitat and serve similar ecological functions for fish. Some of the materials used in artificial reef construction are vessels, concrete pipe, or prefabricated structures such as reef balls. The DMF Artificial Reef Program is responsible for deployment and maintenance of artificial reef sites in state and federal waters. There are 50 DMF-managed artificial reefs of varying construction in North Carolina, of which 29 are located in federal ocean waters, 13 in state ocean waters, and eight in estuarine waters (Ch. 7).

Habitat Functions and Fish Use

Exposed hard substrate provides stable attachment surfaces for colonization by numerous marine invertebrates and algae. This productive three-dimensional habitat is often the only source of structural refuges in open shelf waters and a source of concentrated food. Most reef fish spend almost their entire life cycle on hard bottom, which serves as nursery, spawning, and foraging grounds. The presence of ocean hard bottom off North Carolina, along with appropriate water temperatures, allows for the existence of a temperate-to-subtropical reef fish community and a snapper-grouper fishery. Because of their importance for spawning, nursery, and foraging, all of the nearshore hard bottoms off North Carolina have been federally designated as Habitat Areas of Particular Concern for the snapper-grouper complex.

Habitat Profile

Hard Bottom Functions

- Provides a place for sponges, algae, and coral to attach
- Offers refuge for reef fish
- Supplies new sand through erosion

How Fish Use Wetlands

- Nursery area for groupers, snapper, and black sea bass
- Foraging area for king mackerel, gag, and snapper
- Spawning area for black sea bass, grouper, and tropicals
- Refuge area for gag and black sea bass

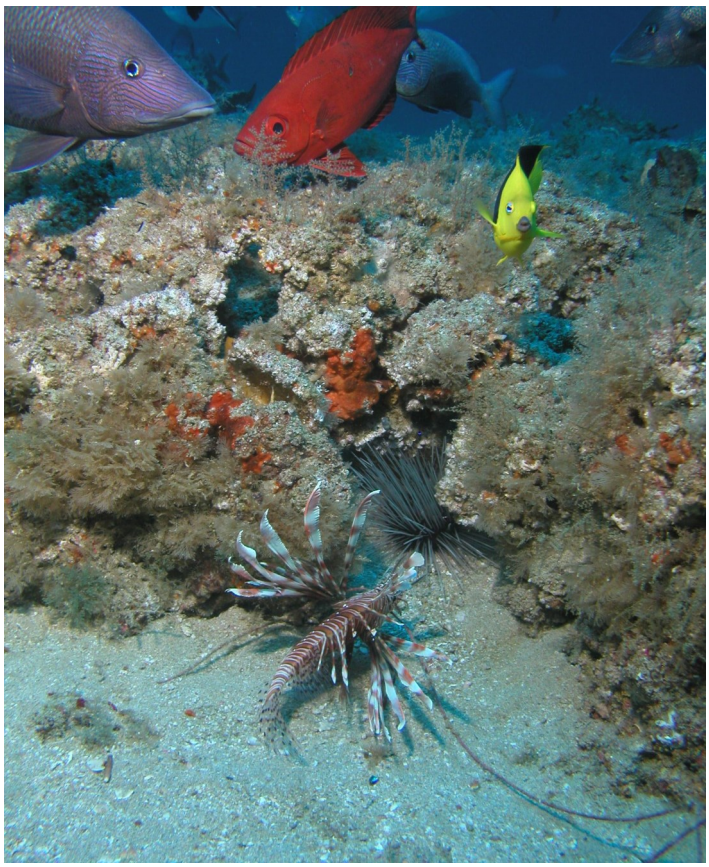
Economic Benefits

Between 2011 and 2013, the North Carolina commercial snapper-grouper fishery harvested an annual average of 1,638,434 lbs of fish (total of 5,015,570 lbs) with an annual market value of over $4.2 million (total for 3 years - $12,567,964). During that same time period, recreational fisherman (private boats, charter boats, and head boats) harvested an average of 568,146 lbs of fish in the snapper-grouper complex/year, for a total of 1,204,439 lbs. Economic benefits also include revenue from the dive industry, since hard bottom reefs are popular dive sites.

Hard Bottom - Rocks, Reefs, and Wrecks

Status and Trends

The condition of shallow hard bottom in North Carolina state territorial waters is of particular importance to the health and stability of estuary-dependent snapper-grouper species that utilize this habitat as “way stations” or protective stopping points as they emigrate offshore. Because of market value, high recreational participation, and the associated fishing tackle industry, the offshore snapper-grouper complex supports productive commercial and recreational fisheries. The South Atlantic Fishery Management Council reported that nearshore hard bottoms in the South Atlantic were considered to be in “good general” condition overall in 2002. Although adequate information exists on the distribution of hard bottom off the North Carolina coast, little information is available to evaluate the status and trends of hard bottom habitat in state territorial waters. The black sea bass populations north and south of Cape Hatteras and gag grouper have improved in the past few years.



Fact: 50 artificial reefs are located in ocean waters along North Carolina’s coast and 8 are located in estuarine waters. In addition, there are numerous shipwrecks along the coast

Threats to Hard Bottom

Threats to nearshore hard bottom habitat in North Carolina include beach nourishment, certain fishing gear, and water quality degradation. Sand from nourished beaches can also cover hard bottom structures. Studies have found that some hard bottom areas adjacent to nourished beaches were buried by sand washed off of nourished beaches. These once productive reef fishing grounds are no longer fished due to poor yield. Boat anchors and bottom trawls can uproot coral and tear loose chunks of rock. Poor water quality can affect growth or survival of the invertebrates living on hard bottom structure. A growing threat to hard bottom is the impact of the highly invasive Pacific lionfish on the reef community. This species has rapidly expanded in range from more southerly waters to North Carolina, and has exhibited extremely high predation rates on snapper and grouper species. Ocean acidification is another concern. More acidic ocean water over time is expected with increasing carbon dioxide levels which can cause calcium based organisms like corals and sponges to disintegrate.

The hard bottom habitat of the North Carolina coast is considered crucial spawning and foraging habitat for many commercially important species of grouper and snapper.

ACRONYM LIST

APNEP:	**Albemarle-Pamlico National Estuary Partnership**
BMPs:	**Best Management Practices**
CAMA:	**NC Coastal Area Management Act**
CHPP:	**Coastal Habitat Protection Plan**
CRC:	**Coastal Resources Commission**
CRFL:	**Coastal Recreational Fishing License**
DACS:	**Department of Agriculture and Consumer Services**
DCM:	**Division of Coastal Management**
DEMLR:	**Division of Energy, Mineral, and Land Resources**
DENR:	**Department of Environment and Natural Resources**
DEQ:	**Department of Environmental Quality (formerly DENR)**
DMF:	**Division of Marine Fisheries**
DMS:	**Division of Mitigation Services**
DO:	**Dissolved Oxygen**
DOT:	**Department of Transportation**
DSWC:	**Division of Soil and Water Conservation**
DWR:	**Division of Water Resources**
EBM:	**Ecosystem-Based Management**
EFH:	**Essential Fish Habitat**
EMC:	**Environmental Management Commission**
EPA:	**US Environmental Protection Agency**
FWS:	**US Fish and Wildlife Service**
LID:	**Low Impact Development**
MFC:	**Marine Fisheries Commission**
NCCR:	**National Coastal Condition Report**
NCFS:	**NC Forest Service**
NLCD:	**National Land Cover Database**
NWI:	**National Wetlands Inventory**
SAFMC:	**South Atlantic Fishery Management Council**
SAV:	**Submerged Aquatic Vegetation**
SCC:	**Sedimentation Control Commission**
SCH:	**Strategic Coastal Habitats**
SWCC:	**Soil and Water Conservation Commission**
TOC:	**Total Organic Carbon**
TSS:	**Total Suspended Solids**
USACE:	**US Army Corps of Engineers**
WRC:	**Wildlife Resources Commission**

For more information or to download the CHPP and Source Document, go to http://portal.ncdenr.org/web/mf/habitat/chpp/downloads

This document should be cited as follows:
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