

Habitat and Water Quality Standing Advisory Committee
Meeting via Webinar
January 18, 2023
6 p.m.

- 6:00 p.m. Call to Order*
- Vote on the Approval of the Agenda****
- Vote on the Approval of the Minutes from October 26, 2022 ****
- 6:10 p.m. 2023 Annual AC Orientation Presentation– Lara Klibansky
- Discussion of Stock Assessment 101 Presentation
- 6:40 p.m. Marine Fisheries Commission Update – Lara Klibansky
- Striped Mullet FMP Supplement Update – Dan Zapf, Jeff Dobbs
- 7:40 p.m. Public Comment
- 7:55 p.m. Staff Updates and Agenda Planning
- 8:00 p.m. Adjourn

** Times indicated are merely for guidance. The committee will proceed through the agenda until completed.*

***Action Items*

****Applies only to Marine Fisheries Commission members*

*N.C.G.S. 138A-15(e) mandates at the beginning of any meeting of a board, the chair shall remind all members of their duty to avoid conflicts of interest under Chapter 138. The chair also shall inquire as to whether there is any known conflict of interest with respect to any matters coming before the board at that time. ****

*N.C.G.S. 143B-289.54(g)(2) states a member of the Marine Fisheries Commission shall not vote on any issue before the Commission that would have a "significant and predictable effect" on the member's financial interest. For purposes of this subdivision, "significant and predictable effect" means there is or may be a close causal link between the decision of the Commission and an expected disproportionate financial benefit to the member that is shared only by a minority of persons within the same industry sector or gear group. A member of the Commission shall also abstain from voting on any petition submitted by an advocacy group of which the member is an officer or sits as a member of the advocacy group's board of directors. A member of the Commission shall not use the member's official position as a member of the Commission to secure any special privilege or exemption of substantial value for any person. No member of the Commission shall, by the member's conduct, create an appearance that any person could improperly influence the member in the performance of the member's official duties. ****

*Commissioners having questions about a conflict of interest or appearance of conflict should consult with counsel to the Marine Fisheries Commission or the secretary's ethics liaison. Upon discovering a conflict, the commissioner should inform the chair of the commission in accordance with N.C.G.S. 138A-15(e). ****



ROY COOPER
Governor

ELIZABETH S. BISER
Secretary

KATHY B. RAWLS
Director

October 28, 2022

MEMORANDUM

TO: Marine Fisheries Commission
Habitat and Water Quality Standing Advisory Committee

FROM: Anne Deaton, Habitat Program Supervisor, Habitat Enhancement Section
Jimmy Harrison, Fisheries Specialist, Habitat Enhancement Section

SUBJECT: Meeting of the Marine Fisheries Commission's Habitat and Water Quality Standing Advisory Committee, Oct. 26, 2022

The Marine Fisheries Commission's (MFC) Habitat and Water Quality Standing Advisory Committee (AC) held a hybrid meeting on Oct. 26, 2022, via webinar and in-person at the Division of Marine Fisheries (DMF) Central District Office, Morehead City, North Carolina. Advisory Committee members could attend in either setting and communicate with other committee members whereas public comment could only occur via the in-person setting.

The following AC members were in attendance: Doug Rader, Ana Shellem, Bob Christian, Nathan Hall, James (Stanley) Hall, Markham Parrish. The following AC members were absent: Joel Fodrie

DMF Staff: Anne Deaton, Tina Moore, James Harrison, Lara Klibansky, Hope Wade, Debbie Manley, Jason Parker, Jeff Dobbs, Steve Poland

Public: Lisa Rider; 14 on YouTube

Habitat and Water Quality AC chair Doug Rader called the meeting to order at 6:02 p.m.

Introductions were made and attendance recorded. The Habitat and Water Quality AC had six members present at the start of the meeting and a quorum was met.

APPROVAL OF THE AGENDA AND APPROVAL OF THE MINUTES

Doug Rader asked the committee to approve the agenda by consensus. All members agreed without objection.

A motion was made by Markham Parrish to approve the minutes from the Habitat and Water Quality AC meeting held on October 20, 2021 and was seconded by Ana Shellem. The motion passed without objection.

MARINE FISHERIES COMMISSION UPDATE

Lara Klibansky gave an update on the newly appointed MFC commissioners and who they replaced. Pete Kornegay (science seat) left due to personal reasons and Dr. Doug Rader will continue Kornegay's term until 2023. Ana Shellem is replacing Sam Romano (commercial seat) and Donald Huggins is replacing Tom Hendrickson (at-large seat). At the November business meeting Sarah Gardner will fill an at-large seat and she was sworn in at the Finfish AC meeting on Oct. 20, 2022.

Klibansky reminded everyone we are in the AC solicitation period which is open through Nov. 1. The DMF is looking for applicants for all ACs and encouraged current AC members to reapply. The MFC chair will select AC members and staff will notify applicants by Dec. 1. Rader asked if there is a certain number of members required for the ACs and if AC members can recruit members. Klibansky replied that 11 is the maximum and that the MFC appoints members with a goal of balance across different stakeholders. There are two openings on the AC and Klibansky agreed with Rader that members can recruit people.

Next the committee was provided an overview of the May and August 2022 MFC business meetings. Since the last Habitat and Water Quality AC meeting in October 2021, the Coastal Habitat Protection Plan (CHPP) 2021 Amendment was approved by the three environmental commissions unanimously, and implementation is underway. At the May MFC meeting, the review of the N.C. River Herring Fishery Management Plan (FMP) was approved as an information update (not an amendment) because the Atlantic States Marine Fisheries Commission is currently conducting a stock assessment and it will be prudent to wait until the results of the assessment are finalized before making management changes. Amendment 3 to the Southern Flounder FMP was approved at the May meeting, completing the cycle for this plan. Results of the 2022 Striped Mullet Benchmark Stock Assessment were presented to the MFC at its May business meeting. The peer reviewed stock assessment indicates the N.C. striped mullet stock is overfished, and overfishing is occurring. The terminal year of the assessment is 2019. At its November meeting, the MFC will be given the results of the scoping period for the review of the Striped Mullet FMP and vote to approve the goal and objectives of draft Amendment 2.

At the August meeting, the MFC tabled the final vote on the selected management measures for estuarine striped bass to give the new commissioners time to fully review the draft Amendment 2 to the FMP; the preferred management measures were approved at the May meeting. The DMF held two meetings in October to review the amendment with the newly appointed commissioners. The MFC is scheduled to select management measures for and give final approval of the Estuarine Striped Bass FMP Amendment 2 at its November business meeting.

The results of the 2022 stock assessment for spotted sea trout and outcome of the peer review will be presented as an informational update at the MFC's November business meeting.

Blue catfish continues to be a topic brought up by commissioners as a major concern due to their impact to other species, particularly in the Albemarle Sound. The DMF continues to actively collect data (diet, etc.) on blue catfish and has participated in blue catfish workshops in Virginia.

Dolphin (mahi mahi) was also discussed at the August meeting and the MFC asked the DMF to draft a letter opposing any new regulations (bag limits). Lastly, the MFC asked that a white paper be developed (or the 2017 document updated) for false albacore and consider management options; concerns were raised because it is a highly migratory species with no regulations. Markham asked if there is a size limit for dolphin because there are dolphin in N.C. year-round. Steve Poland replied no, partially due to lower numbers of fish at that time and concern over dead discards. Studies have found that the size at maturity is 20 inches. Tagging studies indicate dolphin stocks are shifting north. In N.C. and waters further north,

more dolphin are being seen. Rader commented that we will see this more with additional species due to warming temperatures and climate change. He suggested that fishery management may want to consider more comprehensive management rather than species by species.

The November MFC meeting will be held at the Islander Hotel & Resort in Emerald Isle from Nov. 16th to the 18th.

2023 ANNUAL MFC ADVISORY COMMITTEE MEETINGS PLANNING

Klibansky reviewed the 2023 MFC calendar and noted that in past years the AC did not meet unless there was something the MFC needed input on; however, moving forward we would like to meet on a regular basis to give updates and talk about less contentious topics, even when there are no action items from the MFC. In January, there will be new AC members and the ACs will receive a presentation from one of the DMF stock assessment biologists to orient the new members. It will be a virtual meeting. In the future we will alternate between Webex and in-person meetings; however, staff will set up listening stations for the public at various locations when the meetings are virtual. The next AC meeting in January will be virtual.

Markham asked if the AC will get materials in advance and was told yes. Rader noted that he would like them to consider their role, discuss priority habitat and water quality issues that cross multiple species, and make sure the AC agenda aligns with MFC business. Rader asked if there were topics they can take a leadership role in, getting ahead for habitat and water quality issues in FMPs or CHPP. Anne Deaton said that the staff could compile all the Habitat and Water Quality recommended management actions from FMPs for the AC to review. Rader said that would be a good information for the AC to review so that they can consider actions needed. Markham noted there are some common problems such as loss of submerged aquatic vegetation, decline in water quality, but they are difficult for the AC to address (eg. agriculture impacts) because they cannot do anything. Rader explained that they can, with one example being writing letters to appropriate commissions. It is the AC's responsibility to advise the MFC. Rader suggested discussing more specific issues at the January meeting.

FISHERY MANAGEMENT PLANS UPDATE

Poland gave an update on Amendment 3 to the Southern Flounder FMP, noting the 2022 season was based on management from the amendment and it may be a few months before the data is finalized. He noted that the division will not have the Marine Recreational Information Program (MRIP) data until the end of November. There have been reports that fishermen are seeing more and larger flounder, indicating that the fishery is heading in the right direction.

Poland, when asked about any new updates on southern flounder regionally, said there are no reports from other states. Discussions will likely occur in 2024 with other states to inform the stock assessment since southern flounder in the South Atlantic region is considered one stock. N.C. is waiting on the other states to implement management measures. There will be an update by the end of 2024. Stanley Hall noted that new gear restrictions on shrimp trawls (2" bar spacing) are greatly reducing bycatch of flounder.

For the 2022-2023 FMP Review Schedule, hard clam, oyster, striped mullet, estuarine striped bass, and spotted seatrout are under review; the review of river herring has concluded. The 2018 benchmark blue crab stock assessment will also be updated as part of adaptive management and will include data through 2022. The terminal year of the last assessment was 2016 and indicated that the stock was overfished and overfishing was occurring. The assessment update will add six years of data through 2022 with two to three years of management having occurred under the current FMP amendment. The DMF is also working with UNC-W to evaluate new bycatch reduction devices to reduce diamondback terrapin interactions in crab pots.

No management changes were deemed necessary for river herring; the information update is summarized in the 2022 FMP review and will serve as the five-year review of the plan. Staff are reviewing data and existing management for the Hard Clam and Oyster FMPs. Focus will be on cultch planting efforts and new management strategies. Staff will bring information to the ACs in late 2023; a scoping period will likely begin around that same time. Rader asked if anything novel regarding oyster and clams was expected to be brought to committee. Deaton replied that shellfish harvest closures have not been increasing greatly, but there is a trend of temporary areas are closing more frequently or staying closed longer. There are increasing efforts to develop management plans to address runoff. For example, the N.C. legislature allocated funds for developing a Newport River Watershed Restoration Plan. There is a CRFL study finishing up that is examining the rate and effect of sedimentation at multiple tidal creeks by Joel Fodrie. Rader asked if there were any updates on status/trends for nursery areas. Rader expects the AC to have questions about habitat and water quality and productivity trends in nursery areas and the effects of that on FMP species. Rader asked if there was any new information or studies on the extent of heavy metal concentration. Deaton responded that there have been some studies and sampling, but not to the extent of previous efforts. Rader would like staff to present any new information on shellfish and water quality trends so the AC can begin discussing actions needed. Deaton noted there have been some recent relevant studies. One study looked at the impact of sedimentation on oyster reefs, other habitat, and primary nursery function. Another assessed Primary Nursery Area function and current monitoring protocol.

The MFC will review the preferred management measures for estuarine striped bass in November. Due to low juvenile abundance in the Albemarle-Roanoke stock the DMF conducted a stock assessment update. DMF and Wildlife Resources Commission staff are continuing to work on this update and based on the initial review of the results, the Director did not open the fishery in Albemarle Sound and continues to assess the subject. Doug commented that the AC should be aware that one sticking point in the amendment was whether there would be a potential to establish spawning populations in the different systems to jumpstart stock increases. The South Atlantic Fishery Management Council (SAFMC) had a policy related to establishment of flows that allowed the federal agencies to provide input on flow measures to maintain fisheries resources. After this FMP process, Rader said there is a need to assess spawning in the upper Neuse, Tar-Pamlico, and other areas, and the effect of altered flow on spawning.

For spotted seatrout, the peer review panel agreed the stock assessment was the best available data to manage the fishery. The assessment contains data up to 2019 and showed biomass was high and therefore not overfished, but overfishing is occurring. In early 2023 DMF will have scoping meetings for this plan.

Poland discussed striped mullet and said the stock is overfished, and overfishing is occurring in 2019. Because of stock concerns, the Department of Environmental Quality (DEQ) Secretary asked the MFC to work with DMF to implement a supplement. This will be in place until the next amendment is adopted. At the November meeting the MFC will review the scoping input and vote to approve the goal and objectives. The proposed management strategies for Amendment 2 include: Sustainable Harvest, Recreational Fishery Management, Small Mesh Gill net Management, Stop Net Fishery Management, and Migration Corridors. The DMF had three scoping meetings and an online questionnaire. Management actions in Amendment 2 will focus on ending overfishing and rebuilding the spawning stock biomass to provide sustainable harvest. The MFC will review the supplement in November and vote to approve it to go out for public comment. The supplement could be implemented as early as 2023. If all goes as planned the Amendment 2 could be in place as early as 2024 or 2025. Jeff Dobbs noted inclusion of the new data made the model more stable; however, it did change the overall stock status. The DMF issues press releases for these workshops and the public is welcome to attend.

Dobbs gave an overview of the striped mullet scoping meetings. He noted people wanted adaptive management based on abundance indices, not landings as they are influenced by environmental conditions and market demands. Stakeholders expressed need for regional management, noting differences in migration patterns, gears, and markets across the state. Gill net minimum and maximum mesh size restriction as well as migration corridors have been suggested as potential management options. The MFC has not implemented any overarching gill net restrictions; however, will address these in species-specific plans. Dobbs asked the AC if they had any management ideas for Amendment 2 to the Striped Mullet FMP. Markham explained that mullet migrate along the east coast, and are in Maryland waters earlier, and in N.C. waters in August and September. He has concerns that people are cast netting for mullet and bringing the fish to large tractor trailers, where they are then transported and sold elsewhere. Staff noted that the fishermen would have to be licensed, but there were questions on whether the sales are getting recorded on trip tickets. Jason Parker, Marine Patrol officer that attended virtually, stated later to Deaton that the fish would be required to go through a fish dealer if they were landed here and transported out of state.

Rader asked about striped mullet spawning and nursery area locations and whether there would be habitat or water quality concerns. Dobbs explained they are mature in one to two years, they go out of the estuary to spawn in the ocean, not very far offshore. Currents carry larvae to the small estuarine creeks where they live through the summer, and cooling water triggers spawning migrations. During “mullet blows” they move from the rivers to the ocean by December. A tagging study found limited movement in the ocean. Rader asked Dobbs to bring back any habitat and water quality issues related to striped mullet in January. Bob Christian asked if mullet were common in fish kills. Staff did not think so but can look at fish kill data that Division of Water Resources collects. Rader asked if there were new trends with hypoxia in N.C. Nathan Hall, who studies water quality in the Neuse River and other waters extensively, stated it was about the same over the last 20 years, with the Neuse River having hypoxic bottom waters most of the summer. He said that high amounts of organic sediment can cause hypoxia without an algal bloom and that hypoxia does not always result in fish kills. Markham mentioned that a study by Tar-Pamlico Foundation found that hypoxia triggered algal blooms. N. Hall said it’s possible but complex. After further discussion, Rader asked staff to synthesize what is known currently regarding hypoxia, patterns and trends, correlation with fish kills and algal blooms.

Poland said the supplement is intended to be simple, effective, and end overfishing within one year. The MFC will review the supplement in November and vote to approve it to go out for public comment. If all goes as planned the next amendment could be in place as early as 2024 or 2025.

PUBLIC COMMENT

There was no public comment.

PLAN AGENDA ITEMS FOR THE NEXT MEETING

No items are planned at this time. Klibansky said the MFC ACs will not likely need to meet again until January 2023 when she will give an update on the outcome of the November MFC business meeting and the ACs will receive a presentation on the stock assessment process. There will also be an AC orientation. Klibansky mentioned the MFC will be given an update on the lease program changes in November.

Bob Christian noted that CHPP Water Quality Summit occurred last week and asked if Deaton could provide some initial outcomes from that at the January AC meeting. Deaton said we could and noted that they expect multiple water quality initiatives coming from that meeting, including forming an active Stakeholder Engagement for Collaborative Coastal Habitats Initiative (SECCHI). Rader noted wanting updates on other habitat initiative. Examples included APNEP activities, water clarity and nutrient criteria

development, Mid and South Atlantic Council activities, and Council work on climate vulnerability assessments. Staff will compile a list of requested habitat and water quality topics to present to the AC in the future.

Rader adjourned the meeting by consensus at 7:47 p.m.



NC COASTAL WATER QUALITY SUMMIT: STAKEHOLDERS DRIVING SOLUTIONS

Convening stakeholders and decision-makers to identify and organize around voluntary actions that protect and restore coastal water quality

October 19th, 2022 | New Bern, NC



Summit Goals

The NC Coastal Water Quality Summit was the launch of the Stakeholder Engagement for Collaborative Coastal Habitats Initiative (SECCHI), a public/private partnership between the NC Coastal Federation, NC Department of Environmental Quality, and Pew Charitable Trusts as recommended in the 2021 Coastal Habitat Protection Plan (CHPP) Amendment to engage stakeholders in voluntary actions to protect and restore water quality. The Summit was held on October 19, 2022 at the DoubleTree in New Bern with stakeholders from 13 different stakeholder groups (academic, federal agency, state agency, agriculture, development, engineering, shellfish farming, commercial fishing, recreational fishing, forestry, local government, military, and NGO). The goal of the Summit was to engage and recruit a diverse group of stakeholders for the SECCHI Water Quality Workgroup to assist in formulating and carrying out prioritized water quality recommendations related to the 2021 CHPP Amendment and 2021 CHPP Stakeholder Workgroup Recommendations.

Summary of Morning Sessions

Welcome from Trusted Voices

The morning session began with Mike Blanton, Albemarle Sound commercial fisherman and member of the NC Marine Fisheries Commission, Sharon Harker, mayor of Beaufort and advocate for coastal resiliency, and Wilson Daughtry, Hyde County farmer and manager of the Mattamuskeet Association. All three presented on the impacts poor water quality and flooding is having on their local communities. Blanton provided a first hand account of the stressed waterways where he fishes in the northern part of the state and their effect on the coastal economy and the tradition and heritage of the state. Mayor Harker presented the town's watershed restoration plan and efforts the local community has taken to protect its waterways. Daughtry stressed the importance of having not only a diverse group of stakeholders but also a subset of that called "shareholders", or a person who has a vested interest in the project and is directly affected by the project, to anchor the project in the community.

Call to Collaboration

Leadership of the NC Department of Environmental Quality (NCDEQ), including NCDEQ Secretary Elizabeth Biser, Division of Marine Fisheries Director Kathy Rawls (presented by Division of Marine Fisheries Habitat and Enhancement Section Chief Jacob Boyd) and Division of Water Resources Director Richard Rogers spoke to the commitment to implement the 2021 CHPP Amendment's water quality recommendations and the value of public-private partnerships and stakeholder engagement.

Understanding the Water Quality and Habitat Challenges

Two NC experts in seagrass ecology, Dr. Jud Kenworthy, a retired National Oceanic and Atmospheric Administration research fisheries scientist and University of North Carolina Wilmington Associate Professor Dr. Jessie Jarvis explained that the biggest challenge to maintaining healthy submerged aquatic vegetation (SAV) habitat is maintaining or improving water quality. Kenworthy reviewed the ecological value of SAV and the multiple ecosystem services the habitat provides, resulting in high economic value for our coast. He noted that SAV is declining due to reduced water clarity, and taking action now will be less costly than trying to restore SAV once gone. Jarvis reiterated that water clarity drives changes in SAV and reviewed water clarity needs and how establishing water clarity standards in other regions has successfully improved the health of SAV habitat. Jarvis explained the proposed NC water clarity standard, which is based on SAV light requirements specified in the 2021 CHPP Amendment RA 4.7.

NC Coastal Habitat Protection Plan (CHPP)

Keith Larick, Natural Resources Director, NC Farm Bureau Federation and NC Coastal Federation Executive Director Todd Miller spoke about the CHPP Stakeholder Workgroup's Recommendations (Appendix A) that served as the foundation for the afternoon breakout sessions and the priority actions coming out of the Summit. Larick and Miller highlighted the progress that has been made since the recommendations were published and the potential to continue those successes through the SECCHI partnership. Anne Deaton and Eliza Wilczek emphasized that assistance from stakeholders was needed to tackle these water quality actions and reviewed other successful public private partnerships that can be used as an organizational model.

Summary of Breakout Sessions

Working Lands and Waters

The breakout group was asked to discuss recommendations A, F, H, and I from the Stakeholder Workgroup report. The overarching theme of this breakout session was the need for long-term monitoring of coastal habitats and water quality to establish baselines and measure successes and specific goals and objectives. Discussion revolved around the formation of partnerships to improve monitoring efforts and increasing the capacity and funding of monitoring and resilience practices by the state and private entities. Members reiterated that water quality and nutrient management should be framed as a coastal economy issue and expressed support for cost share assistance. There was strong support and enthusiasm for engaging in outreach with the state government in support of water quality and nutrient management (Recommendation A).

Living Shorelines and Salt Marsh Conservation

The breakout group was asked to discuss recommendations C, D, and G from the Stakeholder Workgroup report. There was strong support for CHPP Stakeholder Workgroup Recommendation D. Members discussed reframing the recommendation to expand financial incentives as well as incentivize and educate a more diverse set of stakeholders on the use of living shorelines and marsh conservation. A priority action discussed was outreach to contractors, realtors, and other private landowners as well as developing incentives to encourage these specific stakeholders to advocate for living shorelines over hardened structures. It was noted that there is an existing Living Shorelines Steering Committee and efforts should collaborate with that group rather than duplicating efforts.

Community and Ecosystem Resiliency Planning (Groups 3 and 4)

The breakout group was asked to discuss recommendations A, B, D, E, and G from the Stakeholder Workgroup report. There was overall consensus that there is a need for action at the local level and the implementation of nature-based stormwater strategies. Discussion centered around building the capacity of local governments to take advantage of the incentives and funding opportunities for water restoration planning and project implementation, as well as the outreach and education surrounding nature-based stormwater strategies. Members agreed that increasing buy-in from the public would require outreach and education to ensure connections are made between water quantity and water quality (i.e. emphasizing the relationship between resilience/nature-based strategies, flood reduction, and water quality). There was agreement that a priority for this group is to encourage local communities to use nature-based strategies but there were differing opinions on the most effective approach to do so. Possible action items were to compile a list of funding opportunities that currently do not include nature-based strategies and develop language and scoring criteria that incentivize nature-based practices, compiling a list of approved/implemented nature-based strategies with their economic benefits, and demonstrations of nature-based strategies as “learning labs” for local governments, consultants, etc. Requiring new construction activities to consider nature-based stormwater strategies was suggested but members were hesitant as such language could isolate communities and is not widely used. Another priority identified was enhancing the process of maintaining and improving stormwater infrastructure by improving the coordination between local government/communities and the NC Department of Transportation. Members also noted that work in this group would build off of work currently underway in communities by programs like the Resilient Coastal Communities Program (RCCP) and Regions Innovating for Strong Economies & Environment (RISE) and there is potential for overlap and collaboration.

Next Steps

The SECCHI subgroups will begin meeting to implement the priority actions identified, beginning with the Working Lands and Waters’ outreach with the Governor regarding water quality monitoring in December 2022. The Living Shorelines and Salt Marsh Conservation group will combine with the Community and Ecosystem Resilience Planning Group and meet to continue identifying and implementing the priority actions outlined above in early 2023.

If you want to participate in the Working Lands and Waters subgroup, [please click here.](#)

If you want to participate in the Conservation and Resilience Planning subgroup, [please click here.](#)

The Summit was hosted by the SECCHI Core Team which is composed of the NC Coastal Federation, Pew Charitable Trusts, and the NC Department of Environmental Quality.

SECCHI Core Team

Todd Miller | NC Coastal Federation

Eliza Wilczek | Nc Coastal Federation

Ana Zivanovic-Nenadovic | NC Coastal Federation

Jacob Boyd | NC Division of Marine Fisheries

Anne Deaton | NC Division of Marine Fisheries

Jimmy Johnson | Albemarle-Pamlico National Estuary Partnership

Habitat/Water Quality Management Actions in the most recent Oyster and Hard Clam FMPs.				
FMP	Year	Next FMP	Management Action	Implementation progress
H. Clam	2017	2023	Balance protection of oyster beds and SAV (as habitat) with harvest provisions and expand oyster sanctuary planting and designation.	Accomplished expansion of oyster sanctuaries
H. Clam	2017	2023	Cooperate with University researchers on oyster larvae distribution and oyster recruitment studies to aid in restoration planning.	Accomplished
H. Clam	2017	2023	Coordinate SHAs with land-based conservation and restoration activities such as One North Carolina Naturally and DENR's green infrastructure planning.	Existing authority through the CHPP implementation plan
H. Clam	2017	2023	Develop permit application survey protocols for shellfish and SAV habitats for CAMA applicants.	Accomplished through CHPP implementation plan
H. Clam	2017	2023	Ensure oyster and SAV habitat definitions are consistent across regulating agencies.	SAV definition in effect since April 2009. Existing authority through the CHPP implementation plan
H. Clam	2017	2023	Evaluate and adjust as necessary dredging and trawling boundaries to protect and enhance oyster and SAV habitat.	Existing proclamation authority and ongoing pilot study In Archer Creek to develop protocols
H. Clam	2017	2023	Evaluate making conservation leasing available to non-government organizations for the purpose of oyster restoration and sanctuary development.	Scheduled for consideration by CHPP Steering Committee
H. Clam	2017	2023	Identify and delineate Strategic Habitat Areas that will enhance protection of clam habitats; research physical factors influencing clam abundance predictably.	SHAs nominated. Ongoing through P215 Validation Study
H. Clam	2017	2023	Modify mechanical harvest lines to exclude areas currently open to mechanical harvest where oyster habitat and SAV habitat exist based on all available information.	Existing proclamation authority
H. Clam	2017	2023	Monitor biological/ecological condition and effectiveness of oyster sanctuaries and restored SAV beds.	Accomplished in oyster sanctuaries. Not under investigation for SAV beds.
H. Clam	2017	2023	Recommend a naturally vegetative riparian buffer width of 50 feet.	Partially accomplished. Not as restrictive through DWQ rule changes as of Oct. 2008
H. Clam	2017	2023	Recommend DWQ designate Use-restoration waters in areas where moderate contamination and appropriate shellfish culture conditions are present and develop strategies to restore and protect those waters.	Accomplished; URW Coordinator hired by DWQ
H. Clam	2017	2023	Recommend DWQ to designate Use-Restoration waters in conditionally closed waters where moderate contamination and healthy shellfish beds are present and develop strategies to restore and protect those waters.	Accomplished; URW Coordinator hired by DWQ

FMP	Year	Next FMP	Management Action	Implementation progress
H. Clam	2017	2023	Recommend that conservation leasing for constructed oyster rock habitat be studied by DENR counsel for development of a proper mechanism and to develop siting criteria.	Not under consideration at this time
H. Clam	2017	2023	Recommend the exclusion of all wetlands (coastal and noncoastal), from the built-upon area calculations.	Partially accomplished. Not as restrictive through DWQ rule changes as of Oct. 2008
H. Clam	2017	2023	Recommend to the DWQ to accept a lower threshold of 10,000 square feet to coastal stormwater rules.	Partially accomplished. Not as restrictive through DWQ rule changes as of Oct. 2008
H. Clam	2017	2023	Remap structured habitats to assess changes in distribution and abundance over time.	Ongoing (program 635 drone mapping)
H. Clam	2017	2023	Restore historical distribution and acreage of oysters and SAV where possible; coordinate with land-based protection and restoration.	Ongoing through CHPP and enhancement programs
H. Clam	2017	2023	Seek additional funds and process changes to allow local communities to more rapidly address repairs and upgrades to all aspects of the municipal waste systems, including collection and treatment systems.	Existing authority through the CHPP implementation plan
H. Clam	2017	2023	Seek additional resources to enhance enforcement of and compliance with expanded bottom disturbing fishing gear restrictions that protect oyster and SAV habitat.	Existing authority through the CHPP implementation plan
H. Clam	2017	2023	Support DWQ's efforts to improve stormwater rules through permit comments and CHPP implementation and coordinate with sister agencies.	Accomplished. Rule change occurred in Oct. 2008
H. Clam	2017	2023	Target productive shellfish resources in conditionally approved closed areas for land-based protection and restoration efforts. This could include designation as Strategic Habitat Area or Use-Restoration Water.	Existing authority through the CHPP implementation plan
Oyster	2017	2023	Expand and evaluate the number of designated oyster sanctuaries to increase oyster populations.	Ongoing
Oyster	2017	2023	Include current and future oyster sanctuaries into North Carolina Fisheries Rules For Coastal Waters Subchapter 03R.	Accomplished
Oyster	2017	2023	Plant and monitor seed oysters on existing oyster sanctuary/artificial reefs.	Accomplished