



COASTAL HABITAT PROTECTION PLAN

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COASTAL HABITAT PROTECTION PLAN
JULY 30 MEETING MINUTES

COASTAL HABITAT PROTECTION PLAN
OCTOBER 16 MEETING MINUTES



NORTH CAROLINA
Environmental Quality

ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

MEMORANDUM

TO: Marine Fisheries Commission
Coastal Resources Commission
Environmental Management Commission

FROM: Jimmy Johnson, Albemarle-Pamlico National Estuary Partnership
Anne Deaton, Division of Marine Fisheries

DATE: October 30, 2020

SUBJECT: Update on the 2021 Coastal Habitat Protection Plan Amendment

Issue

Update the Marine Fisheries Commission (MFC), Coastal Resources Commission (CRC), and Environmental Management Commission (EMC) on the status of the ongoing amendment to the 2021 North Carolina Coastal Habitat Protection Plan (CHPP).

Overview

At the MFC's August 2020 business meeting, and CRC and EMC's September 2020 business meetings, staff provided an update on the 2021 Coastal Habitat Protection Plan Amendment. A timeline for completing the amendment and the five selected priority issues were reviewed. Staff received constructive comments and questions. Since those presentations to the commissions, discussions among the agencies have increased, and led to a re-examination of the amendment timeline. The CHPP Team decided that additional time was needed to adequately incorporate all the information needed and get sufficient review by other agencies and the public. The issue papers focus on complex issues that require coordination with and information from multiple agencies. The timeline was discussed with the division directors, and there was consensus that extending the deadline would be beneficial. Despite the updated timeline, the plan review and amendment will still be completed within the statutorily required five-year timeframe (Table 1).

Since the last commission meeting, work on the remaining issue papers continues. Additionally, three online Wetland Technical Workshops were held in Aug. The purpose of the meetings was to receive input from a broad group of scientists and managers on the current state of our knowledge regarding wetland extent, condition, and threats, and have discussion on needs to advance wetland conservation and restoration. Seventy participants from state and federal agencies, non-government organizations, and academia attended.



A CHPP Steering Committee meeting was held in October. Three presentations were given by habitat and water quality experts to provide a foundation for future discussions regarding management of submerged aquatic vegetation, wetlands, and water quality. Updates on issue paper progress were also provided.

Table 1. Timeline of CHPP milestones relevant to DEQ commission meetings.

Action	Quarter	MFC	CRC	EMC
Provide CHPP background, implementation progress, and process for 2021 amendment	Fall 2019	Nov 15	Nov 20	Nov 14
Provide background on SAV, Compliance, and I&I issue papers	Summer 2020	Aug 20-21	Sep 9	Sep 10
Provide update on timeline	Fall 2020	Nov 19-20	Nov 18-19	Nov 18-19
Present background on Wetlands and Habitat Monitoring issue papers	Winter 2021	Feb 17-19	Feb 17-18	Mar 10-11
Provide update on revision status	Spring 2021	May 19-21	Jun 9-10	May 12-13
Present entire draft amendment; ask to take out for public comment (action item)	Summer 2021	Aug 25-27	Sep 15-16	Sep 8-9
Review public comments received; ask for final plan approval (action item)	Fall 2021	Nov 17-19	Nov 9-10	Nov 17-18
Present public friendly short plan for outreach purposes	Spring 2022	TBD	TBD	TBD

Action Needed

For informational purposes only, **no action is needed at this time.**





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Environmental Quality

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Secretary

MEMORANDUM

TO: Coastal Resources Commission
Environmental Management Commission
Marine Fisheries Commission
Coastal Habitat Protection Plan Steering Committee

FROM: Jimmy Johnson
Albemarle-Pamlico National Estuary Partnership
Anne Deaton
Division of Marine Fisheries

DATE: August 3, 2020

SUBJECT: Coastal Habitat Protection Plan Steering Committee Meeting

The Coastal Habitat Protection Plan Steering Committee met via webinar at 9:00 a.m. Thursday, July 30, 2020. The following attended:

Commissioners: Martin Posey, Pete Kornegay, Bob Emory, Larry Baldwin, David Anderson, Yvonne Bailey

DMF Staff: Dan Zapf, Katy West, Anne Deaton, Casey Knight, Alan Bianchi, Corrin Flora, Kimberly Harding, Jimmy Harrison, Jacob Boyd, Jason Rock, Shannon Jenkins

APNEP Staff: Bill Crowell, Jimmy Johnson, Trish Murphey, Tim Ellis

DCM Staff: Braxton Davis, Curt Weychert, Mike Lopazanski, Daniel Govoni

DWR Staff: Adriene Weaver, David May, Forest Shepard, Chris Pullinger

DEMLR Staff: Samir Dumpor

NCDA&CS: Eric Pare (S&W), Alan Coates (Forest Service)

Public: Bill Ross (Brooks-Pierce), Paul Cough (APNEP), Kelly Garvy (The Pew Charitable Trust), Leda Cunningham (The Pew Charitable Trust), Stacy Trackenberg (ECU), Todd Miller (NCCF)

WELCOME, INTRODUCTIONS AND APPROVE AGENDA

Jimmy Johnson, serving as chair, called the meeting to order. He welcomed everyone on the webinar and asked them to provide a name, who they represent and their favorite beach, in the chat box, in order to get a list of attendees. He called the roll for commissioner attendance. All commissioners were present.



Motion by Bob Emory to approve the agenda. Seconded by Martin Posey. Motion carries unanimously.

APPROVE MINUTES FROM MAY 11, 2020 MEETING

Motion by Martin Posey to approve the minutes of the May 11, 2020 meeting. Second by Pete Kornegay. Motion carries unanimously.

REVIEW OF ISSUE PAPERS

Jimmy Johnson (APNEP) reviewed the timeline of the 2021 CHPP development along with drafting and reviewing issue papers. Today we will review two issue papers along with recommendations for approval by the CHPP Steering Committee. There will be three more issue papers for review in October by the committee. Approval for the draft 2021 CHPP to go out for public comment by the three commission will likely be in November. The timeline is tight, but the 2021 CHPP should be finalized by the spring/summer of 2021.

SAV and Water Quality Protection and Restoration with Focus on Water Quality Improvements

Casey Knight (DMF) reviewed the issue paper SAV and Water Quality Protection and Restoration with a Focus on Water Quality to the committee. Protection and restoration of submerged aquatic vegetation (SAV) habitat is critical for healthy fisheries in NC while also providing additional valuable ecosystem services and benefits that enhance coastal resiliency for aquatic life and coastal communities. These services include primary and secondary fisheries production, habitat for fish, wildlife, and waterfowl, sediment and shoreline stabilization, wave energy attenuation, water purification, and carbon sequestration. There are two distinct groups of SAV ecosystems in NC distributed according to the estuarine salinity. One group occurs in moderate to high (<10 ppt) salinity estuarine waters of the bays, sounds, and tidal creeks, referred to as high salinity SAV or seagrasses. The other group thrives in fresh to low salinity riverine waters (≥ 10 ppt), referred to as low salinity SAV or freshwater grasses. Collectively, they are referred to as SAV. These groups are also distinguished by different species composition and living requirements, but the primary factors controlling SAV distribution are water depth, sediment composition, wave energy, and the penetration of light through the water column. North Carolina is unique from other coastal SAV ecosystems on the Atlantic seaboard because of the overlapping distribution of temperate and tropical seagrasses in high salinity waters. Eelgrass (*Zostera marina*) is a temperate species at the southern limit of its western Atlantic range in NC. In contrast, shoal grass (*Halodule wrightii*) is a tropical species that reaches its northernmost extent in NC. Widgeon grass (*Ruppia maritima*) has a wide salinity tolerance, but grows best in moderate salinity areas.

Currently, NC is steward to one of the most productive and biodiverse SAV resources on the Atlantic seaboard, including the largest in-tact high salinity seagrass meadows in the south Atlantic. Over the last 40+ years various mapping projects have been conducted by several universities and state and federal agencies. These individual mapping events have been compiled and overlaid to make up the historically known extent of approximately 191,155 acres of SAV in NC. This is currently the best known estimate of where SAV has persisted in the past, may currently persist, and will hopefully persist in the future. Therefore, the recommended coastwide



interim SAV protection and restoration goal is approximately 191,155 acres. The NC coast and the known historic SAV extent is further divided into nine SAV regions to best represent waterbodies and regional variability. These SAV waterbody regions will be beneficial to setting smart and targeted recommendations on how to obtain these acreage goals. Due to the varying methodologies, extents, resolutions, seasonality, and timeframes, etc. of the mapping events compiled to make the known historic extent of SAV in NC, the regions will allow for goals to be set coastwide and by region allowing for targeted recommended actions. The acreage goals will also be able to be informed and refined by region based on the most current and best resolution mapping events as older mapping data is re-evaluated and new mapping data becomes available. To work towards achieving the interim acreage SAV goal for protection and restoration several recommended actions were presented.

Larry Baldwin asked about the value of chlorophyll *a* as a metric and said there is debate on whether it's a good metric. Knight explained that here, chlorophyll *a* is an interim target that will be used to determine nitrogen load in the future.

Martín Posey asked about sedimentation and how it would be incorporated into the models. Knight explained that sediment does have an impact. Subsequent management measures that reduce nutrient loading from runoff will also reduce sediment loading. Staff said they would follow up on that. Anne Deaton (DMF) added that both Chesapeake Bay and Tampa Bay had tremendous success in controlling nutrients as primary strategy.

Bob Emory questioned if you could see declines of SAV in waterbodies that had a current chlorophyll *a* TMDL. Knight explained that at this point, we cannot due to existing mapping information in those areas. That shows the need for having an more robust SAV monitoring program that could demonstrate that connection.

Baldwin asked about the SAV acreage goal and commented that SAV distribution has a lot of natural variability and if the SAV mosaic was a blended inventory of multiple years and how to account for SAV natural variability. Knight explained that the mosaic is an inventory of several mappings that have occurred over time. It indicates where SAV has occurred at some point in time and could again if conditions are suitable. The mapping dates are in the issue paper and current acreage goal is an interim goal based on this mosaic. If water quality conditions are improved, SAV will be able to recover faster (more resilient) following adverse weather conditions.

Knight reviewed the recommendations and explained that there are some missing dates and that some wording may be changed slightly in order to make them SMART but the intent of the recommendations will not change.

Posey asked about recommendation #2 and if we are setting a deep edge goal or is it something we can determine. Trish Murphey (APNEP) explained that the deep edge depths were already determined based on previous work and is 1.5 meters for the low salinity SAVs and 1.7 meters for the high salinity SAVs.



Emory asked about the mechanisms of adopting targets, does it need to go through the EMC? Who adopts the SAV targets? He suggested that the 22% light to a depth of 1.7 meters and 13% to 1.5 meters be included in the recommendations.

Baldwin expressed some concerns about the recommendations and the need to be more concise. He felt they were too wordy and would lose people. He suggested that rule making should be considered and also think about enforcement and legislative actions and that these recommendations need to be as concise and doable as possible. Knight explained that we can change the wording and structure to address his concerns.

Baldwin also suggested mitigation as a funding mechanism for SAV restoration. It has been successful for wetlands and streams and a lot of resource agencies support mitigation. Baldwin also discussed boat prop dredging/sedimentation and the amount of boats that are out on the water. He suggested the idea of establishing boat carrying capacity for water bodies that have public boat ramps.

Motion by Martin Posey to accept the recommended actions with the understanding that potential changes to wording will be made in order to make them more clear and concise, without any change to their intent. Seconded by Pete Kornegay. Motion carries unanimously.

Environmental Rule Compliance to Protect Habitat and Water Quality

Deaton reviewed the issue paper, Environmental Rule Compliance to Protect Habitat and Water Quality. The paper summarized NC compliance inspections and studies that have looked at compliance in NC and elsewhere. Inspections in NC support the conclusions of the studies that greater compliance is achieved when the public knows that inspections are likely to occur. Non-compliance leads to unauthorized wetland loss and water quality degradation, and with increasing habitat loss and degradation, there is a loss of ecosystem services, like flood control, filtering of pollutants, and provision of suitable juvenile fish habitat. Small thresholds of impacts to wetlands and streams are allowed, and although small, are cumulatively significant. In five years (2014-2019), the impacts within the coastal draining river basins was 1,499 acres. In the same time period there were 1.54 acres of unauthorized impacts for every 1.0 acre of authorized/permitted impacts. Having dedicated compliance inspection positions greatly increases compliance and could result in over 50% less impacts to wetlands with no new rules. Deaton noted that public comments have consistently expressed support for enforcement of existing rules and this issue has been a CHPP priority since 2005. Although new compliance positions were created in 2006, severe budget cuts have limited time availability for compliance inspections. The CHPP Steering Committee reviewed recommended actions which included seeking funding for dedicated compliance positions, additional outreach to increase the public's understanding of EMC and CRC rules and how to recognize potential violations, and establishing a public portal on DEQ's website where it is easy to find out about past violations, and to submit complaints about potential violations.

The CHPP Steering Committee discussed the recommended actions. Larry Baldwin noted that enforcement should be a last resort. Two CHPP team members with DWR and DEMLR explained that since the 2000s staff emphasizes outreach to applicants at the front end. Rather than being heavy handed when problems are found, division staff offer assistance to get into



compliance. They both noted that increased compliance with regular inspections leads to less enforcement actions being needed.

Motion by Pete Kornegay to approve all of the recommended actions in the compliance issue paper. Seconded by Martin. Motion carries unanimously.

PUBLIC COMMENT

No public comment.

BREAK

Johnson called a break and to return by 11:00am.

OTHER CHPP ISSUE PAPER UPDATES

Deaton provided information to the committee on three additional issue papers that are not yet complete but will be for the next meeting.

Reducing Inflow and Infiltration (I&I) from Wastewater Infrastructure to Improve Water Quality

Deaton presented an update on the upcoming issue paper “Reducing Inflow and Infiltration (I&I) from Wastewater Infrastructure to Improve Water Quality”. She explained that I&I is the term used for a common type of wastewater infrastructure problems. Inflow is when stormwater gets into wastewater collection pipes and infiltration is when groundwater gets into the pipes. The increased volume of water entering the pipes is frequently the cause of sanitary sewer overflows. If the raw or partially treated sewage enters surface waters, it can significantly degrade waters for a period of time and result in algal blooms and fish kills. Studies have shown that infiltration is the more significant problem. This issue is widespread in the coastal counties and costly to correct. The coast is particularly vulnerable to I&I problems due to high groundwater table and higher average rainfall than other areas of NC. Climate change is expected to exasperate those factors. The draft issue paper will be presented at the next CHPP Steering Committee Meeting.

Baldwin commented that I&I is definitely a problem and that money is what is needed. In the 301 program, the US Congress appropriated money for infrastructure but did not include maintenance and operational funding. This cost was put on the states. He noted that EMC has done a great job with the Clean Water State Revolving Fund. There has been a lot of improvement in wastewater systems, stricter site selection, etc. Municipalities are seeking funds and loans to upgrade their systems.

Wetland Protection and Restoration with Focus on Nature-Based Methods

Deaton then presented an update on the issue paper “Wetland Protection and Restoration with Focus on Nature-Based Methods”. She explained that the paper is in its initial drafting stage. Staff will be holding three virtual technical meetings to broaden input from researchers, other agencies, and NGOs. The first meeting will focus on mapping and monitoring, the second will focus on threats and conservation, and the third will focus on restoration and living shorelines. The information obtained will aid in drafting the issue paper.

Habitat Monitoring to Assess Status and Regulatory Effectiveness

Deaton also provided an update on the issue paper “Habitat Monitoring to Assess Status and Regulatory Effectiveness”. The paper will include updated status on each habitat, and summarize monitoring needs for each to improve understanding of their condition and trends over time.



Existing monitoring will be noted, and recommendations that may be included in the SAV or wetlands issue papers will be referenced. This issue paper will provide a blueprint for monitoring the state of our coastal habitats in an efficient and feasible manner.

These papers should be finished by October. Martin asked about thoughts on restoration and Deaton explained that there are techniques to do large scale restoration, thin layer sediment dispersal, island creations/expansion, hydrological restoration. Additionally, protecting wetlands from high wave energy can reduce wetland loss due to erosion. Several examples were discussed including NCCF North River Farms and Poplar Island in Chesapeake Bay.

OUTSIDE PRESENTATIONS TO COMMITTEE

The Pew Charitable Trust: CHPP Outreach Efforts

Kelly Garvy (Pew) introduced herself and explained that she has been contracted by Pew and North Carolina Coastal Federation (NCCF) to develop outreach and education information and would like to discuss with the committee some ideas and get feedback. Leda Cunningham (Pew) provided a brief introduction and overview of Pew and that one of its priorities is coastal habitats and focusing on policy vehicles like the CHPP. She emphasized the need to build partnerships and gave the example of the March SAV/Water Quality Workshop. Garvey explained that people do not understand the connection of CHPP's role in maintaining these coastal habitat systems. Pew can provide an additional set of hands to get the word out to the public; what the CHPP is and what is its connection to other state efforts. Discussion continued on what the public needs to know and how to engage the public about the CHPP. Garvey provided three questions for discussion: 1) What do you think the public should know about the CHPP? 2) What are your thoughts and feedback on our approach? 3) What partners and stakeholders should we consider?

Baldwin commented that Pew works on a wide range of topics and that they will be beneficial in the future. He expressed that partnering with Pew would be good and would love to see Pew work on the CHPP and that this would be a great relationship.

Emory stated that the key messages are the particular topics up for action. Any general awareness paves the way to action. The public is big and who in the public to target? We want the conservation organizations to be aware of the CHPP. We want the local government to be aware of the CHPP. We need to keep the CHPP in front of the decision makers. There are some key people that should be on the radar.

Posey agreed and the public needs to know the importance of protecting habitat and why the CHPP is important to their lives. Listening to different angles and viewpoints of the public is critical to get the public knowledgeable and supportive. The opportunity is still there to have conversations with members and to educate the right people.

NC Blue Crab Fisheries Management Plan; Water Quality Recommendations

Corrin Flora (DMF) presented to the CHPP Steering Committee the MFC-approved management measures in Amendment 3 to the Blue Crab FMP issue paper on water quality concerns. Concerns due to mass mortality events in peeler operations, mortality during hypoxic concerns, effects of endocrine disruptors, and quality habitat were addressed in the issue paper. Of the seven management measures, #4 concerns the CHPP Steering Committee directly which is to task the CHPP Steering Committee to prioritize blue crab water quality impacts and juvenile



habitat impacts. These should include hypoxia and toxins, while researching specific sources of water quality degradation and their effects on blue crabs. Discussion centered around how the current issue papers that will be included in the 2021 CHPP Amendment will meet expectations of Task #4 and can include wording to link the paper to the Blue Crab FMP.

Posey asked if the water quality measures that are being proposed as well as the restoration and protection of marsh was a way to address management measure #4. Flora stated that it would. One of the first places that blue crab settle is SAV, using wetlands later in their life history or where SAV is not available. Posey suggested that the Blue Crab FMP and stock assessment be referenced in both the SAV and the wetland issue papers. Knight and Murphey said that it could be done and could potentially reference other managed fishery species where SAV is important to their life histories.

ISSUES FROM COMMISSIONERS

Johnson asked if there were any issues from the commissioners. Baldwin stated that one hot issue is WRC re-designating coastal waters, which would take areas out of CAMA jurisdiction. He expressed concern over management by different agencies and how it will become fractured. He asked about an update.

Katy West (DMF) stated that each agency has been moving forward with the rulemaking process. MFC met in August 2019 where the boundaries rules were acted on and approved with no public comment. She has not seen WRC rules yet go through the same review. However, there will be a new executive director beginning August 1.

Baldwin stated that the CRC sent a letter objecting to the rules and that when different agencies do not agree, it will end up on the Governor's desk. He requested that an update on this be an agenda item for the next meeting.

Johnson brought up the issue concerning the chairmanship of the CHPP Steering Committee. In the past, the committee was chaired by one of the commissioners and DEQ staffed the committee. Over time, he has asked for volunteers but for the last few years, no one was comfortable being the chair, so he has run the meetings. Johnson talked to Posey and asked if he would be interested in assuming the chairmanship. Posey agreed, pending committee approval/agreement.

Motion by Larry Baldwin to nominate Martin Posey as chair of the CHPP Steering Committee. Seconded by Bob Emory. Motion carries unanimously.

NEXT MEETING DATE (OCTOBER)

Johnson stated he will be looking at October for another meeting and will begin looking at date options.

ADJOURN

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NORTH CAROLINA
Environmental Quality

ROY COOPER
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MICHAEL S. REGAN
Secretary

MEMORANDUM

TO: Coastal Resources Commission
Environmental Management Commission
Marine Fisheries Commission
Coastal Habitat Protection Plan Steering Committee

FROM: Jimmy Johnson
Albemarle-Pamlico National Estuary Partnership
Anne Deaton
Division of Marine Fisheries

DATE: October 29, 2020

SUBJECT: Coastal Habitat Protection Plan Steering Committee Meeting

The Coastal Habitat Protection Plan Steering Committee met via webinar at 9:00 a.m. Friday, October 16, 2020. The following attended:

Commissioners: Martin Posey, Pete Kornegay, Bob Emory, Larry Baldwin, David Anderson, Yvonne Bailey

DMF Staff: Dan Zapf, Anne Deaton, Casey Knight, Alan Bianchi, Jason Rock, Kacee Zinn

APNEP Staff: Bill Crowell, Jimmy Johnson, Trish Murphey, Tim Ellis, Dean Carpenter

DCM Staff: Mike Lopazanski,

DWR Staff: Forest Shepard, Rich Gannon, Jim Hawhee, Karen Higgins, Amanda Mueller

DEMLR Staff: Samir Dumpor

NCDA&CS: Eric Pare (S&W)

Public: Paul Cough (APNEP), Kelly Garvy (The Pew Charitable Trust) Leda Cunningham (The Pew Charitable Trust), Todd Miller (NCCF), Phillip Todd (Atlantic Reef Maker), Mason Phipps, Rob Lamme (NCCF), Thomas Roller (MFC), Wilson Laney (NCSU/APNEP/NCWF), Liz Rasheed (SELC), M. Bruce, Marion Deerhake (EMC), Melissa Whaling (SELC), Hans Paerl (UNC-IMS), Jud Kenworthy (APNEP), Carol Price (NC Aquariums), Carolyn Currin (NOAA-NCCOS), D. Childers



WELCOME, INTRODUCTIONS AND APPROVE AGENDA

Martin Posey (Chairman), welcomed everyone on the webinar and asked them to sign in through the chat including their affiliation and favorite Halloween candy, in order to get a list of attendees. He asked that everyone hold questions and comments until the end of each presentation. No changes to the agenda were requested.

APPROVE MINUTES FROM JULY 30, 2020 MEETING

Motion by Larry Baldwin to approve the minutes. Seconded by Yvonne Bailey. Motion approved by acclamation.

UPDATED TIMELINE

Jimmy Johnson (APNEP) reviewed the updated timeline of the 2021 CHPP amendment. Johnson had discussed the amendment completion date with DEQ directors and all agreed to the need to extend it to allow adequate incorporation of information and review. The new timeline has been extended to the fall of 2021 for completion of the plan and approval by the three commissions. He provided a short update on where each issue paper is within the timeline and which issue papers are left for review by the steering committee. Johnson noted that following completion of the amendment, a public friendly summary document will be developed.

Johnson also informed the steering committee that there will a short update on the CHPP at each of the upcoming commission meetings. He offered this could be done by that staff or a steering committee member from his/her respective commission. Posey offered to work with Pete Kornegay to update the MFC. Bob Emory offered to update the CRC and Yvonne Bailey will work with the EMC. Johnson will work with each steering committee member on the update. Staff will send meeting minutes and the new timeline to the steering committee.

REVIEW OF WETLAND WORKSHOP SERIES

Deaton provided a summary on the wetland workshop series held in August. This series of three workshops brought together the technical community to provide input and guidance for the wetland issue paper. There were approximately 50 attendees for each workshop. The first workshop focused on mapping and monitoring. Presentations were given on current mapping of wetlands and the use of remote sensing for the mapping and monitoring of wetlands. The second workshop was about threats and conservation, where the group heard about concerns regarding changes to the federal definition of Waters of the United States (WOTUS), especially to the state's palustrine wetlands, as well as wetland loss occurring from a variety of sources. The third workshop was about restoration and living shorelines where they heard about different restoration techniques and about the successes of living shorelines in NC. A summary document has been drafted and is in review. It will be provided to the steering committee. These workshops were very helpful and will provide good direction for the wetland issue paper.

UPDATE ON ISSUE PAPERS IN PROGRESS

Wetland Protection and Restoration with Focus on Nature-Based Methods

Deaton provided an update on the wetland issue paper for Curt Weychert (DCM), who is lead for this paper, but unable to attend. The wetland workshops provided useful information that will be incorporated into the issue paper. A lot of work has been compiled for the background section,



with assistance from Chris Ballie (ECU). Staff are just beginning the discussion section, which will include potential actions and policies to address wetland issues.

Baldwin thought the goals and objectives of the CHPP are good but money and funding sources are needed for making progress. Baldwin stated there are sources available for the enhancement and creation of wetlands. Division of Mitigation Services can direct people to funding. There are private mitigation banks but not so much on the coast. He said mitigation needs to be encouraged in the CHPP. There is mitigation in the mountains and for streamside management zones. Deaton stated that the workshop had some discussion on mitigation and there are challenges that currently limit mitigation on the coast.

Reducing Inflow and Infiltration to Improve Water Quality

Deaton noted that the issue paper is nearing completion and that the three commissions were provided an overview at their August and September meetings. Good feedback was received, especially from the EMC commissioners. The CHPP writers received data from DWR which shows the extent of sanitary sewer overflow in coastal counties and highlights the connection to coastal water quality. This paper should be available for your review at the next meeting.

Habitat Monitoring to Assess Status and Regulatory Effectiveness

Casey Knight (DMF) provided an update on this issue paper. The focus of the paper is on the status and trends of the six coastal habitats and the monitoring needed to identify changes in the system that will make management more effective. The paper is evolving with help from DMF staff regarding the shell bottom and hard bottom sections. She is currently working on the water column and soft bottom sections. The wetland and SAV monitoring sections will be consistent with the content of the SAV and Wetland issue papers. Knight is coordinating with DWR and DCM to obtain water quality and coastal wetland data. Knight is also working with the APNEP SAV low and high salinity monitoring subgroups that are developing their monitoring plans.

Chairman Posey asked if in the soft bottom section, there will be consideration of different sediment types or done as one unit. Knight stated that she has not addressed that yet and that in the 2016 CHPP it was one overall component. However, she has been reviewing literature and considering ways to take into account consideration of the different sediment types.

SAV Issue Paper and Recommendations

Trish Murphey (APNEP) provided an update on the latest draft of the SAV issue paper. The background section was updated to reflect the steering committee recommendation to reference the Blue Crab Fishery Management Plan (FMP) and its management action for the CHPP Steering Committee to make blue crab water quality a priority. In addition, a table was added listing all FMPs that have SAV and/or water quality recommendations as they relate to this issue paper. The issue paper recommendations were also updated to reflect the steering committee recommendation to be more clear and concise on the issue paper recommendations. These latest recommendations were further reviewed by division directors and DWR staff. The last change in the issue paper addressed concerns voiced by the steering committee as well as the CRC and EMC on how dynamic SAV can be naturally and how this may impact the interim SAV acreage goal. Murphey explained that by improving water quality, the trend toward that goal should increase and also make the SAV more resilient to natural stressors. She also provided a brief



update on the SAV Technical Workshop that was held in March and was used to inform the SAV issue paper.

Chairman Posey asked about sending any comments on the latest version of the issue paper. Murphey replied to send any comments or edits to the paper to Casey Knight and herself.

Bob Emory asked about the nutrient loads in the Neuse River Basin since nutrients are such an issue for SAV. He had concerns that the nutrient levels have not improved in the basin and wanted to know if it is true that nitrogen levels have increased. Rich Gannon (DWR) confirmed this and provided an explanation on potential reasons for lack of improvement in the Neuse River Basin.

Baldwin followed up on Emory's observation. He discussed that a lot of money was spent on upgrading wastewater treatment plants (WWTPs). Nutrient levels did not decrease but stayed steady. He also questioned the SAV "starting point" as a metric. The starting point, will make a difference and is important to consider. He noted there have been changes in coastlines, inlets, and waterbody salinities. This can impact where SAVs can occur.

Knight agreed with Baldwin and noted that when working with the SAV team, the group was cautioned on how far back to go historically. We need to be realistic and therefore, the issue paper settled on the most recent historical record (1981-2015). Also, by breaking up the coast into regions, we will be able to address the different areas as we gather more data on a regional basis. We can continue to update our data as we move forward.

STATUS OF SAV IN ESTUARINE WATERS OF NC*

Jud Kenworthy (APNEP) presented to the steering committee about SAV in NC. He discussed the monitoring of SAV and that we are seeing more declines than gains because of water quality and its impacts on water clarity. The system is not at carrying capacity and will likely be in need of restoration. The question of baseline, discussed earlier will be a challenge. He supported the recommendations in the SAV issue paper and stated they will help avoid negative changes, and help us stay ahead of the curve in protecting SAVs. He discussed the value of SAV and that it is estimated to provide 12.5 billion dollars per year in ecosystem services. How salinity and temperature can impact species composition was discussed, and differences between the low and high salinity SAVs were described. He then reviewed the high salinity SAV trends and said we are now observing many previously continuous beds in high salinity areas convert to patchy beds. Kenworthy then discussed the monitoring of SAVs in the low salinity areas and how it is more difficult to monitor because of TSS, chlorophyll *a*, CDOM (colored dissolved organic matter) and other things that are encountered in low salinity areas that are not in the high salinity areas. The rapid assessment surveys and the use of sentinel sites were described. He discussed climate change and its impacts on SAVs.

Emory asked about declines of SAV in the Sandy Point area. Kenworthy explained that as nitrogen, and chlorophyll *a* increased, light availability to the plants decreased. This can be exacerbated by cyanobacteria blooms.

**Kenworthy presentation included an updated percentage of loss of SAV in the low salinity data. The issue paper will be updated with the new information.*



Chairman Posey asked if *Ruppia* and *Halodule* will be able to keep up with climate changes. Kenworthy explained that he would expect *Halodule* to take over. Because *Ruppia* can be very abundant and occurs in a broad range of environmental conditions, it may be important in the future. The group also discussed species shifts in both SAV and in aquatic life that use the SAV.

BREAK

Chairman Posey called a 10-minute break.

NC SALT MARSHES: THREATS AND CONSERVATION NEEDS

Carolyn Currin (NOAA-NCCOS) presented information on threats and conservation needs of salt marsh and the importance they are in providing fish habitat, water quality enhancement, recreation opportunities, and storm protection. However, their extent is declining, due to the primary threats of marsh dieback during drought, erosion from wave energy, drowning due to sea level rise (SLR), and loss associated with coastal development. The lack of updated maps of NC marsh extent at the resolution needed makes tracking precise change in marsh extent difficult.

Currin discussed how drought has been linked to large marsh diebacks in the southeast U.S. and is predicted to increase in severity in the future. Observed marsh diebacks in NC have been linked to periods of drought, and can persist for a decade with high marsh, and marshes with limited tidal exchange, are most vulnerable.

Currin also discussed SLR and the predicted rate of SLR in the next century will inundate much of the current NC marsh extent. Marshes can adapt to SLR by two mechanisms; either by increasing their surface elevation at a rate similar to SLR or by migrating inland to occupy flooded lowlands. Studies of marsh surface elevation change in central NC show that about half of the 54 marsh sampling stations were able to add elevation similar to the long-term SLR rate of 3 mm/yr. However, only 2 sites had marsh stations that were able to keep up with the accelerated SLR rate. In these two cases, both were able to keep up with greater sediment inputs due to proximity to an inlet or location behind a sill in a high-energy site. She stated that sediment is key and most marshes do not have a good sediment supply.

Currin discussed marsh migration and the need to learn more about the process. An assessment of marsh habitat extent by Duke University modelers suggests that under low to moderate rates of SLR over the next 80 years, much of the current marsh locations will convert to open water. However, marsh migration into uplands can result in maintaining marsh extent, except under the highest SLR scenarios. Yet, this cannot occur unless migration corridors are available. Marshes rely on an external supply of sediment to increase elevation, allowing marshes to grow upward or facilitate migrating landward. She discussed erosion rates in NC and the relationship of fetch, with lower fetch areas having lower erosion rates. She noted that marsh vegetation reduces shoreline erosion rates but does not prevent it. Marshes in high fetch areas have less vegetation, which results in erosion and undercutting on the banks. Daily wave energy during low tides is a greater cause of marsh erosion than periodic large storm events, since water levels during storm events are generally high and pass over marsh, rather than scouring the marsh base. Storms are the primary way that sediment can get into the marsh. Right now there is not enough marsh to trap the sediment to maintain themselves, so conservation measures or management to ensure marsh migration are critical as sea level rises.



Currin concluded with some discussion of the use of living shorelines as a conservation measure. They are more widely used today than in the past. They do reduce erosion but can be a bit of a band aid. They will not protect large marsh systems. Beneficial use of dredge material is another approach is to keep sediment in the system to support marsh accretion. The identification and maintenance of marsh migration corridors is another important approach.

Emory stated that for SAV, total suspended solids (TSS) is the problem while the lack of TSS is the problem for marshes, and asked if someone could address this apparent conflict. Kenworthy stated that SAV is not naturally present in intertidal areas while marsh is and can only survive in the intertidal zone. Lack of suspended solids is good for SAV but it decreases the ability for marsh to accrete. He also noted that chlorophyll *a* levels were more problematic for SAV than TSS. Chairman Posey asked if TSS decreases, should we assume this is deleterious to the marsh? Currin noted that in general yes. However, Amanda Mueller (DWR) pointed out that the source, type, and location of sediment, and relative proximity to wetlands and SAV matters. For palustrine and fringing estuarine wetlands, there is sediment from upland sources, allowing wetlands to migrate upward and landward. The presence of marsh will trap sediment, benefitting subtidal SAV. Sediment input lower in the system is also needed for salt marsh. The reason for insufficient sediment in the lower estuary was not known and there was interest in discussing it further.

NUTRIENT MANAGEMENT STRATEGIES IN NC

Gannon presented information on nutrient management in NC. He reviewed the early nutrient management actions and talked about the phosphate detergent ban in 1988. This was considered a successful regulatory action. That, together with previous establishment of a chlorophyll *a* standard, Nutrient Sensitive Water (NSW) classification, point source controls, and agricultural BMPs, successfully reduced nitrogen and phosphorus loads in the Chowan River. However, mean summer chlorophyll *a* levels have slowly increased since those measures were put in place in the late 1970s and 1980s. The Clean Water Act (CWA), requires that the EMC set reduction goals for nutrient-impaired waters, establish plans for fair and reasonable reductions from point and nonpoint sources, and implement TMDLs. Modeling is done to determine the goals and reduction allocations. He discussed what drives algal events, their effects, nutrient sensitive water (NSW) criteria, and point source strategies. He reviewed the nutrient management strategies that include rules to address wastewater, agriculture, riparian buffer protection, new and existing stormwater, and nutrient trading. Gannon also discussed stormwater rules for new development and how agricultural reductions are implemented. He reviewed the impairment history of the Neuse and Pamlico rivers. 2014 chlorophyll *a* impairment data in the Pamlico River showed improvement in the mid-estuary, but it's uncertain why or how permanent that is.

Gannon reviewed the trends in nitrogen levels in the Chowan River where organic nitrogen was a problem. It was unclear what the problems were and it was suggested that there are larger forces at play. He updated the steering committee on the draft Chowan River Basinwide Plan, which is currently out for public comment and should be approved by next year. There are several recommended actions that include voluntary measures as well as regulatory measures.

Gannon then discussed the process for the Nutrient Criteria Development Plan (NCDP) and the pilot programs within it. The NCDP has selected the Albemarle Sound and Chowan River as their estuarine waters pilot. Through this process they will reevaluate response criteria to



nutrients and whether nitrogen or phosphorus numeric criteria are needed. They have selected SAV as a biological endpoint. The timeline is for the Scientific Advisory Committee (SAC) to provide final recommendations to the EMC by mid-2022 and have rulemaking complete by 2024. The CHPP Team will be coordinating with this effort to accomplish several of the key recommended actions in the SAV issue paper.

Emory asked about the success of Chesapeake Bay with nitrogen reduction and why NC did not have the same success. Gannon explained that Chesapeake Bay has been at it much longer and has much more resources than NC. Emory asked what the potential factors might be that are preventing the Neuse River water quality from improving. Hans Paerl (UNC-IMS) stated that another factor that impacts nutrient levels in NC is the frequency of storm events since the late 90s. From these storms, you see large pulses of nutrient loads as organic matter from multiple sources is flushed out. Increased frequency of heavy rain events and storms has led to increased flashiness of streams and creeks. Researchers are looking at the issue with NCSU to trace nutrient sources. Johnson mentioned the new Memorandum of Understanding (MOU) between NC and Virginia which hopefully this will lead to collaboration across the state lines.

Kenworthy asked about data for chlorophyll *a* and if any analysis has been done for Albemarle Sound. Gannon stated that there is chlorophyll *a* data that can support a determination. Currently, the sounds are meeting the chlorophyll *a* standard, despite frequent algal blooms. Jim Hawhee (DWR) stated that there is no phosphorus criteria but we have DO, pH, and chlorophyll *a* criteria. Baldwin stated that you need to have some information as a starting point and asked if anyone knew why organic nitrogen was changing. Gannon said they did not really know. Since the number of wastewater treatment plants are declining due to alternative methodology (land application) organic nitrogen may be more land-based and climate may be playing a role. In the Chowan system, high nitrogen levels occur near the lower southwest shoreline, and chlorophyll *a* is high in the upper river from near the Virginia border to around Winton. Between these two areas, levels are lower as algae take up nutrients. Marian Deerhake asked about the role of legacy sediments in fueling nitrogen levels. She noted that stream destabilization from development carries sediment downstream, and this is not addressed by stormwater rules.

Johnson gave a short update on the reclassification of the joint fishing waters. Johnson was told by WRC staff that there has been no further action. Wildlife Resources Commission has a new executive director and he is probably getting up to speed. The timeline for rules to go into effect is 2022.

PUBLIC COMMENT

No public comment.

ISSUES FROM COMMISSIONERS

No issues from commissioners

ADJOURN

Johnson will send out *information* regarding the date of the next meeting. **Motion by Pete Kornegay to adjourn. Seconded by Larry Baldwin. Motion approved by consensus.**

/plm

