



NORTH CAROLINA
Environmental Quality

ROY COOPER
Governor

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