



*Review of Draft Coastal Habitat Protection Plan 2021 Amendment,
with Recommended Actions*



DEPARTMENT OF ENVIRONMENTAL QUALITY

CHPP Steering Committee Meeting | Anne Deaton, Division Marine Fisheries | August 3, 2021



2021 CHPP Amendment

- The 2016 CHPP Source Document will continue to serve as the science document for the amendment
- Focus of the 2021 Amendment is on five priority issues
- Includes specific recommended actions
- Oyster restoration remains a high priority, but addressed through the NC Oyster Steering Committee



Why Care about Habitat Protection?

FISHERIES PRODUCTION

- Commercial and recreational fisheries valued at \$3.4-4.8 billion per year
- ~90% of NC fishery species estuarine dependent
- Culturally significant to NC

ECOSYSTEM SERVICES

- Water quality treatment
- Erosion control
- Storm protection
- Flood control
- Carbon sequestration
- Biodiversity
- Recreation/Tourism



2021 CHPP Amendment

Healthy Coastal Habitats Are Critical to NC's Fisheries



Plan Organization and Issue Papers



Ch. #	Title
ES	Executive Summary
1	Introduction
2	Implementation Progress 2016-2020
3	Climate Change and Coastal Habitat Resiliency
4	<i>Submerged Aquatic Vegetation (SAV) Protection and Restoration through Water Quality Improvements</i>
5	<i>Wetland Protection and Restoration through Nature-Based Solutions</i>
6	<i>Environmental Rule Compliance to Protect Coastal Habitats</i>
7	<i>Wastewater Infrastructure Solutions for Water Quality Improvement</i>
8	<i>Coastal Habitat Mapping and Monitoring to Assess Status and Trends</i>
9	Summary of Recommended Actions

Issue Paper: SAV Protection and Restoration through Water Quality Improvement

WHY IS THIS A CHPP PRIORITY ISSUE?

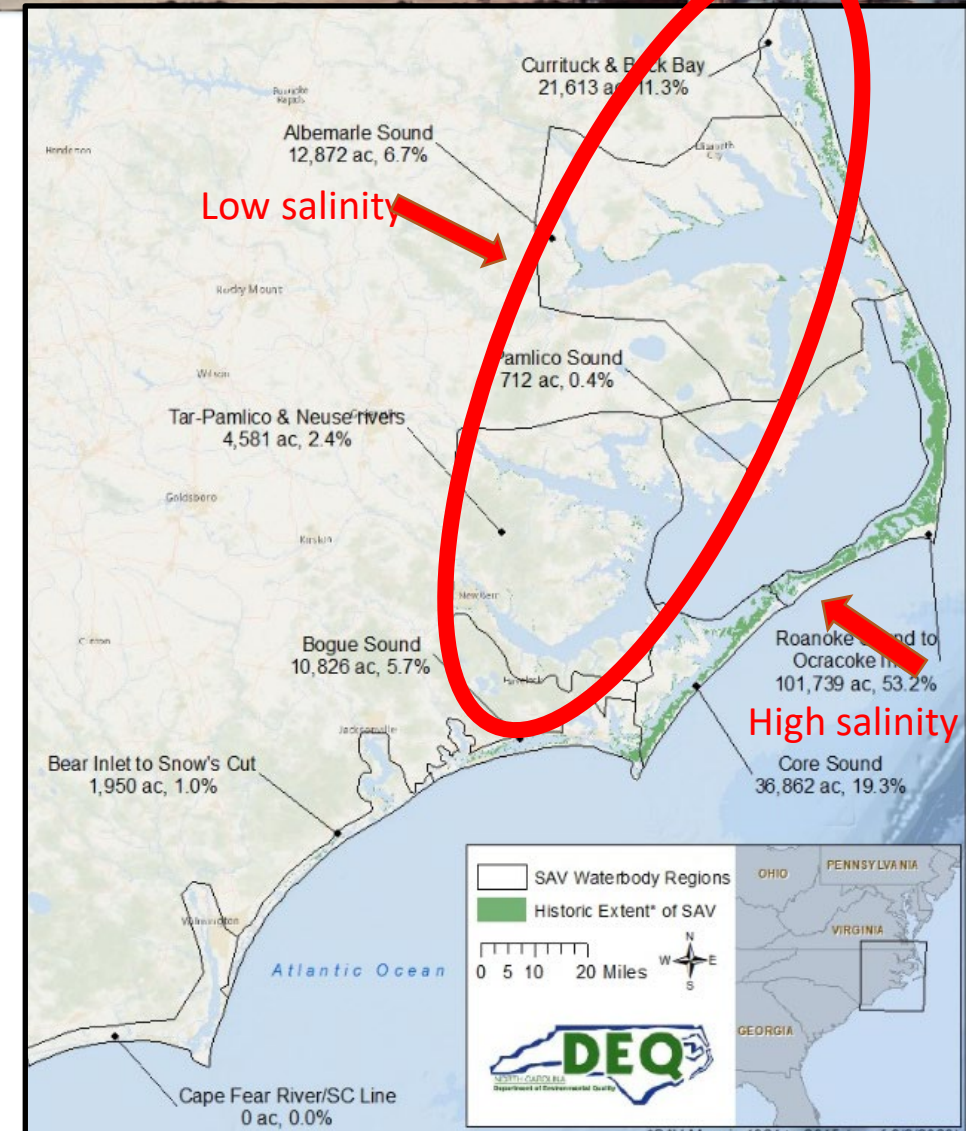


Valuable Ecosystem services:

- Fisheries production
- Water quality enhancement
- Sediment stabilization
- Carbon sequestration

Historical Extent:

191,155 acres
(1981-2015)

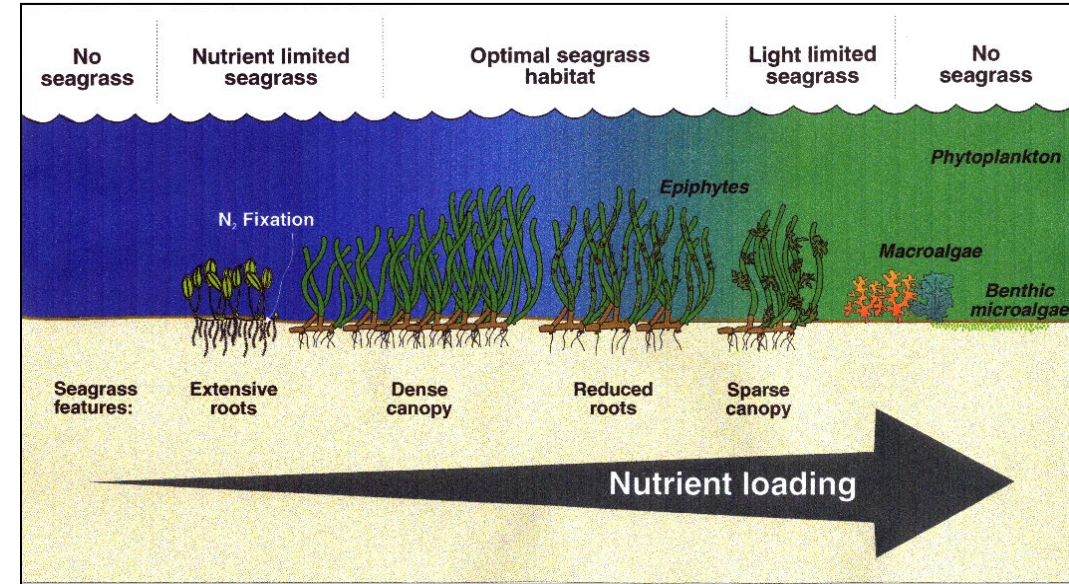


Submerged Aquatic Vegetation Issue Paper

WHY IS THIS A CHPP PRIORITY ISSUE?

Declines in both communities

- Water quality is greatest threat (nutrients and sediment)
- Water clarity improvements elsewhere have resulted in improved SAV (Chesapeake and Tampa bays)
- Multiple land use sources
- Climate change major concern too



Chowan River algal bloom public health advisory, 8/2/2021



Photo: NC DEQ

Submerged Aquatic Vegetation Issue Paper

Recommended Actions

Funding

4.1 \$	By 2023, DEQ will obtain recurring funding that includes the adequate amount of staff to successfully evaluate and meet the SAV acreage goals and implement all of the SAV recommended actions that contribute to meeting the goals.
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Planning

4.2	By 2022, DEQ will commit to protecting and restoring SAV to reach an interim goal of 191,155 acres coastwide with specific targets by SAV waterbody regions (Table 4.5; Figures 4.1-4.9).
4.3	By 2022, DEQ will form an interagency workgroup with NGOs, and local governments to inform and guide development of watershed restoration plans to protect, restore or replicate natural habitats (i.e., SAV, water quality, coastal habitats) and hydrology through natural and nature-based solutions.
4.4	By 2022, DEQ will form a workgroup with DWR, DEMLR , Soil and Water Conservation, local governments, and other partners to develop a plan to increase the use of BMPs related to water quality within the SAV waterbody regions by 50 percent (Table 4.5; Figures 4.1-4.9).

Submerged Aquatic Vegetation Issue Paper

Recommended Actions

Mapping and Monitoring

4.5 (Ch. 8) \$	By 2023, DEQ will develop and implement a full-scale assessment program to conduct coastwide SAV mapping and monitoring at regular intervals (≤ 5 years).
4.6 \$	By 2023, DWR will evaluate and prioritize the incorporation of shallow water sites ($< 1\text{m}$ mean lower low water (MLLW)) that currently or historically contain(ed) SAV into the statewide ambient monitoring system.

Submerged Aquatic Vegetation Issue Paper

Recommended Actions

Potential Rulemaking

4.7	By 2022, the Nutrient Criteria Development Plan (NCDP) Scientific Advisory Council (SAC) will evaluate recommending the EMC establish a water quality standard for light penetration, with a target value of 22 percent to the deep edge (1.7 m) of SAV for all high salinity SAV waterbody regions, and a light penetration target of 13 percent to the deep edge (1.5 m) for all low SAV waterbody regions (Table 4.5 and Figures 4.1-4.9).
4.8	By 2022, the NCDP's SAC will evaluate the chlorophyll a water quality standard and, as needed, recommend it be revised by the EMC to ensure protection of SAV in high and low salinity waterbody regions, beginning with the Albemarle Sound and Chowan River, and continuing with other waterbodies that support SAV (Table 4.5; Figures 4.1-4.9).
4.9	By 2024, EMC will adopt scientifically defensible nitrogen and/or phosphorus criteria if recommended through the NCDP process, to help protect and restore ~12,900 acres of low salinity SAV habitat in the Albemarle Sound SAV waterbody region and continuing with other waterbodies that support SAV.

Submerged Aquatic Vegetation Issue Paper

Recommended Actions

Research

4.10	By 2025, DWR will determine with assistance from research academia, the loading and sources of nutrients and sediments, their quantitative linkages to chlorophyll a concentrations, and their effect on water quality and SAV.
4.11	By 2022, NC and DEQ, through the Secretary of Emergency Management, will request more accurate estuarine bathymetry data from NOAA.
4.12	By 2022, DWR will request the NC Policy Collaboratory to investigate the impacts of agricultural practices and land use change on water quality within SAV waterbody regions, to determine types and location of BMPs needed to effectively improve water quality.

Submerged Aquatic Vegetation Issue Paper

Recommended Actions

Outreach

4.13	By 2022, DEQ Office of Education and Public Affairs will work with local governments and NGOs to start the development of public education and stewardship programs with social media campaigns and citizen science monitoring to increase public awareness of SAV's importance for fish habitat and other co-benefits, as well as instill public commitment to SAV conservation.
4.14	By 2022, DEQ through funding of NCSU by APNEP will provide an economic evaluation of the co-benefits SAV provides to the coastal economy in terms of habitat for fish, waterfowl, wildlife, recreation, shoreline stabilization, water purification, and carbon sequestration.

<https://apnep.nc.gov/media/1912/open>



Issue Paper: Wetland Protection and Restoration through Nature-Based Solutions



WHY IS THIS A CHPP PRIORITY ISSUE?

Ecosystem services:

- Fisheries Production
- Water quality enhancement
- Flood control
- Erosion control
- Carbon sequestration
- Recreation
- Biodiversity



Concerns:

- Continuing losses to palustrine wetlands - agriculture, development, hydrologic alteration
- Additional losses due to shoreline erosion, shoreline hardening, sea level rise, saltwater intrusion



Wetland Issue Paper

Recommended Actions

Mapping and Monitoring

5.1 (Ch.8) \$	By 2023, DEQ will obtain state matching funds for the NOAA C-CAP program to map NC's Coastal Plain at 1m resolution and additional funding to expand coastal wetland monitoring conducted by DWR and other state agencies.
5.2 (Ch.8) \$	By 2024, DEQ will pursue the use of emerging technologies such as data fusion or deep learning neural networks, that rely on a combination of satellite imagery, drone imagery, and field verification for coastal wetland mapping and change analyses.
5.3 (Ch.8)	By 2022, DEQ will form an interagency workgroup to develop a coastal wetland mapping and monitoring plan, including a minimum set of standardized metrics and a potential centralized location to store relevant reports and information.
5.4 (Ch.8) \$	By 2026, DEQ will determine the status and trends of coastal wetland acreage, condition, and function, based on the additional mapping and monitoring data obtained.

Wetland Issue Paper

Recommended Actions

Conservation

5.5	By 2022, DEQ will provide information to NC legislators regarding the need for increased appropriated funds for the three state conservation trust funds to increase conservation of critical wetland properties and critical corridors that will allow for future marsh migration.
5.6	By 2022, DEQ will actively participate in and support the development of a Southeast Regional Marsh Conservation Plan, which is a partnership with the Department of Defense along with federal, state, and private groups that have been initiated by the Southeast Partnership for Planning and Sustainability (SERPPAS).
5.7	By 2026, DEQ will work with researchers, federal and local governments and NGOs to facilitate marsh migration through the conservation of migration corridors, including participation in the Pew Charitable Trust-SERPPAS Salt Marsh Initiative.



Wetland Issue Paper

Recommended Actions

Restoration/Living Shorelines

5.8	By 2022, DMF will determine potential mechanisms to prevent harvesting from living shorelines constructed with oysters.
5.9	By 2025, DEQ will determine if living shoreline projects can be built in a manner that qualifies for salt marsh or nutrient mitigation credits.
5.10 \$	By 2025, DEMLR and other divisions should increase education, outreach, and training to consultants, local government, and landowners for nature-based stormwater and watershed management strategies.



Wetland Issue Paper

Recommended Actions

Research

5.11 §	By 2024, DEQ should partner with other organizations to facilitate coastwide completion or enhancement of coastal vulnerability assessment tools, such as living shoreline siting, and marsh migration and wetland restoration prioritization.
5.12	Determine optimal parameters for thin layer sediment deposition to ensure wetland success.
5.13	Assess trends in salt marsh elevation, inundation, and distribution to prioritize areas for wetland restoration.
5.14	Determine the impact of degrading plastics and marine debris on wetlands, sediment, and the benthos.
5.15	Research the nutrient (nitrogen, phosphorus) reduction benefits provided by living shorelines and use that information to provide incentives for living shoreline projects.
5.16	Study the effects of silvicultural timber harvesting in palustrine (bottomland swamp) forests on hydrology, water quality, and wetland condition; include assessment on the efficacy of forestry BMPs to minimize ecological impacts.
5.17	By 2022, DEQ should support efforts to incorporate coastal wetlands into NC's Greenhouse Gas (GHG) Inventory.

Environmental Rule Compliance to Protect Coastal Habitats



WHY IS THIS A CHPP PRIORITY ISSUE?

- Insufficient number of staff in DWR and DEMLR in coastal regions to conduct follow-up compliance inspections
- Non-compliance leads to increased wetland loss and water quality degradation
- With increasing development and water quality degradation, need to protect wetlands from unpermitted impacts
- Compliance shown to improve when staff conduct random inspections



Environmental Rule Compliance Issue Paper

Recommended Actions

Funding

6.1 \$	By 2023, through legislative appropriations or budget reallocations, DEQ will increase staffing in DWR and DEMLR by a minimum of two staff (one per office, per agency) in the Washington and Wilmington regional offices.
6.2	By 2023, DEQ will seek funding through grants or other sources to supplement state-appropriated compliance efforts.

Outreach

6.3	By 2022, DWR and DEMLR should work with the DEACS to establish a public portal on DEQ's website that provides information on compliance issues, allows the public to submit complaints, and potentially highlights a list of repeat violators.
6.4	By 2023, DWR, DEMLR, and DCM should develop and hold outreach workshops for NGOs, HOAs, and other interested public, on rules related to land disturbing activities that affect wetlands and water quality, and how to identify violations to improve the effectiveness of public complaints.
6.5	By 2022, DEMLR will initiate and continue outreach to stormwater permit holders on rules and required maintenance of stormwater control measures and structures.

Wastewater Infrastructure Solutions for Water Quality Improvement

WHY IS THIS A CHPP PRIORITY ISSUE?

- Inflow and infiltration (I & I) is prevalent and the leading cause of sewer system breaks/spills
- More than 24 million gallons of raw sewage reached coastal surface waters 2015-2019
- Raw sewage causes acute water quality problems
- Climate change will compound the issue
- Water quality can be enhanced by repairing and maintaining failing wastewater infrastructure



Photo Credit: NC Health News

Wastewater Infrastructure Issue Paper

Recommended Actions

Planning

7.1	By 2024, DEQ will request that funding programs under the purview of the SWIA give additional priority for projects with a direct benefit to sensitive estuarine waters, including SA waters, fish nursery areas, and impaired waters, particularly those adversely impacting estuarine fish and their habitat.
7.2	By 2025, DWR will develop additional incentives to encourage improved maintenance of the collection system (e.g. incentivize owners and operators of wastewater lines for both existing systems and potential new systems to adopt construction designs that minimize the potential for sewer spills over the long-term).
7.3 \$	By 2025, DCM, DWR, and <u>DWI</u> will work with NC Office of Recovery and Resiliency (NCORR) and local governments in the coastal counties to develop strategies regarding flood-proofing wastewater infrastructure; siting new and relocating existing infrastructure away from sensitive estuarine waters and floodplains; upgrading sewer infrastructure; and develop strategic priorities for public and natural infrastructure improvements

Wastewater Infrastructure Issue Paper

Recommended Actions

Potential Rulemaking

7.4	By 2023, DWR will evaluate modifications of EMC rules to require deemed permitted collection systems under select criteria (e.g. 100,000 or more GPD) to have a certified operator as an Operator in Responsible Charge (ORC). DWR shall provide an update on this evaluation effort to the Water Quality Committee in approximately one year.
7.5	By 2023, DWR will investigate modification of EMC rules to require deemed permitted collection systems to be cleaned annually on a systematic basis (e.g. 3 to 5 years). The DWR shall provide an update on this evaluation effort to the Water Quality Committee in approximately one year.

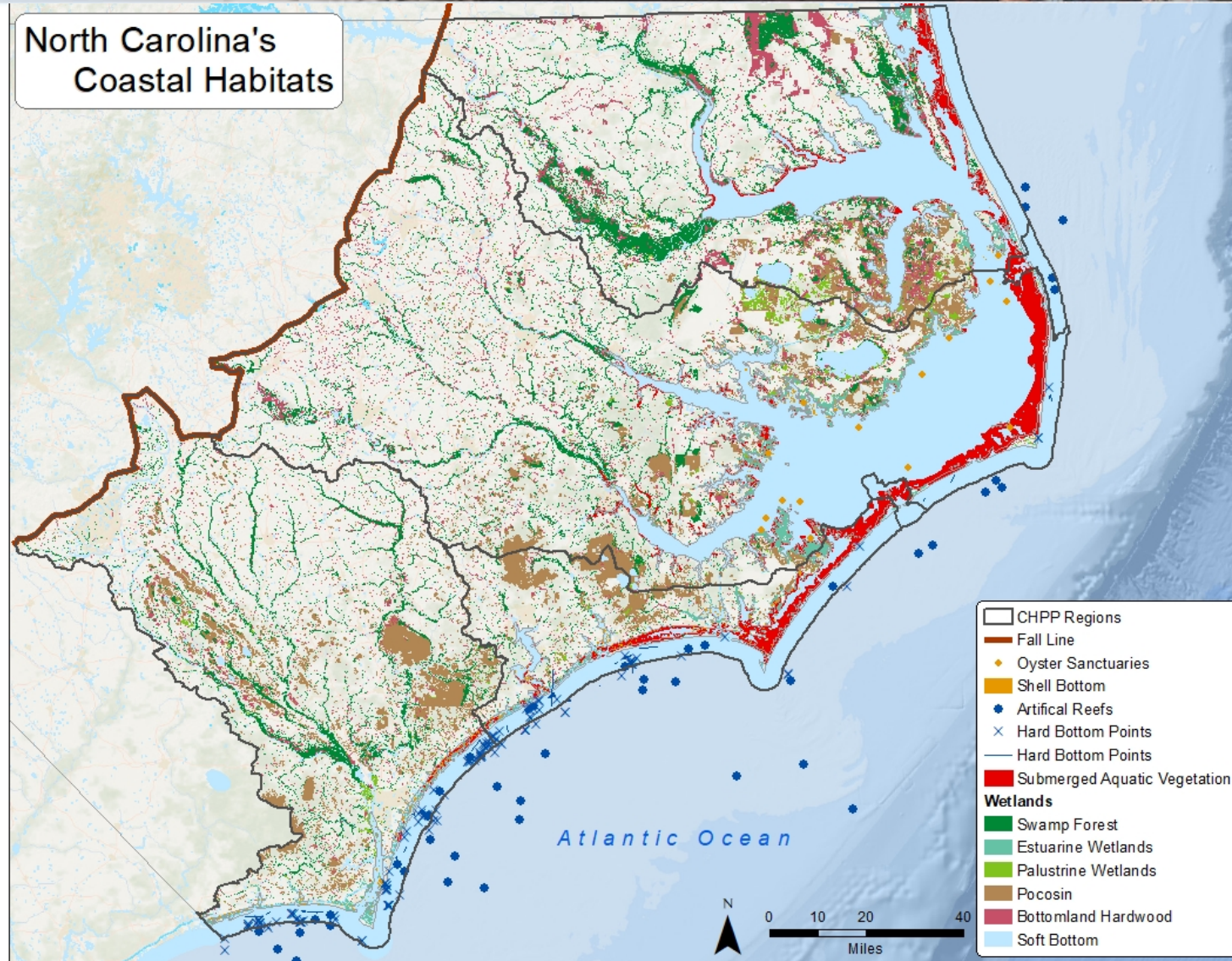
Research

7.6	Prioritize research on alternative wastewater collection system designs that may be better suited for coastal conditions (i.e., alternative sewer systems, composting toilets).
7.7	Evaluate the feasibility of re-designing and re-engineering existing systems that are inadequately protecting ground and surface water quality.

Coastal Habitat Mapping and Monitoring to Assess Status and Trends

WHY IS THIS A CHPP PRIORITY ISSUE?

- Fish habitats are cornerstone to healthy estuarine fish, waters, and coastal economy
- Very limited long-term funded habitat monitoring programs
- Regular monitoring is needed to know status of habitats and where to target actions



Habitat Mapping and Monitoring Issue Paper

Recommended Actions

Planning

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| 8.1 | By 2022, convene interagency workgroups of DEQ agency staff, academics, and subject matter experts by coastal habitat type (i.e., water column, shell bottom, SAV, wetlands, hard bottom, and soft bottom) to define indicator metrics and identify data gaps and monitoring needs for the ability to determine long-term status and trends of coastal habitats and the estuarine ecosystem. |
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Outreach

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| 8.2 | By 2026, develop a document determined by the workgroups to communicate the ecosystem conditions of NC to the public. |
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Habitat Mapping and Monitoring Issue Paper

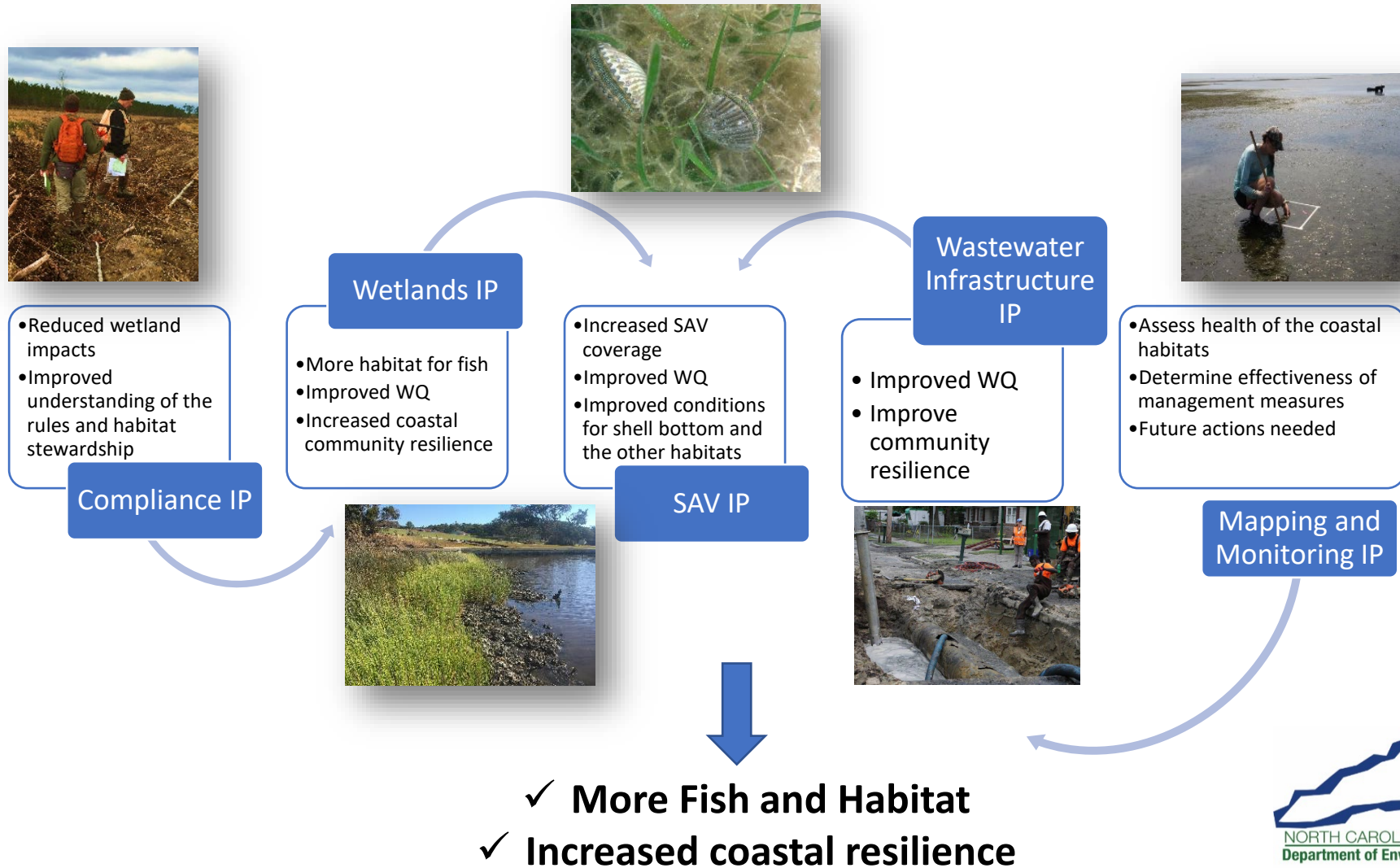
Recommended Actions

Mapping and Monitoring

8.3 \$	By 2023, DWR will evaluate and prioritize estuarine ambient monitoring system sites to address gaps in spatial, habitat, or parameter coverage.
8.4	By 2022, DWR will update standardized procedures for algal bloom investigations and evaluate the potential to cross-train other DEQ divisions to perform estuarine and marine investigations.
8.5	By 2023, DMF will develop a monitoring strategy to determine how best to map natural hard bottom reefs in NC state waters and monitor the condition of both natural and artificial reefs.
8.6	By 2023, DWR will examine the feasibility of expanding the benthic macroinvertebrate sampling to address spatial gaps in assessing the estuarine soft bottom benthic community condition.
n/a	<i>Refer to SAV and Wetland Issue Papers for mapping and monitoring recommended actions (See RA # 4.5, 5.1-5.4)</i>

CHPP 2021 Amendment

Recommended Actions of Five Issue Papers To Benefit Entire System



QUESTIONS?

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CHPP Information and
Meeting Materials:

[http://portal.ncdenr.org/web/
mf/habitat/chpp/07-2020-
chpp](http://portal.ncdenr.org/web/mf/habitat/chpp/07-2020-chpp)

