CHAPTER 9. MANAGEMENT RECOMMENDATIONS

9.1 INTRODUCTION

The discussions of the six major habitat types and habitat systems in the preceding chapters demonstrate the importance of coastal fish habitats, threats to those habitats, and the need to take actions to achieve the stated goal of the Coastal Habitat Protection Plan as provided by the North Carolina General Assembly: "long-term enhancement of coastal fisheries associated with each coastal habitat." This chapter provides management recommendations based on scientific studies cited in chapters 2 – 8, deliberations of the Environmental Management, Coastal Resources, Marine Fisheries and Wildlife Resources commissions, and citizen input (verbal comments received in person or by telephone; written comments received in person or via mail and e-mail) from three public meetings held during the summer of 2010, as well as additional comments obtained during the CHPP process. The commission representation formed the CHPP Steering Committee or CSC (Appendix B).

9.2. PUBLIC INPUT

In 2003 and 2004, the public cited coastal development as the issue most needing immediate attention, followed by enforcement of existing statutes, rules, and permit conditions, and then environmental education and research. Threats associated with development included polluted stormwater runoff, wastewater discharges, and wetland filling. Meeting attendees agreed that existing laws and rules might be sufficient for habitat protection, but that they are not adequately enforced largely due to insufficient staffing and resources. Educating the public about the importance of coastal habitats and the threats they face was repeatedly mentioned as being critical for successful habitat protection and enhancement.

The public meetings in 2010 focused on what was done to address the recommendations in the 2005 CHPP and getting input on emerging and continuing priority issues of the 2010 CHPP. Three meetings were held in Morehead City (June 8), Wilmington (June 4), and Manteo (June 17). Two letters were also received during the comment period, which closed on July 30, 2010. Groups represented at the public meetings or through comments included Pender Watch, North Carolina Coastal Federation, and Business Alliance for a Sound Economy (BASE). When asked what they considered the highest priority recommendations, answers included continuing to enforce existing rules, address cumulative impacts, prevent pollution, endocrine disruptors, no offshore drilling, increase adaptation to sea level rise, greater encouragement and interagency cooperation to implement Low Impact Development (LID) techniques to meet stormwater rule goals, since they are considered the best available technology standard for reducing polluted stormwater runoff. Another comment noted the need for more specific recommendations to address failing septic systems since that is a factor in stormwater runoff, as well as funding for enforcement of existing rules.

There is currently an ongoing DENR Interagency Inspection Task Force, lead by Shellfish Sanitation Office, to examine the issue of compliance and inspections to reduce nonpoint pollution from failing septic systems and other sources. Recommendations 4.5d and 4.6b address LID, but more coordination and outreach efforts are needed to increase use. This could be addressed through establishment of a CSC workgroup rather than modification of the existing recommendations. Substantive public comments and CSC consensus regarding possible modifications to recommendations included:

Rec # 3.2 – specifically state to maintain the state law banning hardened structures on ocean shorelines, rather than leaving the language vague as currently worded. This would be consistent with the literature findings in the CHPP. The recommendation was not changed due to a CSC member objection.

> <u>CSC response (Commissioner Bob Emory)</u>: "The committee is aware that the CRC study on terminal groins was inconclusive and our recommendation to the General Assembly was similarly inconclusive. As a matter of fact, at the CRC's next meeting there will be a discussion regarding

> just exactly what our recommendation meant. There is significant disagreement among some Commissioners. My support for retaining a hardened structure ban aside, a definitive statement in the CHPP report would meet resistance from CRC members; I honestly don't know how many at this point."

Rec # 3.4 – strengthen the wording to simplify and promote use of marsh sills and other alternatives by stating these structures should be preferred rather than just considered. This is supported in the CHPP literature and would be consistent with the conclusions of the Estuarine Biological and Physical Processes Work Group report. The MFC's Habitat and Water Quality Advisory Committee revised wording was accepted by the CSC:

Protect estuarine and public trust shorelines and shallow water habitats by revising shoreline stabilization rules that include consideration of erosion rates and prefer alternatives to vertical shoreline stabilization measures that maintain shallow nursery areas.

Rec. # 3.6 – reword to clearly state that offshore drilling is incompatible with NC's coastal policy because of potential habitat effects. Due to the Deepwater Horizon oil spill, additional research on the effect of oil spills is estuarine waters was done and incorporated into the CHPP text. The literature has documented negative effects to the water column, estuarine wetlands, shellfish, and SAV, as well as ocean hard bottom, and soft bottom. The recommendation was not changed due to a CSC member objection.

> CSC response (Commissioner Anna Beckwith): "I would be cautious about the oil drilling. While I personally oppose drilling for oil off our coast and would personally love to see <a recommendation change>, I would be concerned that it would be considered an emotional reaction to the current situation." (Commissioner Bob Emory) "I prefer to leave the energy development language as it is, without making a statement about banning offshore oil exploration. We should be informed by upcoming investigation in the Gulf."

9.3. RECOMMENDATIONS

The 2010 CHPP update identifies numerous management needs as either accomplished, progressing, without progress, or emerging/clarified, as shown in the "Management needs and accomplishments" sections of chapters 2 – 7. Major accomplishments and progress on 2005 CHPP goals and recommendations was presented in the Introduction chapter. There were also numerous discontinued items because they were found to be redundant, too vague, or insignificant. The management needs information was summarized for the CSC in March 2010. The CHPP staff reviewed the 2010 management needs to determine if the existing goals and recommendations established in the 2005 CHPP adequately addressed all the specific management needs. The results suggested some necessary revision of the goals/recommendation language. The CSC reviewed the changes during their subsequent meeting in April. The revised goals and recommendations are listed below and in Table 9.1, in no particular order of priority.

Making further progress on the goals and recommendations will require the continuing development of CHPP Implementation Plans (IPs). The IPs are developed on a 2-year schedule and include action items for all the participating commissions and their supporting agencies. Prior IPs have included numerous items that address the 2005 goals and recommendations but were not specifically included as management needs in the habitat chapters. The management needs italicized in the habitat chapters are therefore included as a guide for developing implementation actions that combine the influences of opportunity, importance to fish habitat, and socio-economic realities. Some action items in the 2009-2011 CHPP Implementation Plan are listed and described in Appendix J. Contact the DMF Habitat Section (1-252-808-8066) for the most up-to-date Implementation Plans.

GOAL 1. IMPROVE EFFECTIVENESS OF EXISTING RULES AND PROGRAMS PROTECTING COASTAL FISH HABITATS

During the 2005 public meetings, the most common request was to enforce existing rules before implementing new rules. With additional coordination, enforcement, and education, many of the existing rules and programs regarding habitat protection could be much more effective. Despite progress made on this goal during 2005-2010, the following actions are still needed for existing management strategies to be effective:

- Continue to enhance enforcement of, and compliance with, Coastal Resources Commission (CRC), Environmental Management Commission (EMC), Marine Fisheries Commission (MFC), and Wildlife Resources Commission (WRC) rules and permit conditions.
- Coordinate and enhance water quality, physical habitat, and fisheries resource monitoring (including data management) from headwaters to the nearshore ocean.
- Enhance and expand educational outreach on the value of fish habitat, threats from land-use and human activities, climate change, and reasons for management measures.
- Coordinate rulemaking and data collection for enforcement among regulatory commissions and agencies.

Some management needs identified in the 2010 CHPP suggested the inclusion of additional recommendations under the goal of improving existing rules and programs. The new recommendations include:

- Develop and enhance assessment and management tools for addressing cumulative impacts.
- Enhance control of invasive species with existing programs.

GOAL 2. IDENTIFY, DESIGNATE, AND PROTECT STRATEGIC HABITAT AREAS

To identify and protect Strategic Habitat Areas in a science based manner, mapping and monitoring of all fish habitat is necessary to assess distribution and condition. Research is also needed on the effect of anthropogenic activities on fish habitat, as well as ecological linkages between fish and habitat. With mapping, monitoring, and ecological and threats assessments available, SHAs can be accurately identified. Strategic Habitat Area assessments and subsequent nominations are not yet completed. The need for more up-to-date data on habitat distribution and quality, along with current alterations to the habitat, is a major theme of the CHPP update. The following regulatory and non-regulatory management actions continue to be recommendations:

- Support Strategic Habitat Area assessments by:
    - Coordinating, completing, and maintaining baseline habitat mapping (including seagrass, shell bottom, shoreline, and other bottom types) using the most appropriate technology.
    - Selective monitoring of the status of those habitats, and
    - Assessing fish-habitat linkages and effects of land use and human activities on those habitats
- Identify, designate, and protect Strategic Habitat Areas.

GOAL 3. ENHANCE HABITAT AND PROTECT IT FROM PHYSICAL IMPACTS

Large historical losses of wetlands, oysters, and SAV have occurred in North Carolina in the past from various causes. Habitats continue to be degraded or lost at a smaller but cumulatively significant scale from certain development, water dependent and fishing activities. Direct and indirect impacts may occur due to unauthorized impacts, impacts too small to require a permit, indirect and unmitigated impacts of permitted activities, and unsuccessful mitigation. The following regulatory and non-regulatory measures continue to be recommendations:

- Expand habitat restoration in accordance with ecosystem restoration plans, including:
    - Creation of subtidal oyster reef no-take sanctuaries.
    - Re-establishment of riparian wetlands and stream hydrology.
    - Restoration of SAV habitat and shallow soft bottom nurseries.
    - Developing compensatory mitigation process to restore lost fish habitat functions.
- Sustain healthy barrier island systems by maintaining and enhancing ecologically sound policies for ocean and inlet shorelines and implement a comprehensive beach and inlet management plan that provides ecologically based guidelines to protect fish habitat and address socio-economic concerns.
- Protect habitat from fishing gear effects through improved enforcement, establishment of protective buffers around habitats, modified rules, and further restriction of fishing gears, where necessary.
- Protect estuarine and public trust shorelines and shallow water habitats by revising shoreline stabilization rules to include consideration of erosion rates and prefer alternatives to vertical shoreline stabilization measures that maintain shallow nursery habitat.
- Protect and enhance habitat for migratory fishes by:
    - a) Incorporating the water quality and quantity needs of fish in water use planning and rule making.
    - b) Eliminating or modifying obstructions to fish movements, such as dams and culverts, to improve fish passage.

Some management needs identified in the 2010 CHPP suggested the inclusion of additional recommendations under the goal of protecting habitat from physical impacts. The new recommendations include:

- Ensure that energy development and infrastructure is designed and sited in a manner that minimizes negative impacts to fish habitat, avoids new obstructions to fish passage, and where possible provides positive impacts.
- Protect important fish habitat functions from damage associated with activities such as dredging and filling.
- Develop coordinated policies including management adaptations and guidelines to increase resiliency of fish habitat to climate change and sea level rise.

GOAL 4. ENHANCE AND PROTECT WATER QUALITY

Because all fish habitats are connected and influenced by the water column, maintaining and restoring water quality is the basic component of habitat protection and enhancement. Water quality stressors include toxins, excess nutrients and sediment, and bacteria. Sources of these stressors include nonpoint runoff from land-based activities, point source discharges, and spills and failures of wastewater treatment. Alterations to water flow through intakes, discharges, impoundments, and obstructions can also degrade habitat functions. Despite numerous improvements in the management of water-born pollutants, there continue to be areas for improvement, as well as emerging issues. Additional recommendations are related to the emerging threat of endocrine disrupting chemicals. The following regulatory and non-regulatory management measures are still necessary to address a diversity of point and non-point pollution sources:

Point sources

- Reduce point source pollution discharge by:
    - a) Increasing inspections of discharge treatment facilities, collection infrastructure, and disposal sites.
    - b) Providing incentives for upgrading all types of discharge treatment systems.

c) Develop standards and treatment facilities that minimize the threat of endocrine disrupting chemicals on aquatic life.

- Adopt or modify rules or statutes to prohibit ocean wastewater discharges.
- Prevent additional shellfish and swimming closures through targeted water quality restoration and prohibit new or expanded stormwater outfalls to coastal beaches and to coastal shellfishing waters (EMC surface water classifications SA and SB) except during times of emergency (as defined by the Division of Water Quality's Stormwater Flooding Relief Discharge Policy) when public safety and health are threatened, and continue to phase-out existing outfalls by implementing alternative stormwater management strategies.

Non-point sources

- Enhance coordination with, and financial/technical support for, local government actions to better manage stormwater and wastewater.
- Improve strategies throughout the river basins to reduce non-point pollution and minimize cumulative losses of fish habitats through voluntary actions, assistance, and incentives, including:
  a) Improved methods to reduce pollution from construction sites, agriculture, and forestry.
  b) Increased on-site infiltration of stormwater.
  c) Documentation and monitoring of small but cumulative impacts to fish habitats from approved, un-mitigated activities.
  d) Encouraging and providing incentives for low impact development.
  e) Increased inspections of onsite wastewater treatment facilities.
  f) Increased water re-use and recycling.
- Improve strategies throughout the river basins to reduce non-point pollution and minimize cumulative losses of fish habitats through rule making, including:
  a) Increased use of effective vegetated buffers,
  b) Implementing and assessing coastal stormwater rules and modify if justified.
  c) Modified water quality standards that are adequate to support SAV habitat.
- Reduce non-point source pollution from large-scale animal operations by the following actions:
  a) Support early implementation of environmentally superior alternatives to the current lagoon and spray field systems as identified under the Smithfield Agreement and continue the moratorium on new/expanded swine operations until alternative waste treatment technology is implemented.
  b) Seek additional funding to phase-out large-scale animal operations in sensitive areas and relocate operations from sensitive areas, where necessary.
  c) Use improved siting criteria to protect fish habitat.

A management need identified by the CHPP Steering Committee was included as an additional recommendation under the goal of protecting habitat from water quality impacts. The new recommendation was to:

- Maintain adequate water quality conducive to the support of present and future aquaculture.

9.4. POSSIBLE FUNDING SOURCES

Implementation of the above recommendations will involve new program activities and revised priorities for existing programs within DENR and other agencies. Significant new funding is essential to expand and improve enforcement and compliance monitoring to fully implement existing laws and rules. Coordinating and expanding DENR biological, physical, and water quality monitoring and data management within the eight coastal river basins will provide local and state environmental managers and regulatory commissions, as well as the development, agriculture, and forestry communities, with data and analyses necessary to make informed decisions, and to evaluate the effects of those decisions. Implementation of coordinated interagency management requires a significant infusion of personnel,

equipment, and operations monies. These funds must be considered as an investment in greatly enhanced environmental productivity that will benefit all citizens and provide important dividends over the long-term. Possible funding sources listed below are suggestions only. No specific proposals have been developed, although the Saltwater Fishing License enacted by the North Carolina General Assembly in July 2004 includes a provision to fund habitat restoration activities.

- Request expansion funds from the North Carolina General Assembly.
- Apply for grant funding collected through sale and renewal of a Coastal Recreational Fishing License for applicable research on fish habitat
- Utilize existing environmental education and outreach programs
- Incorporate CHPP recommendations into North Carolina Clean Water Management Trust Fund priorities.
- Work with the DENR Ecosystem Enhancement Program to implement coastal habitat restoration projects.
- Develop partnerships to restore and protect coastal fish habitats through private and federal programs, such as the FishAmerica Foundation, Restore America's Estuaries, NOAA Restoration Center, and the U.S. Fish and Wildlife Service.
- Seek direct federal funding through the U.S. Congress, similar to funding provided for the Chesapeake Bay program.
- Seek regional funds available through participation in National Fish Habitat Initiative partnerships and alliances.
- Apply for grant funding through other environmental and habitat restoration grants.
- Establish severance fees for commercial extraction of non-renewable, natural resources from coastal lands and waters and utilize such funds to enhance, protect, restore, and manage coastal fisheries resource habitats.
- Establish a Coastal Fish Habitat Protection Fund supported by impact fees on development in the vicinity of coastal fish habitat

Table 9.1. Recommendations for the long-term enhancement of coastal fisheries associated with coastal habitats. Note: * signifies new recommendation.

Reference No.	Recommended actions to protect, enhance, restore, and manage coastal fish habitats	Responsible commission or agency [Lead group(s) in bold]	Rule-making?
GOAL 1. IMPROVE EFFECTIVENESS OF EXISTING RULES AND PROGRAMS PROTECTING COASTAL FISH HABITATS			
1.1	Continue to enhance enforcement of, and compliance with, Coastal Resources Commission (CRC), Environmental Management Commission (EMC), Marine Fisheries Commission (MFC), and Wildlife Resource Commission (WRC) rules and permit conditions.	**CRC/DCM**, **EMC/DWQ**, **MFC/DMF**, CHS, SCC, WRC, DFR, DLR, S&WCC	☑
1.2	Coordinate and enhance water quality, physical habitat, and fisheries resource monitoring (including data management) from headwaters to the nearshore ocean.	**DENR**, DMF, DWQ, DCM, WRC	☒
1.3	Enhance and expand educational outreach on the value of fish habitat, threats from land-use and human activities, climate change and reasons for management measures.	**DENR**, WRC	☒
1.4	Coordinate rulemaking and data collection for enforcement among regulatory commissions and agencies.	EMC, CRC, MFC, DENR, WRC, SWCC, DFR	☑
1.5*	Develop and enhance assessment methodology and management tools for addressing cumulative impacts.	**CRC/DCM**, **EMC/DWQ**, **MFC/DMF**, CHS, SCC, WRC, DFR, DLR, S&WCC, APNEP, DENR	☑
1.6*	Enhance control of invasive species with existing programs.	DENR, WRC	☑
GOAL 2. IDENTIFY, DESIGNATE, AND PROTECT STRATEGIC HABITAT AREAS			
2.1	Support Strategic Habitat Area assessments by: a) coordinating, completing, and maintaining baseline habitat mapping (including seagrass, shell bottom, shoreline, and other bottom types) using the most appropriate technology b) selective monitoring of the status of those habitats c) assessing fish-habitat linkages and effects of land use and human activities on those habitats.	**DMF**, DCM, DWQ, DENR, WRC	☒

Reference No.	Recommended actions to protect, enhance, restore, and manage coastal fish habitats	Responsible commission or agency [Lead group(s) in bold]	Rule-making?
2.2	Identify, designate, and protect Strategic Habitat Areas.	**DENR**, CRC/DCM, EMC/DWQ, MFC/DMF, WRC	☑
GOAL 3. ENHANCE HABITAT AND PROTECT IT FROM PHYSICAL IMPACTS			
3.1	Expand habitat restoration in accordance with restoration plan goals, including: a) creation of subtidal oyster reef no-take sanctuaries b) re-establishment of riparian wetlands and stream hydrology c)* restoration of SAV habitat and shallow soft bottom nurseries d)* develop compensatory mitigation process to restore lost fish habitat function	**DMF**, EEP, CRC, WRC?	a) ☒ b) ☒ c) ☒ d) ☑
3.2	Sustain healthy barrier island systems by maintaining and enhancing ecologically sound policies for ocean and inlet shorelines and implement a comprehensive beach and inlet management plan that provides ecologically based guidelines to protect fish habitat and address socio-economic concerns.	**CRC/DCM,** EMC/DWQ, MFC/DMF, DWR, WRC, DENR	☑
3.3	Protect habitat from fishing gear effects through improved enforcement, establishment of protective buffers around habitats, modified rules, and further restriction of fishing gear where necessary.	**MFC/DMF**	☑
3.4	Protect estuarine and public trust shorelines and shallow water habitats by revising shoreline stabilization rules to include consideration of erosion rates and prefer alternatives to vertical shoreline stabilization that maintain shallow nursery habitats.	**CRC/DCM, DWQ/EMC**	☑
3.5	Protect and enhance habitat for migratory fishes by: a) incorporating the water quality and quantity needs of fish in water use planning and rule making. b) eliminating or modifying obstructions to fish movements, such as dams and culverts, to improve fish passage.	**DENR**, EMC, DWQ, DWR, WRC, DMF	a) ☑ b) ☒
3.6*	Ensure that energy development and infrastructure is designed and sited in a manner that minimizes negative impacts to fish habitat, avoids new obstructions to fish passage, and where possible provides positive impacts.	CRC/DCM, EMC/DWQ	☑
3.7*	Protect important fish habitat functions from damage associated with activities such as dredging and filling.	CRC/DCM, EMC/DWQ	☑

Reference No.	Recommended actions to protect, enhance, restore, and manage coastal fish habitats	Responsible commission or agency [Lead group(s) in bold]	Rule-making?
3.8*	Develop coordinated policies including management adaptations and guidelines to increase resiliency of fish habitat to climate change and sea level rise.	DENR, WRC	☑
GOAL 4. ENHANCE AND PROTECT WATER QUALITY			
4.1	Reduce point source pollution discharges by a) increasing inspections of wastewater treatment facilities, collection infrastructure, and disposal sites, b) providing incentives for upgrading all types of discharge treatment systems, and c)* developing standards and treatment methods that minimize the threat of endocrine disrupting chemicals on aquatic life.	**EMC**/ DWQ, CPH/DEH	a) ☒ b) ☑ c) ☑
4.2	Adopt or modify rules or statutes to prohibit ocean wastewater discharges.	**EMC**	☑
4.3	Prevent additional shellfish closures and swimming advisories through targeted water quality restoration and prohibit new or expanded stormwater outfalls to coastal beaches and to coastal shellfishing waters (EMC surface water classifications SA and SB) except during times of emergency (as defined by the Division of Water Quality's Stormwater Flooding Relief Discharge Policy) when public safety and health are threatened, and continue to phase-out existing outfalls by implementing alternative stormwater management strategies.	**EMC**/ DWQ, CPH/DEH, CRC/ DCM	☑
4.4	Enhance coordination with, and financial/technical support for, local government actions to better manage stormwater and wastewater.	**DENR**, DWQ, DCM, DEH	☒
4.5	Improve strategies throughout the river basins to reduce non-point pollution and minimize cumulative losses of fish habitat through voluntary actions, assistance, and incentives, including a) improved methods to reduce pollution from construction sites, agriculture, and forestry, b) increased on-site infiltration of stormwater, c) documentation and monitoring of small but cumulative impacts to fish habitats from approved, un-mitigated activities, d) encouraging and providing incentives for low-impact development, e) increased inspections of onsite wastewater treatment facilities, and f) increased water re-use and recycling.	**DENR**, EMC, CRC, DWQ, DCM, SCC, DLR, S&WCC, DS&WC, Dept. of Agriculture & Consumer Services, DFR	a) ☒ b) ☒ c) ☒ d) ☒ e) ☒ f) ☒

Reference No.	Recommended actions to protect, enhance, restore, and manage coastal fish habitats	Responsible commission or agency [Lead group(s) in bold]	Rule-making?
4.6	Improve strategies throughout the river basins to reduce non-point pollution and minimize cumulative losses of fish habitat through rule making, including a) increased use of effective vegetated buffers, b)* implement and assess coastal stormwater rules and modify if justified. c)* modify water quality standards to adequately support SAV habitat.	**EMC**, **CRC**, DWQ, DCM, SCC, DLR	a) ☑ b) ☒ c) ☑
4.8	Reduce non-point source pollution from large-scale animal operations by the following actions: a) support early implementation of environmentally superior alternatives to the current lagoon and spray field systems as identified under the Smithfield Agreement and continue the moratorium on new/expanded swine operations until alternative waste treatment technology is implemented, b) seek additional funding to phase-out large-scale animal operations in sensitive areas and relocate operations where necessary c) use improved siting criteria to protect fish habitat.	**General Assembly**, **DENR**, EMC, DWQ, S&WCC, DS&WC, Dept. of Agriculture & Consumer Services	a) ☑ b) ☒ c) ☑
4.7*	Maintain adequate water quality conducive to the support of present and future aquaculture.	**DENR**	☑