

CHAPTER 8. STRATEGIC HABITAT AREAS

While recognizing that all fish habitat is important, scientific data show that certain areas contribute disproportionately more to the viability of fishery and forage stocks, and populations of protected species. These areas of high importance should be the primary focus of habitat protection efforts. While the locations of many Strategic Habitat Areas (SHAs) in North Carolina are currently unverified, some are known (i.e., Primary Nursery Areas). Basic criteria for their location are presented in this chapter. This chapter also provides guidance for the identification, delineation, and designation processes. Location and delineation of these areas will be addressed in the eleven Management Unit plans following adoption of this Coastal Habitat Protection Plan.

8.1. DEFINITION

In 1998, the CRC, EMC, and MFC approved the following definition for Strategic Habitat Areas (SHAs):

“Specific locations of individual fish habitats or systems of fish habitats that have been identified to provide exceptional habitat functions or that are particularly at risk due to imminent threats, vulnerability, or rarity. These may include areas previously delineated by other state or federal agencies (AECs, HAPCs, ORWs, for example), or others as deemed necessary in an approved CHPP. Strategic Habitat Areas allow for site-specific management measures to be recommended.”

As noted in the SHA definition, management measures will be site-specific based on the fish population dependence on the habitat and the threats to habitat function. Some measures may be broader reaching than others due to the extent of SHAs in a particular Management Unit. As SHAs are identified, each commission and agency involved with activities impacting those areas will determine appropriate regulatory and non-regulatory actions necessary to protect these sites.

8.2. SYSTEM RELATIONSHIPS

In order to locate and delineate SHAs, the relationships among habitats must be considered. While all fish habitats are of ecological value to fish, numerous studies from a variety of areas show that certain spatial relationships among habitats maximize their ecological value to species in those habitats. For example, the overall abundance and biomass of finfish and other animals in tidal freshwater and estuarine creeks are enhanced by proximity of SAV beds to the marsh edge and depth of adjacent creeks (Rozas and Odum 1987a; Ellis 1995; Irlandi and Crawford 1997). Open-water zooplankton are more vulnerable to predation in close proximity to SAV beds providing refuge for small planktivorous fish than zooplankton occurring well away from such areas (SAFMC 1998a). In a Texas estuary, densities of small invertebrates (worms, shellfish, insects) in soft bottom are highest adjacent to emergent salt marsh vegetation in the spring (Rozas and Zimmerman 2000). Species using rocky outcrops in North Carolina marine systems were supported by benthic production from adjacent soft-bottom habitat (Posey and Ambrose 1994). Another example of the synergistic effect of habitat diversity is the co-occurrence of oyster reefs and SAV. In turbid areas with reduced SAV coverage, addition or enhancement of oyster reef habitat facilitates filtration of suspended particles from the water column, enhancing light penetration and improving conditions for SAV. Expansion of SAV habitat can lead to increased production of many fishes and invertebrates dependent on that habitat. These studies show how individual habitats can have a greater value to fish production as part of a system or complex of habitats than as isolated sites.

While delineating complexes of related bottom features is important, it is only part of Strategic Habitat Area delineation. Water circulation patterns play a crucial role in larval settlement and post-larval migration to nursery areas. Maintaining water flow among SHAs is therefore an important aspect of SHA management. The water column surrounding bottom features is also affected by water circulation patterns and land use/land cover characteristics affecting the source of that water. Habitat fragmentation

is a well-recognized problem affecting terrestrial wildlife populations (Saunders et al. 1991). In aquatic systems, Turner et al. (1999) found that SAV patch isolation had a significant influence on benthic community composition, suggesting that habitat fragmentation degrades aquatic systems as well as terrestrial systems. *Therefore, consideration should be given to reducing habitat fragmentation in the process of SHA designation.*

8.3. EXISTING HABITAT DESIGNATION AND PROTECTION PROGRAMS

There are no designated Strategic Habitat Areas in North Carolina at this time. However, several different approaches are used in North Carolina to identify, delineate, and designate ecologically important habitat areas. At the federal level, the Magnuson-Stevens Fishery Conservation and Management Act Reauthorization of 1996 [the Sustainable Fisheries Act (SFA)] requires the National Marine Fisheries Service (NMFS) to amend federal Fishery Management Plans (FMPs) to include provisions for protection of “Essential Fish Habitat” (EFH), defined as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” In North Carolina, salt marshes, oyster reefs, and seagrass beds are designated EFH for red drum and penaeid shrimp, species managed cooperatively by state and federal authorities. Similar to CHPP Strategic Habitat Areas, federal “Habitat Areas of Particular Concern” (HAPCs) are designated for areas of EFH that are particularly important for managed species or species complexes (SAFMC 1998a). North Carolina Primary Nursery Areas, first designated by the MFC in 1977, are similar in concept to HAPCs. However, the NMFS has designated very few HAPCs (none in North Carolina), while the MFC/DMF and WRC have designated tens of thousands of acres as nursery areas in North Carolina (see below). The state designations are well accepted by the various state and federal regulatory and permitting agencies, as well as by the public.

While the concept of HAPC is similar to that of CHPP Strategic Habitat Areas, there are some important differences. First, measures protecting HAPC are focused on federally funded activities. The scope of HAPC protection is also specific to individual species or groups of similar species and, therefore, does not take a watershed-based approach. For oceanic species managed by the federal government (e.g., tunas), this approach presents no obstacle, but for anadromous (e.g., American shad) and estuarine-dependent (e.g., southern flounder) species, which are of primary importance in North Carolina, the watershed approach best captures the nature of threats and impacts, as well as opportunities for restoration, enhancement, and preservation. Finally, the federal FMPs and their implementing rules do not apply to fishery species managed primarily under state authorities (e.g., oysters, spot).

The MFC and WRC have designated nursery areas since 1977 and 1990, respectively, based on field sampling. Approximately 162,000 acres of Coastal Fishing Waters are currently designated by the MFC as Primary, Secondary, and Special Secondary Nursery Areas. About 10,000 acres of Inland Fishing Waters in the coastal area are designated as Inland Primary Nursery Areas, as well as the following areas of the four main rivers draining to North Carolina’s coast:

- Roanoke River, U.S. 258 bridge to Roanoke Rapids Dam (35.5 stream miles, 57.1 km)
- Tar-Pamlico River, railroad bridge at Washington to Rocky Mount Mill Dam (90.2 stream miles, 145.2 km)
- Neuse River, Pitchkettle Creek to Milburnie Dam (160.6 stream miles, 258.4 km)
- Cape Fear River, Lock and Dam #1 to Buckhorn Dam (126.7 stream miles, 203.9 km).

Strategic Habitat Areas are not the same as MFC-defined “Critical habitat areas” [MFC Rule 15A NCAC 3I .0101(20)]. Strategic Habitat Areas may include critical habitat areas, but all critical habitat areas may not be SHAs. The term “Strategic Habitat Areas” is also used to avoid confusion with the term “Critical Habitat” used in the federal Endangered Species Act. There are currently no specific protections for MFC-designated Critical habitat areas within EMC or CRC rules. There are, however, specific protections for designated nursery areas included in the rules of all three commissions. For example, a MFC rule [15A NCAC 3N .0104] prohibits use of trawls, dredges, long haul and swipe seines, and

mechanical shellfishing gears in Primary Nursery Areas (PNAs). Once an area has been designated as a PNA by the MFC, the area also comes under protection of existing CRC rules [15A NCAC 07H .0208] and EMC rules [EMC rule 15A NCAC 02B .0301(c)] that protect physical and water quality parameters of PNAs as a class.

Four classes of Critical habitat areas were defined by a MFC rule in the early 1990s [MFC Rule 15A NCAC 3I (20) – submerged aquatic vegetation, shellfish producing areas, anadromous fish spawning areas, and anadromous fish nursery areas], but no specific areas have yet been designated under that rule. The DMF is currently delineating anadromous fish spawning areas based on sampling conducted from the early 1970s to the present for presentation to the MFC. Although neither CRC nor EMC rules offer any specific protection for anadromous fish spawning or nursery areas, regulatory protections exist for other critical habitat areas, such as submerged aquatic vegetation and shellfish producing areas. Beds of submerged aquatic vegetation are protected from the direct impacts of dredging and trawling (in some locations [MFC rule 15A NCAC 3J .0104]), and open shellfish harvesting areas are protected from new marina pollution and wastewater discharges [CRC rule 15A NCAC 07H.0208(5) (E)]. (More information regarding protection of fish habitat types is provided in Chapters 2 – 7). The piecemeal protection of individual habitat types fails to provide the holistic approach needed to protect entire systems of interdependent habitat. Designation and protection of Strategic Habitat Areas are meant to remedy this problem.

8.4. LOCATION AND DESIGNATION PROCESS

Strategic Habitat Areas will be delineated and recommended for designation in CHPP Management Unit plans. To protect these areas, the CRC, EMC, and MFC would enact appropriate management measures following the Administrative Procedures Act (G.S. 150B) for rulemaking. Recommendations for designation of SHAs will be developed based on existing DMF procedures for identifying PNAs and similar procedures by the other commissions and agencies. Government agencies or private parties may suggest potential areas. The process for identifying and designating SHAs should include the following tasks:

- ***Gather data and information to locate potential Strategic Habitat Areas*** by completing and maintaining habitat mapping (including seagrass, shell bottom, and other bottom types) using the most appropriate technology, monitoring the status of those habitats, and assessing the effects of land use and human activities on those habitats. Data on specific habitat areas (such as small watersheds, bays, or creek segments), fish populations and other natural resources, and potential threats in or near those specific habitat areas, will be compiled, including assessment of linkages between habitats and fisheries resources. Staff will evaluate indicators of biological or ecosystem health and integrity; distribution, status, and trends of the habitat; and threats to habitat quality and quantity.
- ***Identify Strategic Habitat Areas using ecologically based criteria*** developed from information gathered in step 1. The checklist outlined in section 8.5 should be utilized in identifying SHAs.
- ***Develop a spatial database for each proposed SHA.*** The boundaries of each SHA will be mapped and entered into a DENR Geographic Information System (GIS) database. The spatial database will also include habitat types, fish populations and other natural resources, existing protected areas (state, federal and local agencies' designated areas), and potential threats, as well as supporting research and sampling information.
- ***Present recommended Strategic Habitat Areas for designation by the appropriate commission.*** These recommendations will be part of the report associated with the proposed SHA.

Once an area is designated, existing rules and voluntary initiatives pertinent to that area should be compared to potential threats in order to identify any gaps in protecting its current strategic functions. This evaluation could lead to new rules to protect the area, or modifications of existing management

activities (i.e., enforcement, education, land acquisition).

8.5. STRATEGIC HABITAT AREA CHECKLIST

1. The area provides exceptional habitat function for coastal fisheries resources and/or related forage species. The coastal fisheries and forage species and stocks to be considered include the following:
 - a. All coastal fisheries species for which North Carolina, interstate, or federal FMPs have been adopted by the MFC, WRC, Atlantic States Marine Fisheries Commission (ASMFC), South Atlantic Fishery Management Council (SAFMC), or Mid-Atlantic Fishery Management Council (MAFMC),
 - b. Other species that support important commercial and recreational fisheries in coastal North Carolina,
 - c. Forage species important in the diets of the above species
2. The area is documented by specific data or scientific studies as highly important for spawning, nursery, foraging, corridor, or refuge functions.
3. Qualitative information indicates the area is highly important for spawning, nursery, foraging, corridor, or refuge functions.
4. The area is documented by specific data or literature as highly important based on
 - a. High and consistent species abundance
 - b. High and consistent species diversity
5. The area has been documented to provide important functions for state or federally listed protected aquatic animal or plant species.
6. The area is particularly vulnerable to human impacts or is rare (i.e., uncommon, limited geographic range).
7. The area is at particular risk due to demonstrable threats, as indicated by local development patterns, land use plans, or other applicable information.
8. The area is within an existing state, federal, or local government aquatic area designated to provide some level of protection against degradation or loss (designating authority in parentheses):
 - a. Primary nursery areas (MFC)
 - b. Critical habitat area (MFC)
 - c. Inland primary nursery areas (WRC)
 - d. Crab spawning sanctuaries (MFC)
 - e. Outstanding Resource Waters (EMC)
 - f. Wetlands of exceptional functional significance (DCM)
 - g. Habitat areas of particular concern (NMFS)
 - h. Significant natural heritage areas (Natural Heritage Program)
 - i. Sea turtle sanctuaries (MFC)
 - j. North Carolina coastal reserves (CRC)
 - k. National estuarine research reserves (NMFS)
9. Marine protected areas (NMFS)
10. The site is within an area set aside for natural resource management or protection (designating authority in parentheses):
 - a. State parks, natural and scenic rivers (North Carolina General Assembly)
 - b. National parks and seashores (United States Congress)
 - c. National wildlife refuges (United States Congress)
 - d. National forests (United States Congress)
 - e. State game lands (WRC)