

3. ESSENTIAL FISH HABITAT

3.1 Designations in the 2006 Consolidated Atlantic HMS FMP and its Amendments

The Magnuson-Stevens Act requires NMFS to identify and describe Essential Fish Habitat (EFH), minimize to the extent practicable the adverse effects of fishing on EFH, and identify other actions to encourage the conservation and enhancement of EFH. In 2009, NMFS completed the five year review and update of EFH for Atlantic HMS with the publishing of Amendment 1 to the 2006 Consolidated HMS FMP (June 12, 2009, 74 FR 288018). In Amendment 1, NMFS updated and revised existing identifications and descriptions of EFH for Atlantic HMS, designated a Habitat Area of Particular Concern (HAPC) for bluefin tuna in the Gulf of Mexico, and analyzed fishing and non-fishing impacts on EFH pursuant to Section 305(b) of the Magnuson-Stevens Act.

NMFS has also published a Final Environmental Impact Statement (FEIS) for Amendment 3 to the 2006 Consolidated HMS FMP (June 1, 2010, 75 FR 30484) which, among other things, added the smoothhound management group (consisting of *Mustelus canis* or smooth dogfish, *M. norrisi* or Florida smoothhound, and more recently *M. sinusmexicanus* or Gulf smoothhound) under Secretarial management. As a Magnuson-Stevens Act condition of adding a species to federal management, NMFS designated EFH for smoothhound using the same methodology employed in Amendment 1. Details, including a map of the final EFH, are available in Chapter 11 of the Amendment 3 FEIS.

On September 22, 2010, NMFS published an interpretive rule and final action (75 FR 57698) which, among other things, added roundscale spearfish (*Tetrapturus georgii*) to the definition of terms in the implementing regulations of the Magnuson-Stevens Act and the Atlantic HMS regulations, and defined EFH for roundscale spearfish. Roundscale spearfish and white marlin were managed as one species before this final action because the roundscale spearfish were not recognized as a distinct species until recently. Therefore, NMFS determined that the designation of roundscale spearfish EFH is the same as the designation of EFH for white marlin in Amendment 1 to the Consolidated HMS FMP.

In late 2013, NMFS initiated the next EFH five-year review.

EFH maps are presented in hard copy in Amendments 1 and 3 and electronically on the internet via spatial files in Adobe (.pdf) format. The electronic maps and downloadable spatial EFH files for HMS and all federally managed species can be found on the NMFS EFH Mapper at: <http://www.habitat.noaa.gov/protection/efh/habitatmapper.html>. A summary of the management history of HMS EFH is given in Table 3.1.

Table 3.1 Management History for HMS Essential Fish Habitat

FMP or Amendment	EFH and Species
1999 FMP for Atlantic Tunas, Swordfish, and Sharks	EFH first identified and described for Atlantic tunas, swordfish and sharks
1999 Amendment 1 to the Billfish FMP	EFH first identified and described for Atlantic billfish
2003 Amendment 1 to the FMP for Atlantic Tunas, Swordfish and Sharks	EFH updated for five shark species (blacktip, sandbar, finetooth, dusky, and nurse sharks)
2006 Consolidated Atlantic HMS FMP	Comprehensive review of EFH for all HMS. EFH for all Atlantic HMS consolidated into one FMP; no changes to EFH descriptions or boundaries
2009 Amendment 1 to the Consolidated Atlantic HMS FMP	EFH updated for all federally managed Atlantic HMS. HAPC for bluefin tuna spawning area designated in the Gulf of Mexico
2010 Amendment 3 to the Consolidated Atlantic HMS FMP	EFH first defined for smoothhound sharks (smooth dogfish, Florida smoothhound, and Gulf smoothhound)
2010 White Marlin/ Roundscale Spearfish Interpretive Rule and Final Action	EFH first defined for roundscale spearfish (same as white marlin EFH designation in Amendment 1)

3.2 Shark Nursery Grounds and Essential Fish Habitat Studies

NMFS continues to study EFH for HMS to refine our understanding of important habitat areas for HMS. The Magnuson-Stevens Act defines EFH as habitat necessary for spawning, breeding, feeding, and growth to maturity. The Magnuson-Stevens Act requires the identification of EFH in FMPs, and towards that end NMFS has funded two cooperative survey programs designed to further delineate shark nursery habitats in the Atlantic and Gulf of Mexico. The Cooperative Atlantic States Shark Pupping and Nursery (COASTSPAN) Survey, and the Cooperative Gulf of Mexico States Shark Pupping and Nursery (GULFSPAN) Survey are designed to assess the geographical and seasonal extent of shark nursery habitat, determine which shark species use these areas, and gauge the relative importance of these coastal habitats in order to provide information that can then be used in EFH determinations. Also, survey data collected are being incorporated into stock assessment models as abundance trends and life history parameters.

The COASTSPAN program, administered by the NMFS Northeast Fisheries Science Center’s Narragansett, Rhode Island laboratory, has been collecting information on shark nursery areas along the U.S. Atlantic coast since 1998. It involves NMFS scientists along with state and university researchers in Massachusetts, Rhode Island, New York, New Jersey, Delaware, Virginia, North Carolina, South Carolina, Georgia, Florida and the U.S. Virgin Islands. NMFS initiated the GULFSPAN program in 2003 to expand upon the COASTSPAN Survey. This cooperative program, which is administered by the NMFS Southeast Science Center’s Panama City, Florida laboratory, includes, in addition to NMFS scientists, the states of Florida, Alabama, and Mississippi. Following is a summary of the results from the 2012 COASTSPAN and GULFSPAN surveys (Bethea, pers. comm.; McCandless et al., 2013).

Massachusetts

COASTSPAN sampling was conducted in Plymouth, Kingston, and Duxbury Bays in 2012. The shark catch consisted entirely of immature sand tiger sharks, with one age 1 shark and the remaining catch were young-of-the-year. This area continues to provide important summer nursery habitat for this prohibited species.

Rhode Island

Many young-of-the-year sand tigers were caught off Point Judith, Rhode Island in the late spring of 2012. These results continue to provide supporting evidence that Rhode Island waters are used at a minimum as transitional nursery habitat by this prohibited species during their migrations to northern waters.

New York

COASTSPAN sampling was conducted in Shinnecock Bay, New York in 2012. No elasmobranchs were caught during the limited summer sampling this year.

New Jersey and Delaware (Delaware Bay)

COASTSPAN sampling encompassed the entire Bay from the mouth of the Delaware River to the mouth of Delaware Bay using a random stratified design based on depth and geographic location. Additional sampling was also conducted at historical fixed stations throughout the bay. Sandbar shark was the most abundant shark species caught in 2012, followed by smoothhound and sand tigers. One adult male Atlantic sharpnose shark and one juvenile male blacktip shark were also caught in Delaware Bay in 2012. The majority of sandbar sharks caught were immature, with over a quarter of these as young-of-the-year; the remaining sandbar sharks caught were considered mature females based on length and girth measurements. Smoothhounds were represented nearly equally by juvenile and adult fish in 2012, with the overwhelming majority of immature and mature fish as young-of-the-year and females, respectively. The sand tigers caught in 2012 were primarily immature sharks, but several mature male and female sand tigers were also captured. Delaware Bay continues to provide important nursery habitat for sandbar shark, smoothhound and sand tiger sharks. The extensive use of the Bay by all life stages of sand tiger and smoothhound continues to highlight the seasonal importance of this essential shark habitat.

Virginia

COASTSPAN sampling encompassed the lower Chesapeake Bay and inlets along the Eastern Shore of Virginia using a random stratified design based on depth and geographic location. Additional sampling was also conducted at historical fixed stations near the mouth of Chesapeake Bay and in coastal Virginia waters. Juvenile sandbar sharks dominated the catch in all areas sampled. Within the bay and inlets, the majority of sandbar sharks caught were young-of-the-year. The sandbar shark was the only shark species caught within the inlets along the Eastern Shore of Virginia. Within the bay, an additional adult male spiny dogfish and an adult male Atlantic sharpnose shark were caught. The second most abundant species caught in Virginia's coastal waters was the Atlantic sharpnose shark consisting primarily of adult males.

Other species caught in coastal waters, in order of abundance, were: spinner, dusky, tiger, blacktip, scalloped hammerhead, blacknose, and bignose sharks and one adult female bonnethead shark. The majority of each species caught were immature, with the exception of the Atlantic sharpnose shark and the bonnethead. These findings highlight the importance of Virginia's coastal waters in providing nursery habitat for many coastal shark species. Virginia's estuarine waters continue to provide important nursery habitat for sandbar sharks.

North Carolina

Sampling occurred year round in inland (Pamlico Sound and Pungo, Neuse, New, and Cape Fear Rivers) and nearshore waters along the southern coast of North Carolina from New River Inlet to the South Carolina border. Two bull sharks were captured in the Pamlico/Pungo and Neuse river systems in 2012. In the New and Cape Fear River systems, Atlantic sharpnose shark was the most abundant species, followed by bonnetheads. In the Atlantic coastal waters, the catch was seasonally dominated by spiny dogfish and smoothhound in the cooler months. Atlantic sharpnose sharks dominated the catch in the warmer months, followed by blacknose sharks and bonnetheads in much lower numbers.

South Carolina

COASTSPAN sampling took place in both nearshore and estuarine waters along the South Carolina coast including: Bulls Bay, Charleston Harbor, North Edisto, Port Royal Sound, St. Helena Sound, and Winyah Bay. Thirteen species of sharks were captured, the most abundant of which was Atlantic sharpnose. Other sharks captured, in order of abundance, were finetooth, bonnethead, sandbar, blacktip, scalloped hammerhead, blacknose, spinner, nurse, and lemon sharks, and one of each great hammerhead, smoothhound, and spiny dogfish. The majority of each shark species captured were immature, with the exception of these species: Atlantic sharpnose, bonnethead, and blacknose sharks, and the great hammerhead and spiny dogfish. These findings continue to highlight the importance of South Carolina estuarine and nearshore waters as nursery habitat for many small and large coastal shark species and indicate the extensive use of these waters as habitat for several adult small coastal shark species.

Georgia

COASTSPAN sampling took place in both estuarine (St. Simon and St. Andrew sound systems) and nearshore waters along the Georgia coast from Sapelo Island to the Florida border. Of the ten species of shark captured, Atlantic sharpnose was the most abundant. Other sharks included bonnethead, blacknose, sandbar, blacktip, scalloped hammerhead, spinner, finetooth, smoothhound, and tiger sharks. Four species captured were also present as young-of-the-year in estuarine waters: Atlantic sharpnose, sandbar, and blacktip sharks, and one scalloped hammerhead. In addition, Atlantic sharpnose, blacktip, sandbar, smoothhound, scalloped hammerhead, and tiger sharks were present as young-of-the-year in Georgia's nearshore waters. The majority of sharks captured were immature, highlighting the importance of these areas as potential nursery habitat for both small and large coastal shark species. In addition, the majority of blacknose sharks and bonnetheads were mature, indicating these waters continue to provide important adult habitat for these small coastal shark species.

Atlantic Coast of Florida

COASTSPAN sampling occurred within 2 km of Florida's north Atlantic coast in and around the following locations: Cumberland Sound, Nassau Sound, Tolomato River, St. Johns River, St. Augustine Inlet, and Matanzas Inlet. Species represented in the 2012 catch included, in order of abundance: Atlantic sharpnose, bonnethead, blacktip, sandbar, finetooth, scalloped hammerhead, spinner, blacknose, nurse, and lemon sharks and one nurse shark. Nassau and Cumberland Sounds continue to provide nursery habitat for juvenile Atlantic sharpnose, scalloped hammerhead, and blacktip sharks. Cumberland Sound and northern Florida's nearshore waters continue to provide habitat for adult female bonnetheads and mature blacknose sharks, respectively, as well. Cumberland Sound also provided nursery habitat for juvenile sandbar, finetooth, and spinner sharks in 2012. The multi-year seasonal use of the waters around Pine Island in the Tolomato River by neonate scalloped hammerheads continues to provide supporting evidence of an inshore nursery area for this species.

U.S. Virgin Islands

COASTSPAN sampling took place in Coral Bay and Fish Bay of St. John in June 2012. Two species of shark were captured, blacktip and lemon sharks. All sharks captured were immature and were also present as young-of-the-year in both bays. Long-term passive tracking data indicates strong site fidelity towards these two bays. Distinct habitat partitioning is present in Coral Bay, with lemon sharks occupying the areas of Johnson's Bay and blacktip sharks occupying areas of inner Coral Bay to the north with little overlap. Inner Fish Bay has a higher degree of overlap between species and may be due to the relatively small size of the bay and limited habitat. These results continue to highlight Coral and Fish Bay as important nursery habitat for blacktip and lemon sharks, particularly areas like Johnson's Bay, inner Coral Bay, and inner Fish Bay.

Panhandle of Florida

GULFSPAN sampling covered 5 areas in the Florida panhandle: St. Andrew Bay, Crooked Island Sound, St. Joseph Bay, and the Gulf of Mexico side of St. Vincent Island. In 2012, ten species of sharks and three species of rays were captured; the most abundant of which was Atlantic sharpnose shark. Others included blacknose, blacktip, bonnethead, finetooth, Florida smoothhound, sandbar, scalloped hammerhead, and spinner sharks, as well as cownose, smooth butterfly, and southern stingrays. The majority of the sharks captured were immature, indicating that areas along the Florida panhandle are potentially important nursery areas for both large and small coastal shark species. In general, young-of-the-year sharks were more often collected in shallower water with higher temperature, lower salinity, and more turbid conditions compared to juveniles and adults. Benthic habitat included shallow seagrass beds, clay, sand, mud and oyster shoals.

Big Bend of Florida

2012 GULFSPAN sampling by Florida State University covered more than 300 km of Florida's coastline from St. George Sound to Anclote Keys. Longlines and gillnets were used to collect data. Twelve elasmobranch species were caught; the majority of which was Atlantic

sharpnose, bonnethead, blacktip, and blacknose sharks. Others included bull, lemon, tiger, great hammerhead, nurse, and Florida smoothhound sharks, as well as cownose and smooth butterfly rays. Sampling indicates that this region serves as a primary nursery for at least three species of small coastal sharks (Atlantic sharpnose, bonnethead sharks, and blacknose) and one species of large coastal shark (blacktip).

Alabama

GULFSPAN sampling took place in Mississippi Sound (Point Aux Pins, Dauphin island), Mobile Bay (Dog River, Fairhope and Cedar Point south to Pelican Bay), and the Perdido system (Perdido Bay to Orange Beach and Perdido Pass). In 2012, seven species of sharks were collected; the most abundant of which was Atlantic sharpnose. Others included finetooth, blacktip, bull, bonnethead, scalloped hammerhead, and spinner sharks. Immature individuals made up majority of the catch, indicating potential nursery areas for the species captured. Similar to previous surveys, western and southern sites of coastal Alabama (i.e., Mississippi Sound) had higher levels of observed shark abundance, occupying a wide range of habitats and environmental conditions within those areas.

Mississippi

In 2012, GULFSPAN sampling by the University of Southern Mississippi Gulf Coast Research Laboratory covered five regions of the Mississippi Sound in Mississippi state waters: west (including Cat Island), central (including Ship and Horn islands), east (including Horn, Petit Bois and Round islands), inshore central (Deer Island, Davis Bayou, Katrina Reef), and inshore east (Pascagoula Beach, Singing River Island, Point Au Chenes). Five species of shark (Atlantic sharpnose, blacktip, bull, finetooth, and spinner) and one species of ray (cownose) were encountered. Over half of the sharks captured were of juvenile or young of the year stature indicating the region is being used as nursery habitat. Shark abundances were higher and more diverse in the eastern waters sampled including both the “east” and “inshore east” sampling regions.

Conclusion

The data obtained from both COASTSPAN and GULFSPAN surveys continues to provide the needed information to identify new EFH areas and to further refine areas already designated as EFH by determining specific habitat characteristics associated with these EFH. Time series for both surveys continue to be used in the stock assessments for large and small coastal shark species and are essential for monitoring these populations and their habitat use in the areas surveyed.

Chapter 3 References

McCandless, C.T., B. Frazier, C. Belcher, J. Gelsleichter, B. DeAngelis, J. Kneebone, G. Skomal, R. Latour, C. Bonzek, J. Gartland, and D. Chapman. 2013. Summary report of the 2012 Cooperative Atlantic States Shark Pupping and Nursery (COASTSPAN) survey. An internal report to NOAA Fisheries, Highly Migratory Species Division.