

ISSUES AND OPTIONS FOR REVISED MANAGEMENT OF ATLANTIC SHARKS

SCOPING DOCUMENT FOR AMENDMENT 1 TO THE HMS FMP

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Office of Sustainable Fisheries
Highly Migratory Species Management Division
1315 East-West Highway
Silver Spring, MD 20910
phone: 301-713-2347
fax: 301-713-1917

January 23, 2003

TABLE OF CONTENTS

List of Tables Page -3-

1 PURPOSE OF THE SCOPING DOCUMENT Page -4-

2 MANAGEMENT HISTORY Page -5-

3 AFFECTED ENVIRONMENT Page -10-

 3.1 Determining the Status of the Stocks Page -10-

 3.2 Large Coastal Sharks Page -10-

 3.3 Small Coastal Sharks Page -11-

 3.4 Pelagic Sharks Page -12-

 3.5 Deepwater Sharks and Other Species Page -12-

4 DESCRIPTION OF FISHERIES Page -17-

 4.1 Domestic Aspects of Commercial Atlantic Shark Fisheries Page -17-

 4.2 Domestic Aspects of Recreational Atlantic Shark Fisheries Page -19-

5 CURRENT FISHERY MANAGEMENT PLAN OBJECTIVES Page -26-

6 ISSUES AND OPTIONS: ATLANTIC SHARKS Page -28-

 6.1 MANAGEMENT MEASURES FOR COMMERCIAL FISHING Page -28-

 6.2 Effort Controls, Retention Limits, and Other Management Measures .. Page -33-

7 ISSUES AND OPTIONS: HIGHLY MIGRATORY SPECIES Page -42-

 7.1 EXEMPTED FISHING PERMITS/SCIENTIFIC RESEARCH PERMITS Page -42-

Appendix I: Scoping Schedule Page -44-

Appendix II: Preliminary Schedule for Development of Amendment Page -45-

List of References Page -46-

LIST OF TABLES

TABLE 2.1	SHARKS IN THE MANAGEMENT UNIT BY SPECIES GROUPS.	PAGE -8-
TABLE 2.2	STATUS OF SCS IN 1992 AND 2002.	PAGE -9-
TABLE 2.3	STATUS OF LCS IN 1992, 1996, 1998 AND 2002.	PAGE -9-
TABLE 3.1	SUMMARY TABLE OF THE STATUS OF THE BIOMASS OF LARGE COASTAL SHARKS.	PAGE -13-
TABLE 3.2	SUMMARY TABLE OF THE STATUS OF THE FISHING MORTALITY ON LARGE COASTAL SHARKS.	PAGE -14-
TABLE 3.3	SUMMARY TABLE OF THE STATUS OF THE BIOMASS OF SMALL COASTAL SHARKS.	PAGE -15-
TABLE 3.4	SUMMARY TABLE OF THE STATUS OF THE BIOMASS OF SMALL COASTAL SHARKS.	PAGE -16-
TABLE 4.1	ESTIMATES OF TOTAL LANDINGS AND DEAD DISCARDS FOR LARGE COASTAL SHARKS: 1981-2001 (NUMBERS OF FISH IN THOUSANDS).	PAGE -20-
TABLE 4.2	TOTAL DRIFT GILLNET SHARK CATCH BY SPECIES DURING ALL OBSERVED TRIPS, 2002 (OUTSIDE OF RIGHT WHALE CALVING SEASON).	PAGE -22-
TABLE 4.3	TOTAL STRIKENET SHARK CATCH BY SPECIES DURING ALL OBSERVED TRIPS, 2002 (OUTSIDE OF RIGHT WHALE CALVING SEASON).	PAGE -22-
TABLE 4.4	ESTIMATES OF RECREATIONAL CATCHES BY SHARK GROUPING.	PAGE -23-
TABLE 4.5	RECREATIONAL HARVEST ESTIMATES OF U.S. ATLANTIC LARGE COASTAL SHARKS BY SPECIES FOR 1999, 2000, AND 2001.	PAGE -24-
TABLE 4.6	RECREATIONAL HARVEST ESTIMATES OF U.S. ATLANTIC SMALL COASTAL SHARKS BY SPECIES FOR 1999, 2000, AND 2001.	PAGE -25-
TABLE 4.7	RECREATIONAL HARVEST ESTIMATES OF U.S. ATLANTIC PELAGIC SHARKS BY SPECIES FOR 1999, 2000, AND 2001.	PAGE -25-

1 PURPOSE OF THE SCOPING DOCUMENT

The National Marine Fisheries Service (NOAA Fisheries) intends to amend the Fishery Management Plan for Atlantic Tunas, Swordfish, and Sharks (HMS FMP) to revise the management measures for Atlantic sharks based on the results of the 2002 large and small coastal shark stock assessments. This scoping or comment phase is the first step in the development of an amendment to the HMS FMP. The amendment will examine management alternatives available to rebuild or prevent overfishing of Atlantic sharks, consistent with the results of the 2002 stock assessments for large and small coastal sharks, the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), and other relevant federal laws. The ensuing management decisions will affect shark fishermen and related industries, shark fishing communities, and the status of the resource.

The purpose of this document is to provide a mechanism by which the public can consider and comment on issues and options relative to the management of Atlantic sharks. This document describes the major issues, current management and legal requirements, and identifies potential management measures (including measures already in effect) to address these issues in the fisheries for Atlantic sharks. Comments received on this action will assist NOAA Fisheries in determining the options for rulemaking to conserve and manage shark resources and shark fisheries. NOAA Fisheries will hold public scoping meetings in February 2003 (Appendix I) and will accept comments through March 17, 2003.

NOAA Fisheries believes that advice from the public is critical during the FMP amendment process (See Appendix II) when it can be used to explore the full range of alternative approaches to future management. Accordingly, the views of the commercial fishing, recreational fishing, conservation and scientific communities, the regional fishery management councils, the states, and the general public are being sought by NOAA Fisheries through circulation of this issues and options document. NOAA Fisheries anticipates that additional issues and options will be identified by the public during the series of scoping meetings. These additional issues and options will also be considered when drafting the amendment to the HMS FMP.

2 MANAGEMENT HISTORY

In 1993, NOAA Fisheries implemented the Fishery Management Plan for Sharks of the Atlantic Ocean (1993 Shark FMP), which established three management units: large coastal sharks (LCS), small coastal sharks (SCS), and pelagic sharks (Table 2.1). At that time, NOAA Fisheries identified LCS as overfished and noted that SCS and pelagic sharks were fully utilized (Tables 2.2 and 2.3). As a result, NOAA Fisheries implemented commercial quotas for LCS and pelagic sharks, and established recreational retention limits for all sharks, consistent with the LCS rebuilding program.

In June 1996, NOAA Fisheries convened a Shark Evaluation Workshop (SEW) to examine the status of LCS stocks (Table 2.3). The 1996 SEW found no clear evidence that LCS stocks were rebuilding and concluded that “[a]nalyzes indicate that recovery is more likely to occur with reductions in effective fishing mortality rate of 50% or more.” In response to these results, in 1997, NOAA Fisheries reduced the LCS commercial quota by 50 percent to 1,285 metric tons (mt) dressed weight (dw) and the recreational retention limit for LCS, SCS, and pelagic sharks combined to two per trip with an additional allowance of two Atlantic sharpnose sharks per person per trip (62 FR 16648, April 2, 1997). In this same rule, NOAA Fisheries established an annual commercial quota for SCS of 1,760 mt dw and prohibited possession of five species. On May 2, 1997, the Southern Offshore Fishing Association (SOFA) and other commercial fishermen and dealers sued the Secretary of Commerce (Secretary) on the April 1997 regulations.

In 1996, amendments to the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) modified the procedures for defining overfishing and established new national standards to halt overfishing and rebuild overfished stocks, minimize bycatch and bycatch mortality to the extent practicable, and identify and protect essential fish habitat. Accordingly, in 1997, NOAA Fisheries began the process of creating a rebuilding plan for overfished HMS, including LCS, consistent with the new provisions.

On February 26, 1998, Judge Steven D. Merryday of the U.S. District Court for the Middle District of Florida issued an order in the SOFA case, finding that the Secretary “failed to conduct a proper analysis to determine the [April 1997 LCS] quota’s economic effect on small businesses” and directed NOAA Fisheries “to undertake a rational consideration of the economic effects and potential alternatives to the 1997 [LCS] quotas” on small businesses engaged in the Atlantic shark commercial fishery. Judge Merryday allowed NOAA Fisheries to maintain the 1997 quotas pending further order of the court. NOAA Fisheries completed this consideration in May 1998.

In June 1998, NOAA Fisheries held another LCS SEW. The 1998 stock assessment found that LCS were overfished and would not rebuild under reduced harvest levels implemented in 1997 (Table 2.3). In April 1999, NOAA Fisheries published the HMS FMP, which included numerous measures, based on the 1998 stock assessment, to rebuild or prevent overfishing of Atlantic sharks in commercial and recreational fisheries. The HMS FMP reduced commercial LCS and

SCS quotas, established ridgeback and non-ridgeback subgroups of LCS, implemented a minimum size for ridgeback LCS, reduced the non-ridgeback LCS commercial quota, established a commercial quota for blue sharks, established a species-specific quota for porbeagle sharks and reduced the pelagic shark commercial quota accordingly, reduced recreational retention limits for all sharks, expanded the list of prohibited shark species, implemented limited access in commercial fisheries, established new procedures for counting dead discards and state landings of sharks after federal fishing season closures against federal quotas, and established season-specific over- and under-harvest adjustment procedures. The HMS FMP replaced the 1993 Shark FMP by consolidating it with the existing swordfish FMP and the new tunas FMP. The implementing regulations were published on May 28, 1999 (64 FR 29090). On June 25, 1999, SOFA *et al.* sued NOAA Fisheries again, this time challenging the revised Atlantic shark commercial measures implemented in the HMS FMP.

On June 30, 1999, NOAA Fisheries received a court order from Judge Merryday relative to SOFA's May 1997 lawsuit. Specifically, the order enjoined NOAA Fisheries from enforcing the 1999 regulations with respect to Atlantic shark commercial catch quotas and fish-counting methods (including the counting of dead discards and state commercial landings after federal closures), which were different from the quotas and fish counting methods prescribed by the 1997 Atlantic shark regulations (64 FR 37883, July 14, 1999). A year later, on June 12, 2000, the court issued an order clarifying that NOAA Fisheries could proceed with implementation and enforcement of the 1999 prohibited species provisions in 64 Fed. Reg. 29090 (May 28, 1999).

Additionally, in 1999, NOAA Fisheries was sued by Bluewater Fisherman's Association regarding several issues including the pelagic shark management measures adopted in the HMS FMP. On September 25, 2000, Judge Roberts of the United States District Court for the District of Columbia dismissed the case and stated that the regulations were consistent with the Magnuson-Stevens Act and the Regulatory Flexibility Act. On January 1, 2001, the pelagic shark quotas adopted in the HMS FMP were implemented (66 FR 55).

Also in 1999, the Recreational Fishing Alliance sued NOAA Fisheries regarding the recreational shark regulations adopted in the HMS FMP. On September 20, 2001, Judge Roberts of the United States District Court for the District of Columbia dismissed the case and stated that the recreational retention limits are consistent with the Magnuson-Stevens Act.

On November 21, 2000, SOFA *et al.*, and NOAA Fisheries reached a settlement agreement for both the 1997 and 1999 lawsuits. On December 7, 2000, Judge Merryday entered an order approving the settlement agreement. The settlement agreement required, among other things, an independent (i.e., non-NOAA Fisheries) review of the 1998 LCS stock assessment. NOAA Fisheries arranged for such a review and received the results of the complete peer reviews in October, 2001. The settlement agreement did not address any regulations affecting the pelagic shark, prohibited species, or recreational shark fisheries. Consequently, NOAA Fisheries published an emergency rule to address the settlement agreement in March 2001 (66 FR 1344).

Taking into consideration the SOFA *et al.*, and NOAA Fisheries settlement agreement, peer reviews of the 1998 LCS stock assessment, current catch rates, and the best available scientific information (not including the 1998 stock assessment projections), NOAA Fisheries implemented an emergency rule for the 2002 fishing year, suspending certain measures under the 1999 regulations pending completion of new LCS and SCS stock assessments and a peer review of the new LCS stock assessment (66 FR 67118, December 28, 2001; extended 67 FR 37354, May 29, 2002). Specifically, NOAA Fisheries maintained the 1997 LCS commercial quota (1,285 mt dw), maintained the 1997 SCS commercial quota (1,760 mt dw), suspended the commercial ridgeback LCS minimum size, suspended counting dead discards and state landings after a federal closure against the quota, and replaced season-specific quota accounting methods with subsequent-season quota accounting methods. This emergency rule expired on December 30, 2002.

In 2001, National Audubon Society and The Ocean Conservancy sued NMFS regarding the opening of the second 2001 LCS semi-annual fishing season and the March 6, 2001, emergency rule. These plaintiffs sued NOAA Fisheries again in January 2002 regarding the 2002 emergency rule (66 FR 67118). These cases are still pending.

On May 8, 2002, NOAA Fisheries announced the availability of the first SCS stock assessment since 1992 (67 FR 30879). The Mote Marine Laboratory and the University of Florida provided NOAA Fisheries with another SCS assessment in August 2002. Both of these stock assessments indicate that overfishing is occurring on finetooth sharks. The three other species in the SCS complex (Atlantic sharpnose, bonnethead, and blacknose) are not overfished and overfishing is not occurring (Table 2.1).

NOAA Fisheries announced the availability of the LCS stock assessment on October 17, 2002 (67 FR 64098). The results of this stock assessment indicate that the LCS complex is still overfished and overfishing is occurring, that sandbar sharks are no longer overfished but that overfishing is still occurring, and that blacktip sharks are rebuilt and overfishing is not occurring (Table 2.2). The LCS stock assessment peer review process required under the settlement agreement was completed in mid-December 2002. The findings of this review are generally positive and are currently being considered by NOAA Fisheries.

NOAA Fisheries recently issued an emergency rule which is effective for 180 days starting on December 31, 2003. The emergency rule implements annual quotas of 783 metric tons (mt) dressed weight (dw) and 931 mt dw for the commercial ridgeback and non-ridgeback large coastal shark fisheries, respectively, and an annual quota of 326 mt dw for the commercial small coastal shark fishery. Additionally, the emergency regulations suspend the regulation regarding the commercial ridgeback large coastal shark minimum size. On January 1, 2003, the regulations regarding season-specific quota adjustments and counting dead discards and state landings after a federal closure against the commercial quotas went into effect.

Table 2.1

Sharks in the management unit by species groups. Source: NMFS, 1999.

Large Coastal Sharks		Small Coastal Sharks	
<i>Ridgeback Species</i>			
Sandbar	<i>Carcharhinus plumbeus</i>	Atlantic sharpnose	<i>Rhizoprionodon</i>
Silky	<i>Carcharhinus falciformis</i>	Finetooth	<i>terraenovae Carcharhinus</i>
Tiger	<i>Galeocerdo cuvieri</i>	Blacknose	<i>isodon</i>
		Bonnethead	<i>Carcharhinus acronotus</i>
			<i>Sphyrna tiburo</i>
<i>Non-Ridgeback Species</i>		Pelagic Sharks	
Blacktip	<i>Carcharhinus limbatus</i>	Blue	<i>Prionace glauca</i>
Spinner	<i>Carcharhinus brevipinna</i>	Oceanic whitetip	<i>Carcharhinus longimanus</i>
Bull	<i>Carcharhinus leucas</i>	Porbeagle	<i>Lamna nasus</i>
Lemon	<i>Negaprion brevirostris</i>	Shortfin mako	<i>Isurus oxyrinchus</i>
Nurse	<i>Ginglymostoma cirratum</i>	Thresher	<i>Alopias vulpinus</i>
Scalloped hammerhead	<i>Sphyrna lewini</i>		
Great hammerhead	<i>Sphyrna mokarran</i>	Deepwater and Other Species	
Smooth hammerhead	<i>Sphyrna zygaena</i>	Iceland cat shark	<i>Apristurus laurussoni</i>
Prohibited Species		Smallfin cat shark	<i>Apristurus parvipinnis</i>
Sand tiger	<i>Odontaspis taurus</i>	Deepwater cat shark	<i>Apristurus profundorum</i>
Bigeye sand tiger	<i>Odontaspis noronhai</i>	Broadgill cat shark	<i>Apristurus riveri</i>
Whale	<i>Rhincodon typus</i>	Marbled cat shark	<i>Galeus arae</i>
Basking	<i>Cetorhinus maximus</i>	Blotched cat shark	<i>Scyliorhinus meadi</i>
White	<i>Carcharodon carcharias</i>	Chain dogfish	<i>Scyliorhinus retifer</i>
Dusky	<i>Carcharhinus obscurus</i>	Dwarf catshark	<i>Scyliorhinus torrei</i>
Bignose	<i>Carcharhinus altimus</i>	Japanese gulper shark	<i>Centrophorus acuus</i>
Galapagos	<i>Carcharhinus galapagensis</i>	Gulper shark	<i>Centrophorus granulosus</i>
Night	<i>Carcharhinus signatus</i>	Little gulper shark	<i>Centrophorus uyato</i>
Caribbean reef	<i>Carcharhinus perez</i>	Kitefin shark	<i>Dalatis licha</i>
Narrowtooth	<i>Carcharhinus brachyurus</i>	Flatnose gulper shark	<i>Deania profundorum</i>
Caribbean sharpnose	<i>Rhizoprionodon porosus</i>	Portuguese shark	<i>Cetoscymnus coelolepis</i>
Smalltail	<i>Carcharhinus porosus</i>	Greenland shark	<i>Somniosus microcephalus</i>
Atlantic angel	<i>Squatina dumerili</i>	Lined lanternshark	<i>Etmopterus bullisi</i>
Longfin mako	<i>Isurus paucus</i>	Broadband dogfish	<i>Etmopterus gracilispinnis</i>
Bigeye thresher	<i>Alopias superciliosus</i>	Caribbean lanternshark	<i>Etmopterus hillianus</i>
Sevengill	<i>Heptranchias perlo</i>	Great lanternshark	<i>Etmopterus princeps</i>
Sixgill	<i>Hexanchus griseus</i>	Smooth lanternshark	<i>Etmopterus pusillus</i>
Bigeye sixgill	<i>Hexanchus vitulus</i>	Fringefin lanternshark	<i>Etmopterus schultzi</i>
		Green lanternshark	<i>Etmopterus virens</i>
		Cookiecutter shark	<i>Isistius brasiliensis</i>
		Bigtooth cookiecutter	<i>Isistius plutodus</i>
		Smallmouth velvet Dogfish	<i>Scymnodon obscurus</i>
		Pygmy shark	<i>Squaliolus laticaudus</i>
		Roughskin spiny dogfish	<i>Squalus asper</i>
		Blainville's dogfish	<i>Squalus blainvillei</i>
		Cuban dogfish	<i>Squalus cubensis</i>
		Bramble shark	<i>Echinorhinus brucus</i>
		American sawshark	<i>Pristiophorus schroederi</i>
		Florida smoothhound	<i>Mustelus norrisi</i>
		Smooth dogfish	<i>Mustelus canis</i>

Table 2.2 Status of SCS in 1992 and 2002. Sources: NMFS, 2003; 2002 SCS stock assessment.

	1992 stock assessment	2002 stock assessment
SCS Complex	fully fished	<i>not</i> overfished, overfishing is <i>not</i> occurring
Sharpnose*	--	<i>not</i> overfished, overfishing is <i>not</i> occurring
Bonnethead*	--	<i>not</i> overfished, overfishing is <i>not</i> occurring
Blacknose*	--	<i>not</i> overfished, overfishing is <i>not</i> occurring
Finetooth*	--	<i>not</i> overfished (but results indicate overfishing could occur “in the relatively near future”), overfishing <i>is</i> occurring

*NOTE - These species were not analyzed separately in the 1992 stock assessment.

Table 2.3 Status of LCS in 1992, 1996, 1998 and 2002. Sources: NMFS, 2003; 2002 LCS stock assessment.

	1992 stock assessment	1996 stock assessment	1998 stock assessment	2002 stock assessment
LCS Complex	overfished	overfished	overfished, overfishing is occurring	overfished, overfishing is occurring
Sandbar*	--	--	overfished, overfishing is occurring	<i>not</i> overfished, overfishing is occurring
Blacktip*	--	--	overfished, overfishing is occurring	<i>rebuilt</i> , over fishing is <i>not</i> occurring

*NOTE - Sandbar and Blacktip were not analyzed separately in the 1992 and 1996 stock assessments.

3 AFFECTED ENVIRONMENT

Sharks, skates, and rays comprise the subclass Elasmobranchs, and together with chimaeras, comprise the class Chondrichthyes, or cartilaginous fishes. This diverse group of fishes can be distinguished by the possession of a cartilaginous skeleton as opposed to the bony skeleton of the class Osteichthyes, or bony fishes. The great majority of commercially and recreationally important species of chondrichthyans are elasmobranchs. Elasmobranchs are primarily at the top of the food web, often top-level carnivores, and their abundance is relatively small compared to groups in lower trophic levels. The life-history characteristics of many elasmobranchs, such as late age of maturity and relatively slow growth rates, make them more susceptible to overfishing than most bony fishes. Recovery of populations from severe depletions (caused either by natural phenomena or human-induced mortality) can take many years for elasmobranch species.

The information presented here should be considered a summary. Detailed descriptions of the life histories and population status of highly migratory species (HMS) species can be found in the HMS FMP, the 2002 LCS stock assessment and associated papers presented at the shark evaluation workshop, and the 2002 SCS stock assessment. The species in each group are listed in Table 2.1.

3.1 Determining the Status of the Stocks

The methods used to determine the status of HMS are fully described in Chapter 3 of the HMS FMP and in a paper describing the technical guidance for implementing National Standard 1 of the Magnuson-Stevens Act (Restrepo *et al.*, 1998). In summary, a species is considered overfished when the current biomass (B) is less than the minimum stock size threshold. The minimum stock size threshold is determined based on the natural mortality of the stock and the biomass at Maximum Sustainable Yield (B_{MSY}). The MSY is the maximum long-term average yield that can be produced by a stock on a continuing basis. Overfishing is occurring on a species if the current fishing mortality (F) is greater than the fishing mortality at MSY (F_{MSY}). When one or both of these measures occur, a species is declared overfished and a rebuilding plan is needed within one year.

A species is considered rebuilt when B is greater than B_{MSY} and F is less than F_{MSY} . A species is considered healthy when B is equal to the biomass at optimum yield (B_{OY}) and F is equal to the fishing mortality at optimum yield (F_{OY}).

3.2 Large Coastal Sharks

The 1993 Atlantic Shark FMP concluded that LCS were overfished and that stock recovery to levels of the 1970s would be slow due to the relatively low intrinsic rates of increase exhibited by these species. The 2002 LCS stock assessment included additional catch estimates, new biological data, and a number of fishery-independent and fishery-dependent catch rate series.

Additionally, the 2002 LCS stock assessment used several stock assessment models, including the model used in the 1992 LCS stock assessment, to estimate the status of LCS stocks and project their future abundance under a variety of future catch levels in waters off the U.S. Atlantic and Gulf of Mexico coasts. The 2002 LCS stock assessment concluded that:

1. The LCS complex as a whole is overfished and overfishing is occurring;
2. Sandbar sharks are no longer overfished although biomass levels have not reached optimum yield (the point at which they would be considered healthy) and that overfishing is occurring; and,
3. Blacktip sharks are healthy and overfishing is not occurring.

Tables 3.1 and 3.2 provide the biomass and fishing mortality estimates used to make these determinations.

Directed commercial longline fishing vessels currently catch primarily sandbar and blacktip sharks. Sandbar and blacktip sharks make up approximately 60 to 75 percent of the commercial catch (GSAFDF, 1996) and over 70 percent of the landings (Cortes and Neer, 2002). The remainder of the catch is comprised mostly of dusky, bull, bignose, tiger, sand tiger, lemon, spinner, scalloped hammerhead and great hammerhead sharks, with catch composition varying by region (GSAFDF, 1996). These species are less marketable and are often released, so they are reflected in the overall catch but not the landings. In 2000 and 2001, sharks reported as unclassified comprised three and 21 percent of the LCS landings, respectively. Approximately 84 to 91 percent of LCS came from the southeast region, mainly Louisiana, Florida, and North Carolina, although Texas and South Carolina had a large percentage in 2001 (Cortes and Neer, 2002). Observer data indicates that LCS discarded from the fishery accounts for approximately 5.7 percent of the total LCS mortality (Cortes and Neer, 2002).

3.3 Small Coastal Sharks

The 1993 Atlantic shark FMP concluded that SCS were fully utilized. In 2002, NOAA Fisheries conducted the first SCS stock assessment since 1992. This stock assessment used additional biological data, improved fisheries statistics, and bycatch estimates from the shrimp trawl fishery. Additionally, the stock assessment used new or extended fishery-dependent and independent catch rate series and several stock assessment models. The stock assessment determined that the SCS complex as a whole, Atlantic sharpnose, bonnethead, and blacknose sharks are not overfished and that overfishing is not occurring (Tables 3.3 and 3.4). The stock assessment also concluded that finetooth sharks are not overfished but that overfishing is occurring (Tables 3.4 and 3.5).

Also, in 2002, researchers at the Mote Marine Laboratory and the University of Florida, conducted a stock assessment for SCS using similar data but different models. The results were similar in that current biomass levels for Atlantic sharpnose, bonnethead, and blacknose were at least 69 percent of the biomass in 1972 while the current biomass level for finetooth sharks was only 9 percent the level in 1972 (Simpfendorfer and Burgess, 2002). Both stock assessments note

that the data used for finetooth sharks is not as high a quality as the data used for Atlantic sharpnose due to shorter catch-per-unit-effort (CPUE) and catch series, lack of bycatch estimates, and no catches reported in some years.

Small coastal sharks are targeted in localized fisheries in the southern United States, caught incidentally in other commercial fisheries, and are commonly used for bait. The majority of commercial harvest occurs in the South Atlantic region (57 percent) with gillnets. Finetooth, Atlantic sharpnose, and blacknose sharks comprise most of the commercial landings (34, 24, and 30 percent in 2000, respectively; 42, 27, and 22 percent in 2001, respectively) with bonnethead shark landings less than 12 percent in both 2000 and 2001 (Cortes and Neer, 2002).

3.4 Pelagic Sharks

The 1993 Atlantic shark FMP concluded that pelagic sharks were fully utilized. Pelagic sharks are subject to exploitation by many different nations and exhibit trans-oceanic migration patterns. As a result, ICCAT's Standing Committee on Research and Statistics (SCRS) Subcommittee on Bycatch has recommended that ICCAT take the lead in conducting stock assessments for pelagic sharks. The SCRS will conduct assessments of Atlantic pelagic sharks in 2004.

3.5 Deepwater Sharks and Other Species

Sharks in this species group were included for data reporting under the original shark FMP. Under the 199 HMS FMP, finning of these sharks is prohibited. Spiny dogfish, *Squalus acanthias*, is not included because it is federally managed by the New England and Mid-Atlantic Fishery Management Councils under a separate FMP. Spiny dogfish is also managed via an Interstate Fishery Management Plan developed by the Atlantic States Marine Fisheries Commission.

Table 3.1 Summary table of the status of the biomass of large coastal sharks. Sources: 2002 LCS stock assessment; E. Cortes, personal communication; L. Brooks, personal communication. MSC=maximum sustainable catch; SPM=surplus production model; SIR=sampling/importance resampling algorithm; SSSPM =space-state surplus production model; ASPM=age-structured surplus production model; SSLRSG=state-space lagged recruitment, survival, and growth model; SSSPM=state-space surplus production model. Only models shown in figures 71, 73, and 76 of the 2002 LCS stock assessment are summarized below.

Species	Current Biomass N_{2001}	N_{MSY}	Current Relative Biomass Level N_{2001}/N_{MSY}	Biomass Target $B_{OY} = 125\%B_{MSY}$	Outlook
Large Coastal Complex	2,940 - 10,156	4,469 - 8,371	0.46 - 1.18	5,586 - 10,464	STOCK IS OVERFISHED. $B_{2001} < B_{OY}$ The majority of the models, including the models not summarized here, indicate that the resource is overfished. Even in the models where the resource is not overfished, the rebuilding target (B_{OY}) has not been met.
Sandbar	1,027 - 4.86 E8	786 - 1.50 E12	3.25 E-4 - 2.22	983 - 1.88 E12	STOCK IS NOT OVERFISHED; REBUILDING IS STILL NEEDED. $B_{2001} < B_{OY}$ The models have conflicting results. These conflicts are due, in part, to the sensitivity of certain models to catch or CPUE series. The Bayesian SPM models and SSLRSG models appear to correspond with each other, have good convergence ² , and fit well with CPUE data. These models generally indicate that the biomass is at or above B_{MSY} levels and below B_{OY} levels.
Blacktip	5,587 - 3.16 E7	3,430 - 1.90 E7	0.79 - 1.66	4,288 - 2.38 E7	STOCK IS NOT OVERFISHED AND IS REBUILT. $B_{2001} > B_{OY}$ The majority of the models indicate that biomass levels exceed B_{MSY} and B_{OY} . Some of the models that were very optimistic had difficulty converging. The other models were sensitive to the catch series.

1. MSC for age structures models is in biomass, not numbers.
2. Convergence indicates that the algorithm has become stable and come to an optimal solution.

Table 3.2 Summary table of the status of the fishing mortality on large coastal sharks. Sources: 2002 LCS stock assessment; E. Cortes, personal communication. SPM=surplus production model; SIR=sampling/importance resampling algorithm; SSSPM =space-state surplus production model; ASPM=age-structured surplus production model; SSLRSG=state-space lagged recruitment, survival, and growth model; SSSPM=state-space surplus production model. Only models shown in figures 71, 73, and 76 of the 2002 LCS stock assessment are summarized below.

Species	Current F F_{2001}	Maximum Fishing Mortality Threshold $MFFT = F_{MSY}$	Current Relative Fishing Mortality Rate F_{2001}/F_{MSY}	Fishing Mortality Target $F_{OY} = 0.75F_{MSY}$	Outlook
Large Coastal Complex	0.07 - 0.21	0.05 - 0.10	0.89 - 4.48	0.05 - 0.08	OVERFISHING $F_{2001} > F_{OY}$ The majority of the models indicate that current F levels exceed F_{MSY} .
Sandbar	0.0001 - 0.70	0.05 - 0.46	0.00156 - 2.45	0.03 - 0.34	OVERFISHING $F_{2001} > F_{OY}$ The majority of the models indicate the overfishing is occurring. Most of the models that indicate overfishing also indicated that biomass levels are at or above MSY .
Blacktip	0.01 - 0.21	0.06 - 0.18	0.13 - 1.72	0.04 - 0.14	NOT OVERFISHING $F_{2001} < F_{OY}$ The majority of the models indicate that current fishing rates are below F_{OY} . Most of these models are the same models that indicate biomass levels are above B_{MSY} .

Table 3.3 Summary table of the status of the biomass of small coastal sharks. Sources: 2002 SCS stock assessment; E. Cortes, personal communication. LRSG=lagged recruitment, survival, and growth model; SPM=surplus production model.

Species	Current Biomass B_{2001}	B_{MSY}	Current Relative Biomass Level B_{2001}/B_{MSY}	Minimum Stock Size Threshold $MSST = (1-M)B_{MSY}$ if $M < 0.5$ $MSST = 0.5 B_{MSY}$ if $M \geq 0.5$	Minimum Biomass Flag $B_{flag} = (1-M)B_{OY}$	Biomass Target $B_{OY} = 125\%B_{MSY}$	MSY	Outlook
Sharpnose	72.7 - 73.2	23 - 43.3	1.69 - 3.16	11.5 - 33.4	9.0 - 41.8	28.75 - 54.12	7.8 mill lb dw to 1.9 mill lb dw	Stock not overfished $B_{2001} > B_{OY}$
Bonnethead	12.8 - 13.4	4.6 - 9.2	1.46 - 2.78	2.3 - 7.3	0.8 - 9.2	5.75 - 11.50	1.8 mill lb dw to 0.5 mill lb dw	Stock not overfished $B_{2001} > B_{OY}$
Blacknose	10.4	3.3 - 5.4	1.92 - 3.15	1.6 - 4.5	2.0 - 5.6	4.12 - 6.75	0.8 mill lb dw to 0.2 mill lb dw	Stock not overfished $B_{2001} > B_{OY}$
Finetooth	1.9 - 2.3	0.8 - 1.65	1.39 - 2.37	0.4 - 1.4	0.5 - 1.7	1.00 - 2.06	0.26 mill lb dw to 0.05 mill lb dw	Stock not overfished $B_{2001} > B_{OY}$
SCS aggregate	77.1 - 83.8	32.3 - 60.75	1.38 - 2.39	16.2 - 50.2	12.4 - 62.7	40.38 - 75.94	7.0 mill lb dw to 2.2 mill lb dw	Stock not overfished $B_{2001} > B_{OY}$

Table 3.4 Summary table of the status of the biomass of small coastal sharks. Sources: 2002 SCS stock assessment; E. Cortes, personal communication.

LRSF=lagged recruitment, survival, and growth; SPM=surplus production model.

Species	Current F F_{2000}	Maximum Fishing Mortality Threshold $MFFT = F_{MSY}$	Current Relative fishing Mortality Rate F_{2000}/F_{MSY}	Fishing Mortality Target $F_{OY} = 0.75F_{MSY}$	Outlook
Sharpnose	0.02 - 0.06	0.04 - 0.42	0.14 - 0.42	0.03 - 0.31	Not overfishing
Bonnethead	0.03 - 0.18	0.05 - 0.53	0.35 - 0.56	0.04 - 0.40	Not overfishing
Blacknose	0.02 - 0.19	0.03 - 0.32	0.61 - 0.65	0.02 - 0.24	Not overfishing
Finetooth	0.13 - 1.50	0.03 - 0.44	3.42 - 4.13	0.02 - 0.33	OVERFISHING
SCS aggregate	0.03 - 0.24	0.04 - 0.28	0.24 - 0.78	0.03 - 0.21	Not overfishing but $F_{2000} \geq F_{OY}$

4 DESCRIPTION OF FISHERIES

4.1 Domestic Aspects of Commercial Atlantic Shark Fisheries

Commercial fishermen use a number of gear types to target sharks, including bottom longline, pelagic longline, gillnet, and rod and reel. Different gear types can be used to target different species of sharks. For example, bottom longline gear is generally used to target LCS while pelagic longline gear is used to target pelagic sharks. Other gear types such as shrimp trawls catch sharks incidentally. All of these gears catch many species of fish; some of those captured are marketable and thus are retained, while others are discarded for economic or regulatory reasons. Species encountered are snappers, groupers, red drum, cobia/dolphin, swordfish, tunas, billfish, wahoo, king and Spanish mackerel, little tunny, crevalle jack, and other finfish species. Sometimes fishermen also catch sea turtles, marine mammals, and sea birds, known collectively as “protected” species. All of these species are federally managed, and NOAA Fisheries seeks to control the mortality that results from fishing effort. NOAA Fisheries also seeks to control the likelihood of mortality, injury, or other forms of take of protected species.

Below is a brief description of Atlantic shark fisheries. Please refer to section 2.4 and 2.5 of the HMS FMP and section 4.5 of the latest SAFE report for more detailed descriptions. Additional information specific to the pelagic longline fishery can be found in the Final Supplemental Environmental Impact Statement for the Reduction of Bycatch, Bycatch Mortality, and Incidental Catch in the Atlantic Pelagic Longline Fishery, and in the Environmental Assessment and Regulatory Impact Review to Reduce Sea Turtle Bycatch and Bycatch Mortality in the Atlantic Pelagic Longline Fishery or in the June 14, 2001, Biological Opinion.

4.1.1 Bottom Longline Fishery

The Atlantic bottom longline fishery targets LCS, with landings dominated by sandbar and blacktip sharks (Cortes and Neer, 2002). Gear characteristics vary slightly by region, but in general, a ten-mile long monofilament bottom longline, containing about 750 hooks, is fished overnight. Skates, sharks, or various finfishes are used as bait (GSAFDF, 1997). The gear typically consists of a heavy monofilament mainline with lighter weight monofilament gangions. Some fishermen may occasionally use a flexible 1/16 inch wire rope as gangion material or as a short leader above the hook.

Commercial shark fishing effort with bottom longline gear is generally concentrated in the southeastern United States and Gulf of Mexico. McHugh and Murray (1997) found in a survey of shark fishery participants that the largest concentration of bottom longline fishing vessels is found along the central Gulf coast of Florida, with the John’s Pass - Madeira Beach area considered the center of directed shark fishing activities. Average bottom longline sets generally last between 10.1 and 14.9 hours, with longer sets typical of the North Carolina and Florida Gulf fisheries and shorter sets typical of the South Carolina/Georgia fishery (GSAFDF, 1997). As with all HMS

fisheries, some shark fishery participants move from their home ports to active fishing areas as the seasons change.

4.1.2 Pelagic Longline Fishery

The U.S. pelagic longline fishery for Atlantic HMS primarily targets swordfish, yellowfin tuna, or bigeye tuna in various areas and seasons and catches sharks incidentally. Although this gear can be modified (i.e., depth of set, hook type, etc.) to target swordfish, tuna or sharks, like other hook and line fisheries, it is a multi-species fishery. Longline gear sometimes attracts and hooks non-target finfish with no commercial value, as well as species that cannot be retained by commercial fishermen, such as billfish or some species of sharks. Pelagic longlines may also interact with protected species such as marine mammals, sea turtles and sea birds.

Pelagic longline gear is composed of several parts. The primary mainline can vary from five to 40 miles in length, with approximately 20 to 30 hooks per mile. The depth of the mainline is determined by ocean currents and the length of the floatline, which connects the mainline to several buoys and periodic markers with radar reflectors and radio beacons. Lightsticks, which contain chemicals that emit a glowing light, are often used to attract bait fish which may, in turn, attract pelagic predators. When targeting swordfish, the lines generally are deployed at sunset and hauled in at sunrise to take advantage of the nocturnal near-surface feeding habits of the large pelagic species (Berkeley *et al.*, 1981). In general, longlines targeting tuna are set in the morning, deeper in the water column, and hauled in the evening. Except for vessels of the distant water fleet which undertake extended trips, fishing vessels preferentially target swordfish during periods when the moon is full to take advantage of increased densities of pelagic species near the surface.

Several species of large coastal (dusky, silky, hammerhead, and night) and pelagic sharks (mako, thresher, porbeagle and blue) are caught in pelagic longline fisheries; some are retained due to high fin and meat market value, others are reported as discarded (dead or alive). Approximately 132 mt whole weight (ww) of LCS (hammerheads, night, silky, unidentified, and dusky sharks) and 154 mt ww of pelagic sharks (primarily blue sharks) were discarded dead in pelagic longline fisheries in 2001 (Cramer, 2002). Between 1996 and 1998, approximately 15,600 LCS were discarded dead by pelagic longline vessels (Table 4.1).

4.1.3 Gillnet Fishery

The southeast shark gillnet fishery is comprised of about 6 vessels that use nets typically 456 to 2,280 meters long and 6.1 to 15.2 meters deep, with stretched mesh from 12.7 to 22.9 cm (Carlson and Baremore, 2002). The entire process (time net was first set through time the haulback was completed) averaged 8.9 hours in 2002 (Carlson and Baremore, 2002). A total of 28 drift gillnet sets were observed from April to October in 2001 and 2002 combined. The observed drift gillnet catch consisted of 12 shark species (Atlantic sharpnose, finetooth, blacknose, and blacktip comprised 96.5 percent of the catch), 26 bony fish and rays, and 1 species of marine mammal (Table 4.2). Shark fishermen also use gillnet gear in a strikenet fashion. This

can be done with a small second vessel actively setting the net around a school of sharks or the drift gillnet vessel actively setting the net in the wake of a shrimp vessel. Vessels fishing in a strikenet fashion used nets 364.8 meters long, 30.4 meters deep, and with mesh size 22.9 cm (Carlson and Baremore, 2002). A total of 14 strikenet sets were observed in April to October 2001 and 2002 combined. Three species of shark (blacknose, blacktip, and bonnethead comprised 100.0 percent of the catch) were observed caught (Table 4.3). Legislation in South Carolina, Georgia, and Florida has prohibited the use of commercial gillnets in state waters, thereby forcing some of these vessels into deeper waters under federal jurisdiction, where gillnets are less effective.

4.2 Domestic Aspects of Recreational Atlantic Shark Fisheries

Recreational fishing for Atlantic sharks occurs in federal and state waters from New England to the Gulf of Mexico and Caribbean Sea. U.S. recreational shark harvests of large coastal sharks have declined by 80 percent from the peak recorded catches in 1983 (Table 4.4). Blacktip and sandbar sharks dominate the catches of large coastal sharks by 36 and 27 percent respectively (Table 4.5). Recreational harvests of small coastal sharks have fluctuated between 34,000 and 190,000 fish per year since the mid 1980s, with Atlantic sharpnose comprising about 60 percent of the catch in recent years (Table 4.4 and Table 4.6). For pelagic species, some of which are considered prized game fish (e.g., makos), recreational harvests have fluctuated from a peak of approximately 93,000 fish in 1985 to a low of about 6,000 fish in 1994. The apparent decline of shortfin mako sharks is of substantial concern to the recreational fishing community. Recreational harvests of blue sharks accounted for 47 and 53 percent of the total catches of pelagic sharks in 1999 and 2000 (Table 4.7).

Table 4.1 Estimates of Total Landings and Dead Discards for Large Coastal Sharks: 1981-2001 (numbers of fish in thousands). Source: Cortes and Neer, 2002.

Year	Commercial Landings	Pelagic Longline Discards	Recreational Catches	Unreported	Bottom Longline Discards	Mexican Catches	Menhaden Fishery bycatch	Total
1981	16.2	0.9	265.0	N/A	0.9	120.0	25.1	428.1
1982	16.2	0.9	413.9	N/A	0.9	81.9	25.1	538.9
1983	17.5	0.9	746.6	N/A	1.0	85.4	25.1	876.5
1984	23.9	1.3	254.6	N/A	1.4	120.7	25.1	426.9
1985	22.2	1.2	365.6	N/A	1.3	87.7	25.1	503.1
1986	54.0	2.9	426.1	24.9	3.1	81.8	25.1	617.9
1987	104.7	9.7	314.4	70.3	5.9	80.2	25.1	610.3
1988	274.6	11.4	300.6	113.3	15.5	89.3	25.1	829.8
1989	351.0	10.5	221.1	96.3	19.9	105.6	25.1	829.4
1990	267.5	8.0	213.2	52.1	15.1	122.2	25.1	703.3
1991	200.2	7.5	293.4	11.3	11.3	95.7	25.1	644.5
1992	215.2	20.9	304.9	N/A	12.2	103.4	25.1	681.6
1993	169.4	7.3	249.0	N/A	11.3	119.8	25.1	581.9
1994	228.0	8.8	160.9	N/A	16.3	110.7	26.2	550.9
1995	222.4	5.2	176.3	N/A	13.9	96.0	24.0	537.8
1996	160.6	5.7	188.5	N/A	7.6	106.1	25.1	493.6

Year	Commercial Landings	Pelagic Longline Discards	Recreational Catches	Unreported	Bottom Longline Discards	Mexican Catches	Menhaden Fishery bycatch	Total
1997	130.6	5.6	165.1	N/A	8.3	83.1	25.1	417.8
1998	174.9	4.3	169.8	N/A	9.9	74.1	25.1	458.1
1999	111.5	9.0	90.1	N/A	3.8	57.1	25.1	297.5
2000	111.2	9.4	140.4	N/A	4.8	52.1	25.1	343.0
2001	99.2	9.4	142.0	N/A	6.3	52.1	25.1	334.1

Table 4.2 Total drift gillnet shark catch by species during all observed trips, 2002 (outside of right whale calving season). Source: Carlson and Baremore, 2002.

Species	Total Number Caught	Kept (%)	Discarded Alive (%)	Discarded Dead (%)
Atlantic sharpnose	7,332	98.9	0.4	0.7
Blacknose	859	100.0	0.0	0.0
Blacktip	572	1.2	30.9	67.8
Finetooth	1,490	100.0	0.0	0.0
Bonnethead	305	100.0	0.0	0.0
Scalloped hammerhead	37	2.7	5.4	91.9
Tiger	2	50.0	50.0	0.0
Spinner	17	23.6	5.8	70.6
Sandbar shark	2	0.0	0.0	100.0
Lemon shark	1	0.0	0.0	100.0
Great hammerhead	18	0.0	0.0	100.0

Table 4.3 Total strikenet shark catch by species during all observed trips, 2002 (outside of right whale calving season). Source: Carlson and Baremore, 2002.

Species	Total Number Caught	Kept (%)	Discarded Alive (%)	Discarded Dead (%)
Blacknose	620	100.0	0.0	0.0
Blacktip	547	99.8	0.2	0.0
Bonnethead	1	100.0	0.0	100.0

Table 4.4 **Estimates of Recreational Catches by Shark Grouping. Note: Recreational catches are reported in numbers of fish in thousands.** Source: NMFS, 1999; Cortes, 1999; and Cortes, 2002.

Year	Large Coastal Sharks	Small Coastal Sharks	Pelagic Sharks	Total
1981	265.0	--	--	265.0
1982	413.9	--	--	413.9
1983	746.6	--	--	746.6
1984	254.6	--	--	254.6
1985	365.6	--	93.0	365.6
1986	426.1	34.9	42.1	503.1
1987	314.4	48.8	37.3	400.5
1988	300.6	82.4	33.4	416.4
1989	221.1	62.3	22.6	306
1990	213.2	47.3	15.4	275.9
1991	293.4	137.0	11.6	442
1992	304.9	116.2	16.4	437.5
1993	249.0	78.7	31.3	359
1994	160.9	103.2	6.2	270.3
1995	176.3	135.1	32.9	344.3
1996	188.5	112.7	20.8	322
1997	165.1	97.0	8.4	270.5
1998	169.8	77.9	7.7	255.4
1999	91.0	115.9	11.1	218
2000	140.4	184.7	13.3	338.4
2001	142.0	189.5	3.8	335.3

Table 4.5 Recreational harvest estimates of U.S. Atlantic Large Coastal Sharks by Species for 1999, 2000, and 2001. Note: Recreational catches are reported in numbers of fish. Source: Cortes and Neer, 2002.

Species	Large Coastal Sharks		
	1999	2000	2001
Blacktip	34,962	74,055	48,848
Bull	3,107	6,045	3,751
Dusky	5,570	2,397	5,703
Great Hammerhead	352	921	3,367
Hammerhead, genus	75	3,693	--
Lemon	146	2,801	5,946
Night	50	--	--
Nurse	1,503	2,138	4,280
Reef	3	182	182
Requiem family	3,975	6,349	11,397
Requiem genus	8,978	11,600	4,887
Sandbar	20,553	10,743	35,880
Sand Tiger	--	--	604
Scalloped Hammerhead	1,349	3,517	1,108
Silky	3,863	5,109	4,070
Smooth Hammerhead	1	--	703
Spinner	6,391	6,355	2,896
Tiger	153	1,479	784
Total	91,031	137,384	134,406

Table 4.6 Recreational harvest estimates of U.S. Atlantic Small Coastal Sharks by Species for 1999, 2000, and 2001. Note: Recreational catches are reported in numbers of fish. Source: Cortes and Neer, 2002.

Species	Small Coastal Sharks		
	1999	2000	2001
Atlantic Sharpnose	68,621	114,973	109,114
Blacknose	6,019	10,463	15,059
Bonnethead	41,128	57,405	58,600
Finetooth	78	1,786	6,729
Smalltail	4	29	--
Total	115,850	184,656	189,502

Table 4.7 Recreational harvest estimates of U.S. Atlantic Pelagic Sharks by Species for 1999, 2000, and 2001. Note: Recreational catches are reported in numbers of fish. Source: Cortes and Neer, 2002.

Species	Pelagic Sharks		
	1999	2000	2001
Blue	5,218	7,010	950
Shortfin Mako	1,383	5,808	2,882
Thresher	5,512	528	--
Total	11,113	13,346	3,832

5 CURRENT FISHERY MANAGEMENT PLAN OBJECTIVES

The management plan objectives of the HMS FMP are described below. They apply to tuna, swordfish, and sharks. They are not listed in any particular order.

- To prevent or end overfishing of Atlantic tuna, swordfish, and sharks and adopt the precautionary approach to fishery management;
- To rebuild overfished fisheries in as short a time as possible and control all components of fishing mortality, both directed and incidental, so as to ensure the long-term sustainability of the stocks and promote stock recovery of the management unit to the level at which the maximum sustainable yield can be supported on a continuing basis;
- To minimize, to the extent practicable, economic displacement and other adverse impacts on fishing communities during the transition from overfished fisheries to healthy ones;
- To minimize, to the extent practicable, bycatch of living marine resources and the mortality of such bycatch that cannot be avoided in the fisheries for Atlantic tuna, swordfish, and sharks;
- To establish a foundation for international negotiation on conservation and management measures to rebuild overfished fisheries and to promote achievement of optimum yield for these species throughout their range, both within and beyond the exclusive economic zone. Optimum yield is the maximum sustainable yield from the fishery, reduced by any relevant social, economic, or ecological factors;
- To provide a framework, consistent with other applicable law, to take necessary action under International Convention for the Conservation of Atlantic Tunas (ICCAT) compliance recommendations;
- To provide the data necessary for assessing the fish stocks and managing the fisheries, including addressing inadequacies in current collection and ongoing collection of social, economic, and bycatch data about HMS fisheries;

- Consistent with other objectives of the HMS FMP, to manage Atlantic HMS fisheries for continuing optimum yield so as to provide the greatest overall benefit to the Nation, particularly with respect to food production, providing recreational opportunities, preserving traditional fisheries, and taking into account the protection of marine ecosystems;
- To better coordinate domestic conservation and management of the fisheries for Atlantic tuna, swordfish, sharks, and billfish, considering the multispecies nature of many HMS fisheries, overlapping regional and individual participation, international management concerns, historical fishing patterns and participation, and other relevant factors;
- To simplify and streamline HMS management while actively seeking input from affected constituencies, the general public, and the HMS AP;
- To promote protection of areas identified as essential fish habitat for tuna, swordfish, and sharks;
- To reduce latent effort and overcapitalization in HMS commercial fisheries;
- To develop eligibility criteria for participation in the commercial shark and swordfish fisheries based on historical participation, including access for traditional swordfish handgear fishermen to participate fully as the stock recovers; and
- To create a management system to make fleet capacity commensurate with resource status so as to achieve the dual goals of economic efficiency and biological conservation.

6 ISSUES AND OPTIONS: ATLANTIC SHARKS

The primary purpose of this scoping document, and of the series of public scoping meetings to be held during the winter of 2003, is to articulate all of the issues in Atlantic Shark fisheries and identify the full range of options to address those issues in rebuilding or maintaining shark stocks. The following issues and options were developed by NOAA Fisheries. The list of issues and options presented below is intended to serve as a starting point for discussion of future Atlantic Shark management and should not be considered comprehensive. Some measures are in place under current management and may be retained. NOAA Fisheries anticipates that other issues and options will be identified by the public and the Advisory Panels during the scoping process. NOAA Fisheries will, as appropriate, consider all issues and options as well as public comments in the plan amendment.

Issues are presented by subject heading as originally outlined in the HMS FMP. The associated options are not presented in any particular order.

6.1 MANAGEMENT MEASURES FOR COMMERCIAL FISHING

6.1.1 ISSUE 1: ACCOUNTING FOR MORTALITY

Description of the Issue

All sources of mortality (e.g., landings, dead discards, state landings after federal fishery closures) are included in stock assessments but have not been accounted for when setting quota levels. For example, variable landings may result in either an over harvest or an under harvest in quota at the end of the fishing season/year. As of December 31, 2002, dead discards and state landings, which occur after a federal closure, are counted against the federal commercial quota for sharks. Fishermen have expressed concern that taking dead discards and state landings after a federal closure from the federal quota constitutes “double dipping” because the mortality from dead discards and state landings are considered in the stock assessment. The current emergency rule addresses this concern.

According to the 2002 stock assessment for large coastal sharks, over 15 thousand fish were discarded in the pelagic and bottom long line fisheries during 2001. As such, approximately six percent of the total catch for large coastal sharks, in terms of discards, has remained unaccounted for when quota allowances are being determined. Similarly, when states remain open after a federal fishery closure, additional mortality is incurred above and beyond that which was assumed when the quota was originally set. These situations increase the risk associated with setting quota levels too high (mortality levels may exceed sustainable levels and contribute toward overfishing) or too low (additional conservation benefits may be gained, but at a cost to the industry). Accounting for all sources of mortality in setting quota levels could reduce overfishing/prevent overfishing, keep rebuilding programs on track, reduce the likelihood of additional restrictions in the future, and reduce unnecessary costs to industry.

Options Available for Consideration

1. Over harvests/Under harvests (Season specific accounting, following season accounting, create a reserve whereby over/under harvests would be subtracted, no management measure)
2. Dead discards (Reduce next year's quota based upon last year's discards, establish a total allowable catch (TAC) and reduce total allowable landings (TAL) by discard estimates, create a reserve whereby discards would be subtracted, no management measure)
3. State landings after federal closures (Reduce next year's quota based upon last year's landings, establish TAC and separate federal and state TALs, create a reserve whereby state landings would be subtracted, no management measure)

6.1.2 ISSUE 2: QUOTAS

Description of the Issue

Commercial quotas for species groups (e.g., large coastal, small coastal, pelagic shark) are used to limit fishing mortality by establishing the maximum number/weight of sharks that can be legally landed in a period of time. While quotas are effective tools for reducing or restricting fishing mortality, there are a number of issues which must be carefully considered when designing or selecting a quota management program for sharks including, but not limited to, fishery dynamics, enforcement, status of stock, and unintended consequences of implementing said programs. For example, the 2002 stock assessment for large coastal sharks noted that overfishing could still be occurring on the complex as a whole. However, current biomass for individual species (i.e., sandbar, blacktip) within this complex could be near or above maximum sustainable yield (MSY). Results of the small coastal shark stock assessment indicate that aggregate biomass levels for the complex are at or above those which could produce MSY. However, fishing mortality on finetooth sharks exceeds the fishing mortality at MSY, which indicates that overfishing is occurring for this species. These stock assessment results question the appropriateness of aggregate/group specific quotas, given that species quotas may provide more flexibility to address species specific management concerns. Species specific quotas, however, may be difficult to implement and enforce, given that many of these species look alike in the field and are not readily identifiable from one another. To complicate this issue further, unintended consequences of the quota program design, such as increased discards of sharks in incidental fisheries, where these species are taken as bycatch, may actually offset expected reductions in fishing mortality. In this circumstance, consideration should be given to management by the least common denominator, whereby closure of the fishery is questioned once an individual species quota is taken or projected to be taken. Management by the least common denominator may result in discards that exceed some previously determined threshold.

Options Available for Consideration

QUOTA CLASSIFICATION

1. Aggregate (e.g., Large coastal sharks, small coastal sharks, other)

2. Group (e.g., Large coastal sharks - ridgeback/nonridgeback)
3. Species-specific (e.g., Sandbar, silky, tiger, blacktip, bull, finetooth)
4. Spatial-specific (e.g., Coastwide, regional, state-by-state, other)
5. Temporal-specific (e.g., Quarterly, bi-annually, annually, other)
6. Gear-specific (e.g., Pelagic long line, bottom long line, gill net, hand gear)
7. Combination of above options (e.g., Regional ridgeback)
8. Individual fishing quota or individual transferable quota

QUOTA BASIS

1. Landings (Status Quo)
Description - Quotas would be established for the fishery as a whole; once quota is met then fishery is closed and possession is prohibited; quota would be adjusted on the basis of annual landings to meet FMP rebuilding schedule or target reference point in FMP.
2. Constant fishing mortality
Description - Quotas would be established for the fishery as a whole; once quota is met then fishery is closed and possession is prohibited; quota would be adjusted annually on the basis of achieving constant fishing mortality or exploitation over time.
3. Individual (e.g., Individual fishing quota or individual transferable quota)
Description - Quotas would be established for each individual permit holder; once quota is met then the individual can no longer fish for or have possession of quota species; quota may be adjusted depending on system design (e.g., transferability, limited entry into fishery, and/or exit from fishery), status of the resource, rebuilding schedule in FMP, or target reference point in FMP.

QUOTA ADMINISTRATION (TIMING FOR ADJUSTMENT WHERE OVER AND UNDER HARVESTS ARE CONSIDERED SEPARATELY)

1. Adjust quota annually (quota specifications set before the beginning of each fishing season)
2. Adjust quota concurrent with stock assessment (every 2-4 years)

QUOTA ADMINISTRATION (TIMING FOR ADJUSTMENT WHERE OVER AND UNDER HARVESTS ARE NOT CONSIDERED SEPARATELY)

1. Adjust quota annually (quota specifications set before the beginning of each fishing season)
2. Adjust quota concurrent with stock assessment (every 2-4 years)
3. Adjust quota based upon over and under harvests in next season
4. Adjust quota based upon over and under harvests in same season

6.1.3 ISSUE 3: FISHERY CLOSURES

Description of the Issue

Once commercial quotas are reached or projected to be reached, the fishery must be closed. The only fishery that has reached its quota is the large coastal shark fishery. Prior to 1999, the fishery was closed with 5 days advanced notice and NOAA Fisheries received comments that fishermen had trouble establishing markets, felt they had to fish whenever they could because they did not know when the fishery would close. In 1999, NOAA Fisheries implemented a 30-day advanced notice of season length procedure. NOAA Fisheries has received comments from some fishermen that the procedure allows for some stability and reduces derby fishing conditions but other fishermen prefer to return to the 5 day advanced notice procedure. Note other options for regional, quarterly, season- or gear-specific quotas may impact this option.

Options Available for Consideration (Large Coastal Sharks)

1. Fishing season notification 30 days prior to opening and closing
2. 5 days advanced notice of closure
3. 14 days advanced notice of closure

6.1.4 ISSUE 4: MINIMUM SIZES OR OTHER LIMITS TO REDUCE MORTALITY

Description of the Issue

Minimum sizes are used to reduce fishing mortality on juvenile fish and can also be used in conjunction with quotas, time and area closures, prohibited species, etc. to reduce overall fishing mortality. Both the 1998 and the 2002 large coastal shark stock assessments noted that current research indicates that juvenile survival is the most important variable affecting overall population growth rates. To be effective in reducing fishing mortality, minimum sizes should be selected for species that survive the capture experience and/or for which size classes segregate either in space or time, otherwise bycatch mortality may negate any benefits of releasing juvenile fish. The 1998 and 2002 LCS assessments also noted that fecundity explains the variability within these survival rates, which lends additional support to protection of reproductive females in addition to juvenile fish.

Options Available for Consideration

LIMIT CLASSIFICATION

1. Group-specific (Large coastal sharks - ridgeback/nonridgeback; small coastal sharks; pelagic sharks)
2. Species-specific (Sandbar, silky, tiger, blacktip, bull, finetooth, etc.)
3. Sex-specific (e.g., Male only catch or females between a certain size range or larger/smaller than a certain size)
4. Time/Area closures (e.g., Essential fish habitat, nursery grounds)

SIZE LIMITS

1. No management measure (Status Quo)
2. 1999 FMP minimum size (137 cm FL ridgeback LCS)
3. Other based upon size at maturity
4. Other based upon size > size at maturity
5. Maximum size
6. Slot size

6.1.5 ISSUE 5: TRIP LIMITS FOR DIRECTED PERMIT HOLDERS

Description of the Issue

Trip limits can help extend a fishing season by capping the amount of fish that can be landed on a given fishing trip and may help limit fleet capacity by reducing incentives to upgrade vessel harvesting capacity. The large coastal shark commercial trip limit of 4,000 lb dressed weight was implemented in 1994 due to severe derby fishing conditions; there are no other trip limits for directed shark permit holders. Since implementation of limited access and its associated upgrading restrictions in 1999, NOAA Fisheries has heard that the 4,000 lb trip limit for vessels with directed permits is unnecessary because the larger vessels cannot re-enter the fleet. NOAA Fisheries has also heard that removing the trip limit may cause the fishery to return to derby conditions. Trip limits can result in bycatch mortality of fish that are caught on portions of the gear that is fished for long periods of time, if the trip limit is reached before all the gear is hauled.

Options Available for Consideration

TRIP LIMIT CLASSIFICATION

1. Maintain aggregate (Large coastal sharks; small coastal sharks; other) by permit type (Status Quo)
2. Group (Large coastal sharks - ridgeback/nonridgeback; small coastal sharks; pelagic sharks)

TRIP LIMIT

1. Limits on all species groups
2. Limits on some species groups (e.g., 4,000 lb dw for LCS - Status Quo)
3. Limits on all sharks regardless of species groups
4. Limits based upon average catch/trip
5. Allow incidental landings during a directed closure
6. Other
7. No management measure

6.1.6 ISSUE 6: TRIP LIMITS FOR INCIDENTAL PERMIT HOLDERS

Description of the Issue

Similar to the issue described above for directed permit holders, if a decision is made that a certain fishery can only withstand incidental levels of harvest, then trip limits for incidental permit holders

may need to be adjusted. Adjustments may also need to be made if allowances for incidental landings during directed closures occur.

Options Available for Consideration

1. Limits on all species groups
2. Limits on some species groups (e.g., 5 LCS, 16 SCS and pelagic sharks combined)
3. Limits on all sharks regardless of species groups
4. Limits based upon average catch/trip
5. Allow incidental landings during a directed closure
6. Other
7. No management measure

6.2 EFFORT CONTROLS, RETENTION LIMITS, AND OTHER MANAGEMENT MEASURES

6.2.1 MANAGEMENT MEASURES FOR RECREATIONAL FISHING

6.2.1.1 ISSUE 1 : BAG LIMITS

Description of the Issue

Recreational retention limits, or bag limits, are used to limit fishing mortality by recreational fishermen. All fish caught in excess of the bag limit must be released in a manner that will ensure maximum probability of survival without removing the fish from the water. Unlike commercial quotas, recreational bag limits have been combined for all species groups due to misidentification of sharks, particularly of small coastal sharks and juvenile large coastal sharks. Recreational anglers are currently limited to one shark/vessel/trip plus an allowance of one Atlantic sharpnose shark/person/trip. Babcock and Pickitch (2002) found that a significant fraction of recreational fishing trips are still harvesting more than the 1 shark/vessel/trip retention limit.

Options Available for Consideration

RECREATIONAL RETENTION LIMIT - CLASSIFICATION

1. Status quo - All species groups combined
2. Group-specific (Large coastal sharks - ridgeback/non-ridgeback; small coastal-sharks; pelagic sharks)
3. Sex-specific
4. Charter/Headboat-specific.
5. Tournament-specific.

RECREATIONAL RETENTION LIMITS - NUMBER

1. 1 shark/vessel/trip plus 1 Atl. sharpnose/person/trip (Status Quo)
2. X shark(s)/vessel/trip plus X Atl. sharpnose/person/trip
3. X shark(s)/vessel/trip plus X Atl. sharpnose and X bonnethead sharks/person/trip

4. Male harvest only
5. Other
6. No management measure

6.2.1.2 ISSUE 2: MINIMUM SIZES AND OTHER LIMITS TO REDUCE MORTALITY

Description of the Issue

Minimum sizes are used to reduce fishing mortality on juvenile fish and can be used in conjunction with bag limits, time and area closures, and prohibited species to reduce overall fishing mortality. A recreational size limit of 4.5 feet FL (137 cm) was selected in 1999 for all sharks other than Atlantic sharpnose sharks. Cortes *et al.*, 2002, state that current research indicates juvenile survival as the most important variable affecting overall population growth rates and that minimum sizes and protection of reproductive females may be important management measures.

To be effective in reducing fishing mortality, minimum sizes should be selected for species that survive the capture experience and/or for which size classes segregate either in space or time, otherwise bycatch mortality may negate any benefits of releasing juvenile fish.

According to Babcock and Pickitch (2002) although the 137 cm size limit has increased catch and release fishing in the recreational shark fishery, the majority of sharks sampled by the MRFSS survey are below the established minimum size limit. It appears as though the minimum size limit has been ineffective. Many established tournaments have mandatory minimum size limits in place for sharks qualifying for competition.

Options Available for Consideration

LIMIT- CLASSIFICATION

1. Status quo - All species groups combined
2. Group-specific (Large coastal sharks - ridgeback/non-ridgeback; small coastal sharks; pelagic sharks)
3. Species-specific (e.g., Mako, sandbar, blacktip, tiger, bull)
4. Sex-specific
5. Charter/Headboat-specific
6. Tournament-specific
7. Time/Area closures

LIMIT - PARAMETERS

1. 4.5 ft FL all sharks except Atl. sharpnose (Status Quo)
2. 4.5 ft FL all sharks except Atl. sharpnose and bonnethead
3. No minimum size for any shark species except Atl. sharpnose and bonnethead (minimum size based on age at maturity)

4. Species-specific minimum sizes based on age at maturity
5. Slot limits to protect juvenile and reproductive sharks
6. Other
7. No management measure

6.2.1.3 ISSUE 3: LANDING FORM

Description of the Issue

In 1999, NMFS implemented a requirement that all sharks landed by recreational fishermen have head, tail, and fins attached to increase species identification at the dock. (A similar measure was rejected for commercial fisheries due to concerns about seafood safety from inadequate freezing of shark carcasses).

Options for Consideration

LANDING FORM CLASSIFICATION

1. Charter/Headboat-specific
2. Tournament-specific
3. All anglers

LANDING FORM

1. Whole form required at landing (e.g., can be gutted and bled - Status Quo)
2. Other
3. No management measure (e.g., can be headed, gutted, finned and filleted at sea)

6.2.1.4 ISSUE 4: AUTHORIZED GEAR

Description of the Issue

The 1999 HMS FMP did not distinguish any shark gear type as recreational or commercial. Shark fishermen were considered to be commercial if they held a limited access shark permit. Under this scenario, a fisherman using a longline to catch dolphin or a driftnet to catch mackerel who did not hold a limited access shark permit could land sharks recreationally. With the creation of an HMS angling category permit (67 FR 77434, December 13, 2002), this is no longer an issue. However, public input is requested on the management strategy currently employed to address this issue.

Options for Consideration

1. Specify that sharks landed recreationally must be caught with rod and reel or handgear only (Status Quo)
2. Other
3. No management measure

6.2.2 BYCATCH REDUCTION IN SHARK FISHERIES

National Standard 9 of the Magnuson-Stevens Act requires that bycatch, or bycatch mortality, be minimized. The Magnuson-Stevens Act defines bycatch as “fish which are harvested in a fishery, but which are not sold or kept for personal use, and includes economic discards and regulatory discards. Such term does not include fish released alive under a recreational catch and release fishery management program.” It is noteworthy to point out that “fish,” as defined by the Magnuson-Stevens Act are “finfish, mollusks, crustaceans, and all other forms of marine animal and plant life other than marine mammals and birds.”

Bycatch has become a central concern of fishing industries, environmentalists, resource managers, scientists, and the public, both nationally and globally. A 1994 report of the Food and Agriculture Organization (FAO) of the United Nations estimated that over one-quarter (27 million metric tons) of the total world catch by commercial fishing operations was discarded (Alverson *et al.*, 1994). Bycatch precludes other more productive uses of fishery resources; it is important to minimize the waste associated with bycatch when so many of the world’s fisheries are either fully exploited or overexploited. As a source of fishing mortality, excessive bycatch in commercial fisheries can slow rebuilding of overfished stocks (if most of the bycatch dies) and imposes direct and indirect costs on commercial fishing operations by increasing sorting time, and decreasing the amount of gear available to catch target species. Bycatch concerns also apply to populations of marine mammals, sea turtles, seabirds and other components of ecosystems for which there are no commercial or recreational uses. Bycatch can be reduced by the improvement of selective fishing methods and by implementing management measures that reduce the incentive for fishermen to catch more fish than will be retained; in some cases, an incentive exists to catch more fish than will be retained if the fisher’s cost of the additional catch is less than the benefit.

Specifically, NOAA Fisheries undertakes bycatch reduction through:

1. Evaluation and continued support of current data collection programs and research related to bycatch
2. Implementation of bycatch reduction measures through gear modifications and time/area closures
3. Education of fishermen and processors on identification and reporting methods of HMS species and on proper sea turtle handling and release methods

Bycatch Reporting Methods Currently in Place

1. Logbooks
2. Discard report form
3. Observer data
4. Survey data

6.2.2.1 ISSUE 1: REDUCING BYCATCH OF PROTECTED RESOURCES

Description of the Issue

The June 14, 2001, Biological Opinion that analyzed the impacts of shark fisheries on listed marine mammals and sea turtles took into account recent landings and concluded that the southeast gillnet fishery for sharks, the bottom longline fishery, handgear fishery, and rod and reel fisheries may adversely affect but are not likely to jeopardize the continued existence of the right whale, humpback, fin, or sperm whales, or Kemp's ridley, green, loggerhead, hawksbill, or leatherback sea turtles. While the June 14, 2001, Biological Opinion did find that the continued operation of the Atlantic pelagic longline fishery is likely to jeopardize the continued existence of the leatherback and loggerhead sea turtles, pelagic longline gear is generally not used to target LCS or SCS. NOAA Fisheries has implemented a final rule to establish the Reasonable and Prudent Alternative outlined in the Biological Opinion and is conducting an experiment to test gear modifications that could further reduce sea turtle interactions.

Under the June 14, 2001, Biological Opinion, fishermen are permitted to catch a limited number of protected resources. Under an "Incidental Take Statement (ITS)" issued under the authority of Section 9 of the ESA. This Biological Opinion allows for the take of twelve loggerhead turtles, two leatherback, two Kemp's ridley, two green, and two hawksbill sea turtles annually in the bottom longline fishery. In the shark drift gillnet fishery, the ITS is twenty loggerhead turtles, four leatherback (no more than two can be dead), two Kemp's ridley, two green, and two hawksbill sea turtles annually.

Shark gillnet gear, used to target SCS, can interact with sea turtles and is used in right whale critical habitat. Because of possible whale interactions, this gear is subject to compliance with the Large Whale Take Reduction Plan (LWTRP) under the Marine Mammal Protection Act (MMPA). This fishery has 100 percent observer coverage during right whale calving season and 53 percent observer coverage during the remainder of the year.

Bottom longline gear can also interact with sea turtles and marine mammals. This fishery has had mandatory observer coverage since January 2002. Interactions with protected resources by these gear types are fully described in the latest Stock Assessment and Fishery Evaluation Report (SAFE Report).

Any vessel owner or operator, or fisher (in the case of non-vessel fisheries), participating in a Category I, II or III fishery must comply with 50 CFR 229.6 and report all incidental injuries or mortalities of marine mammals that occur during commercial fishing operations to NOAA Fisheries (section 118 MMPA). In the 2002 List of Fisheries, the Southeastern U.S. Atlantic shark gillnet fishery, which is comprised of fewer than 11 vessels, was classified as Category II for its encounters with Bottlenose dolphin, North Atlantic Right Whales, and Atlantic spotted dolphin (67 FR 2410). Category II is defined in section 118 of the MMPA as "annual mortality and serious injury of a stock in a given fishery is greater than 1 percent and less than 50 percent of the

Potential Biological Removal level.”

Options Available for Consideration Regarding Reducing Bycatch of Protected Species

GEAR DEPLOYMENT (by gear type)

Gillnet

1. Require continuous net checks–status quo
2. Large Whale Take Reduction Plan (LWRTP) restrictions– Status quo
3. Require strike netting year-round with spotter planes
4. Require 100% observer coverage year round for the drift gillnet fishery
5. Require VMS during right whale calving season in order to reduce cost of observers
6. Require VMS year-round
7. Close right whale calving areas
8. Close the shark gillnet fishery permanently/Remove gear from list of authorized gear
9. Vessel buyback program

Bottom Longline

1. Require the guidelines for the safe handling of sea turtles captured in a bottom longline interaction to be posted in the wheelhouse (Status Quo)
2. Require line clipping equipment on board vessel
3. Require de-hooking devices on board vessel
4. Require fishermen to attend workshops that teach the proper techniques for handling and release of protected resources from hooking or entanglement, in order to minimize post-release mortality – participation mandatory
5. Close areas with high sea turtle interaction
6. Require different types of bait
7. Require bait treated with dyes or chemical repellents

6.2.2.2 ISSUE 2: REDUCING BYCATCH OF SHARKS AND PROHIBITED SHARK SPECIES

Description of the Issue

National Standard 9 of the Magnuson-Stevens Act requires that bycatch, or bycatch mortality, be minimized.

Bycatch mortality, particularly on sensitive life history stages, can contribute to overfishing and can impede stock rebuilding. Many shark species use coastal bays and estuaries as pupping and

nursery grounds and some offshore areas function as overwintering grounds. Reducing bycatch mortality on sensitive life history stages can be one way to increase the effectiveness of management measures, speed rebuilding, and/or build in buffers to prevent overfishing.

Better bycatch estimates of SCS in the shrimp trawl and bottom longline fisheries (Cortes, 2002) and better identification in the seafood dealer reporting system and methodology would also help to understand the status of SCS. At minimum, continued observer coverage, better identification and reporting methods, and collection of additional species-specific data are needed.

All currently known tools for bycatch reduction in HMS fisheries are being used. There are probably no fisheries in which there is no bycatch because none of the currently legal fishing gears are perfectly selective for the target of each fishing operation (with the possible exception of the swordfish harpoon fishery). The challenge becomes one of managing the kinds of gear, their configuration, and how, when, and where they are operated; and the disposition of each species caught in such a way that the unintended catch is reduced, the survival of the catch is maximized, and the sustainable use of bycatch is achieved where appropriate. Shark fisheries are currently limited to the following gear types: handgear, longline, squid trawl, and harpoon for swordfish; and handgear, longline, drift gillnet, and rod and reel.

Managing when and where fisheries operate can be a very effective means of reducing bycatch. Recent attempts to close critical habitat to protect fish from directed and incidental fishing gear have been successful.

Options for Consideration Regarding Reducing Bycatch of Sharks and Prohibited Shark Species

TIME/AREA CLOSURES

1. Close nursery and pupping grounds
2. Close overwintering grounds
3. Issue non-transferable permits allowing access to selected areas
4. Close EFH or areas of particular concern
5. Close migration corridors

6.2.3 PROHIBITED SPECIES

6.2.3.1 ISSUE 1: PROHIBITED SPECIES GROUP

Description of the Issue

In 1999, NOAA Fisheries expanded the prohibited shark species group from 5 species to 19 species and added species that were severely overfished and species which were rarely reported caught and/or especially vulnerable to overfishing with the goal of preventing directed fisheries from developing before scientific information as to sustainable fishing mortality levels could be gathered. Since then, NOAA Fisheries has received a number of comments from the public

including expressions of concern that: current prohibited species are rarely caught and do not need high levels of protection; and dusky sharks as well as other species have high bycatch mortalities so prohibiting them increases mortality. Additionally, while limited sharks may be landed with an exempted fishing permit (EFP), some fishermen find the process to obtain an EFP burdensome.

Options Available for Consideration:

1. 19 species on the list (Status Quo)
2. Add finetooth to the list
3. Remove dusky shark or other species from list
4. Return to the 5 species in 1997: white, sand tiger, bigeye sand tiger, whale, and basking shark
5. Allow limited numbers of display species to be collected with a separate collection permit
6. Implement time/area closures to protect some species
7. Other
8. No management measure

6.2.4 DEEPWATER/OTHER SPECIES

6.2.4.1 ISSUE 1: DEEPWATER/OTHER SPECIES GROUP

Description of the Issue:

In 1999, NOAA Fisheries established a deepwater/other shark species group with the only management measure of a ban on finning to increase enforcement capabilities of the finning ban. In February 2002 (67 FR 6194), NMFS implemented the requirements of the Shark Finning Prohibition Act which banned finning of all sharks nationally.

Options Available for Consideration:

1. Finning prohibition only (Status Quo)
2. Remove from management unit (b/c of finning ban); data collection only
3. Other
4. No management measure

6.2.5 ESSENTIAL FISH HABITAT

6.2.5.1 ISSUE 1: ESSENTIAL FISH HABITAT

DESCRIPTION OF THE ISSUE

The Magnuson-Stevens Act requires each FMP to describe and identify essential fish habitat (EFH) for the fishery, minimize to the extent practicable adverse effects on that EFH caused by fishing, and identify other actions to encourage the conservation and enhancement of that EFH. In 1999, NOAA Fisheries designated EFH for all actively managed species of sharks as well as designated two habitat areas of particular concern. NOAA Fisheries is committed to reviewing

new information pertaining to essential fish habitat as it becomes available.

Topics for Consideration and Public Input

1. New information on habitat for all shark species
2. Additional/new information on areas of particular concern (e.g., Georgia finetooth areas)
3. New information and studies that have been conducted to minimize impacts to EFH for sharks

7 ISSUES AND OPTIONS: HIGHLY MIGRATORY SPECIES (GENERAL)

The secondary purpose of this scoping document, and of the series of public scoping meetings to be held during the winter of 2003, is to articulate exempted fishing permit issues in HMS fisheries and identify the full range of options to address these issues. The following issues and options were developed by NOAA Fisheries. The list of issues and options presented below is intended to serve as a starting point for discussion of future administration of exempted fishing activities for HMS management and should not be considered comprehensive. Some options are in place under current management and may be retained. Some options may not be allowed under existing law but are included in order to identify the full range of management options available. NOAA Fisheries anticipates that other issues and options will be identified by the public and the Advisory Panel during the scoping process. NOAA Fisheries will, as appropriate, consider all issues and options as well as public comments in the amendment.

Issues are presented by subject heading as originally outlined in HMS FMP. The associated options are not presented in any particular order.

7.1 EXEMPTED FISHING PERMITS/SCIENTIFIC RESEARCH PERMITS

7.1.1 ISSUE 1: RESTRUCTURING THE EXEMPTED FISHING PERMIT ISSUANCE PROCESS

Description of the Issue

Issuance of EFPs and/or SRPs may be necessary because possession of certain shark species is prohibited, possession of billfishes on board commercial fishing vessels is prohibited, and because the commercial fisheries for bluefin tuna, swordfish and large coastal sharks may be closed for extended periods, during which collection of live animals and/or biological samples would otherwise be prohibited. NOAA Fisheries is aware of growing concerns about the EFP/SRP issuance process. Specifically, current concerns relate to accountability requirements in the live capture of HMS. Concerns have also been noted that EFPs should not allow access to closed areas for the purposes of research (i.e., bycatch reduction experiments) and that commercial sale of fish caught during exempted fishing activities should not be allowed to offset the costs of conducting scientific research. Also, management of such ongoing activities by “exemption” is not appropriate and may lead to conflicts with other state/federal management programs.

Options for Consideration

EFP CLASSIFICATION

1. Issue EFPs for all species groups with the management unit (See Table 3)
2. Issue EFPs for some species groups within the management unit (e.g., LCS, SCS, and pelagic sharks for public display and scientific research only; prohibited species for public display and scientific research only)
3. Create a new permit for the collection of sharks for display purposes that has its own set of regulations and reporting requirements.

4. Other
5. No management measure

EFP LIMITS

1. Allow harvest of sharks up to 60 mt
2. Other
3. No management measure

ADDITIONAL REQUIREMENTS (THE FOLLOWING OPTIONS MAY NOT BE MUTUALLY EXCLUSIVE)

1. Improve overall accountability in the EFP/SRP issuance process (i.e., call in and out 72 hours in advance of activity, passive integrated transponder tags required for implantation in live collections, application must include gear deployment, monitoring, and soak time in order to minimize mortality of live captures, mandatory observer placement, VMS on directed swordfish vessels to negate necessity for EFP to allow delayed offloading)
2. Limit or prohibit commercial sale of fish caught during exempted fishing activities

APPENDIX I: SCOPING SCHEDULE

<i>Location</i>	<i>Address</i>	<i>Date</i>	<i>Time</i>
<i>Silver Spring, MD</i>	<i>Holiday Inn 8777 Georgia Ave. Silver spring, MD 20910 Contact: Karyl Brewster-Geisz, (301) 713-2347</i>	<i>February 10, 2003</i>	<i>1-6 PM</i>
<i>Montauk, NY</i>	<i>Montauk Fire House 12 Flamingo Avenue Montauk, NY 11954 Contact: Heather Stirratt, (301) 713-2347</i>	<i>February 19, 2003</i>	<i>7-9 PM</i>
<i>Cocoa Beach, FL</i>	<i>Cocoa Beach Public Library 550 North Brevard Avenue Cocoa Beach, FL 32931 Contact: Greg Fairclough, (727) 570-5447</i>	<i>February 25, 2003</i>	<i>7-9 PM</i>
<i>Madeira Beach, FL</i>	<i>City of Madeira Beach 300 Municipal Dr. Madeira Beach, FL 33708 Contact: Greg Fairclough, (727) 570-5447</i>	<i>February 27, 2003</i>	<i>7-9 PM</i>
<i>Ocean City, MD</i>	<i>Ocean City Council Chambers 301 Baltimore Ave. Ocean City, MD 21842 Contact: Karyl Brewster-Geisz, (301) 713-2347</i>	<i>March 5, 2003</i>	<i>7-9 PM</i>
<i>Manteo, NC</i>	<i>North Carolina Aquarium Roanoke Island PO Box 967 Airport Road Manteo, NC 27954 Contact: Heather Stirratt, (301) 713-2347</i>	<i>March 6, 2003</i>	<i>7-9 PM</i>
<i>Port Aransas, TX</i>	<i>University of Texas Marine Science Institute Visitor's Center (located on Cotter St. near beach) 750 Channel View Dr. Port Aransas, TX 78373 Contact: Heather Stirratt, (301) 713-2347</i>	<i>March 11, 2003</i>	<i>7-9 PM</i>

APPENDIX II: PRELIMINARY SCHEDULE FOR DEVELOPMENT OF AMENDMENT

November 2002	NOAA Fisheries publishes Notice of Intent (NOI) to prepare an amendment/EIS in <u>Federal Register</u> (w/120-day comment period); Comment period ending (CPE) 3/17/03
January 2003	NOAA Fisheries publishes Notice of Availability (NOA) of Issues and Options (IO) paper and Notice of public scoping meeting; CPE 3/17/03
Feb/March 2003	Scoping Meetings (must fall within comment period for IO and NOI, 11/13/02 and 03/17/03)
February 10-12, 2003	Advisory Panel Meetings, Silver Spring
March 17, 2003	Comment period (120 days) ends for NOI to prepare an amendment/Environmental Impact Statement (EIS); CPE for Issues/Options paper
June 2003	NOA for Draft EIS (DEIS) published in the Federal Register; Proposed rule released
August 2003	Comment period ends on proposed rule and DEIS
October 2003	NOA for Final EIS (FEIS) published in <u>Federal Register</u> w/30-day cooling-off period by Environmental Protection Agency (EPA)
November 2003	Final rule published
January 2004	Final rule becomes effective

LIST OF REFERENCES

- Babcock, E.A., and E.K. Pikitch. 2002. The Effectiveness of Bag Limits in the U.S. Atlantic Recreational Fishery. 2002 SEW Document SB-02-2.
- Carlson, J. K. and I. Baremore. 2002. The directed shark gillnet fishery: non-right whale season, 2002. NOAA, NMFS, Southeast Fisheries Science Center, Panama City, FL. SFD Contribution PCB-02/12. 10pp.
- Carlson, J.K. and I. Baremore. 2002 The directed shark gillnet fishery: right whale season, 2002. NOAA NMFS, Southeast Fisheries Science Center, Panama City, FL. SFD Contribution PCB-02/13. 8pp.
- Cortes, E., and J. Neer. 2002. Updated Catches of Sharks. 2002 SEW Document SB-02-15.
- Cortes, E. 2002. Stock Assessment of Small Coastal Sharks in the U.S. Atlantic and Gulf of Mexico. National Marine Fisheries Service, Southeast Fisheries Science Center, Panama City Laboratory. Panama City, FL. Public Document.
- Cortes, E., *et al.* 2002. Stock Assessment of Large Coastal Sharks in the U.S. Atlantic and Gulf of Mexico: Final Meeting Report of the 2002 Shark Evaluation Workshop. National Marine Fisheries Service, Southeast Fisheries Science Center, Panama City Laboratory. Panama City, FL. Public Document.
- National Marine Fisheries Service, Office of Science and Technology, Fisheries Statistics and Economics Division. 1996. The Economics of Bycatch and Bycatch Management in the U.S. EEZ Groundfish Fisheries off Alaska. Silver Spring, MD. Public Document.
- National Marine Fisheries Service, Office of Sustainable Fisheries, Highly Migratory Species Management Division. 1997. Issues and Options for the Management of Atlantic Highly Migratory Species. Silver Spring, MD. Public Document.
- National Marine Fisheries Service, Office of Sustainable Fisheries, Highly Migratory Species Management Division. 1999. Fishery Management Plan for Atlantic Tunas, Swordfish and Sharks. Silver Spring, MD. Public Document.
- National Marine Fisheries Service, Office of Sustainable Fisheries, Highly Migratory Species Management Division. 2001. Report of NOAA Fisheries Technical Gear Workshop to Reduce the Incidental Capture of Sea Turtles in the Atlantic Pelagic Longline Fishery. Silver Spring, MD. Public Document.
- National Marine Fisheries Service, Office of Protected Resources. 2001. Endangered Species Act - Section 7 Consultation Biological Opinion: Reinitiation of Consultation on the Atlantic Highly Migratory Species Fishery Management Plan and its Associated Fisheries. Silver Spring, MD. Public Document.
- National Marine Fisheries Service, Office of Sustainable Fisheries, Highly Migratory Species Management Division. 2002. Summary of the Discussions of the Highly Migratory Species and Billfish Advisory Panels Meeting. Silver Spring, MD. Public Document.
- National Marine Fisheries Service, Office of Sustainable Fisheries, Highly Migratory Species Management Division. 2002. Final Supplemental Environmental Impact Statement, Regulatory Adjustment 2 to the Atlantic Tunas, Swordfish, and Sharks Fishery Management Plan: Final Rule

to Reduce Sea Turtle Bycatch and Bycatch Mortality in Highly Migratory Species. Silver Spring, MD. Public Document.

National Marine Fisheries Service, Office of Sustainable Fisheries, Highly Migratory Species Management Division. 2002. Stock Assessment and Fishery Evaluation for Atlantic Highly Migratory Species 2002. Silver Spring, MD. Public Document.

National Marine Fisheries Service, Office of Sustainable Fisheries, Highly Migratory Species Management Division. 2003. Environmental Assessment on the Proposed Rule to Implement Management Measures on an Interim Basis in the Atlantic Shark Fisheries, Consistent with the 2002 Stock Assessments. Silver Spring, MD. Public Document.

Restrepo, V.R., G.G. Thompson, P.M. Mace, W. L. Gabriel, L.L.Low, A.D. MacCall, R. D. Methot, J.E. Powers, B.L. Taylor, P.R. Wade, J.F. Witzig. 1998 Technical guidance on the use of the precautionary approaches to implementing National Standard 1 of the Magnuson-Stevens Fishery Conservation and Management Act. NOAA Tech. Memo. NMFS-F/SPO, 54pp.

Romine, J.G. *et al.* 2002. An Analysis of the Status and Ecology of The Dusky Shark, *Carcharhinus obscurus*, in the western North Atlantic. The Virginia Institute of Marine Science, College of William and Mary and the National Marine Fisheries Service, Office of Protected Resources.

Simpfendorfer, C.A. and G. H. Burgess. 2002. Assessment of the status of the Small Coastal Sharks in U.S. Waters using an Age-structured Model. Mote Marine Laboratory Technical Report No. 836. Sarasota, FL.