

commercial trade sector include brokers, freight forwarders, and carriers (primarily commercial airlines, trucking, and shipping companies). Swordfish, tunas, and sharks are important commodities on world markets, generating significant amounts in export earnings in recent years.

NMFS has recently observed that many seafood dealers that buy and sell highly migratory species and other seafood products have expanded their operations into internet-powered trading platforms specifically designed to meet the needs of other seafood professionals. Through these platforms, interested parties can conduct very detailed negotiations with many trading partners simultaneously. Buyers and sellers can bargain over all relevant elements of a market transaction (not just price) and can specify the product needed to buy or sell in detail, using seafood-specific terminology. The platforms are purportedly very easy to use because they mimic the pattern of traditional negotiations in the seafood industry. NMFS expects that the use of the internet will continue to change the way HMS trade occurs in the future.

3.8 Bycatch, Incidental Catch, and Protected Species

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 and regulatory discards. Fish is defined as finfish, mollusks, crustaceans, and all other forms of marine animal and plant life other than marine mammals and birds. As a result, other species such as seabirds, sea turtles, and marine mammals are considered “incidental catch.” This chapter provides an overview of the actions NMFS has taken to reduce bycatch and incidental catch and any results of those actions. Additional species and fishery specific data have already been presented in Section 3.4.

3.8.1 Bycatch Reduction Strategy

The NMFS HMS bycatch reduction program includes an evaluation of current data collection programs, implementation of bycatch reduction measures such as gear modifications and time/area closures, and continued support of data collection and research relating to bycatch. Additional details on bycatch and bycatch reduction measures can be found in Section 3.5 of the Fishery Management Plan for Atlantic Tunas, Swordfish and Sharks (NMFS, 1999), in Regulatory Amendment 1 to the 1999 FMP (NMFS, 2000), in Regulatory Adjustment 2 to the 1999 FMP (NMFS, 2002), and in Amendment 1 to the 1999 FMP (NMFS, 2003a). In addition, an HMS Bycatch Reduction Implementation Plan was developed in late 2003 which identifies priority issues to be addressed in the following areas: 1) monitoring, 2) research, 3) management, and 4) education/outreach. Individual activities in each of these areas were identified and new activities may be added or removed as they are addressed or identified.

3.8.1.1 Bycatch Reporting Methodology

NMFS utilizes self-reported data (HMS logbook program and the supplemental discard report form in the reef fish, snapper-grouper, king and Spanish mackerel, and shark logbook programs), at-sea observer data, and survey data (recreational fishery dockside and telephone surveys) to produce bycatch estimates. These data are collected with respect to fishing gear type and have been presented by gear type in this report in prior sections. The number and location of

discarded fish are recorded, as is the disposition of the fish, *i.e.*, released alive vs. released dead. Post-release mortality of HMS is accounted for in stock assessments to the extent that the data allow.

Effective August 1, 2001, selected Federal permit holders in the Gulf of Mexico reef fish, South Atlantic snapper-grouper, king and Spanish mackerel, and shark fisheries must report all species and quantities of discarded (alive and dead) sea turtles, marine mammals, birds, and finfish on a supplemental discard form. A randomly selected sample of 20 percent of the vessels with active permits in the above fisheries is selected each year. The selection process is stratified across geographic area (Gulf of Mexico and South Atlantic), gear (handline, longline, troll, gillnet, and trap), and number of fishing trips (ten or less trips and more than 11 trips). Of the 3,359 vessels with Federal permits in these fisheries in 2003, a total of 452 vessels were selected to report. Of the 3,517 vessels with Federal permits in the fisheries in 2004, 428 were selected to report.

In addition to existing programs in some commercial HMS fisheries, NMFS has the authority to use observers to collect bycatch information from commercial vessels fishing for tunas and voluntarily, from vessels with HMS charter/headboat or angling permits. Many of these vessels already complete Federal and/or state logbooks (e.g., the NMFS Northeast Region Vessel Trip Report (VTR) Program), in which they are required to report all fishing information, including that for HMS. NMFS is currently evaluating various alternatives to increase logbook coverage of vessels fishing for HMS, such as selecting additional HMS vessels to report in logbooks or be selected for observer coverage, and is investigating alternatives for electronic reporting.

NMFS submits annual data (Task I) to ICCAT on mortality estimates (dead discards). These data are used and included in the SAFE report to evaluate bycatch trends in HMS fisheries.

NMFS collects recreational bycatch data from dockside surveys (the Large Pelagic Survey and the Marine Recreational Fishery Statistics Survey) for the rod and reel fishery and uses these data to estimate dead discards. However, bluefin and yellowfin tuna are currently the only species for which expanded estimates are currently made. Statistical problems associated with small sample size remain an obstacle to estimating bycatch in the rod and reel fishery. New survey methodologies are being developed, however, especially for the Charter/Headboat sector of the rod and reel fishery, which should help to address some of the problems in estimating bycatch for this fishery. In addition, selecting rod and reel vessels for logbook reporting (as discussed above) would provide bycatch information for this gear type.

3.8.1.2 Marine Mammals

NMFS relies on both fishery-dependent and fishery-independent data to produce stock assessments for marine mammals in the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea. The draft stock assessment reports are typically published around January and final reports are typically published in the Fall. Final 2003 and draft 2004 stock assessment reports are available and can be obtained on the web at:

http://www.nmfs.noaa.gov/prot_res/PR2/Stock_Assessment_Program/sars.html

The final 2004 MMPA List of Fisheries was published on August 10, 2004 (69 FR 48407). The Atlantic Ocean, Caribbean, and Gulf of Mexico large pelagics longline fishery is classified as Category I (frequent serious injuries and mortalities incidental to commercial fishing) and the southeastern Atlantic shark gillnet fishery is classified as Category II (occasional serious injuries and mortalities). The following Atlantic HMS fisheries are classified as Category III (remote likelihood or no known serious injuries or mortalities): Atlantic tuna purse seine; Gulf of Maine and mid-Atlantic tuna, shark and swordfish, hook-and-line/harpoon, southeastern mid-Atlantic and Gulf of Mexico shark bottom longline, and mid-Atlantic, southeastern Atlantic, and Gulf of Mexico pelagic hook-and-line/harpoon fisheries. For additional information on the fisheries categories and how fisheries are classified, see http://www.nmfs.noaa.gov/prot_res/readingrm/Fisheries/2004_final_LOF.pdf.

NMFS continues to investigate serious injuries to marine mammals as they are released from fishing gear. In April 1999, NMFS held a joint meeting of the three regional scientific review groups to further discuss the issue. NMFS is continuing to develop marine mammal serious injury guidelines and until these are published, NMFS will apply the criteria listed by the review groups to make determinations for specific fisheries. The current BiOps for HMS fisheries have resulted in a conclusion of non-jeopardy for marine mammals.

3.8.1.3 Sea Turtles

NMFS has taken several steps in the past few years to reduce sea turtle bycatch and bycatch mortality in domestic longline fisheries. On March 30, 2001, NMFS implemented via interim final rule requirements for U.S. flagged vessel with pelagic longline gear on board to have line clippers and dipnets to remove gear on incidentally captured sea turtles (66 FR 17370). The requirements to carry and to use the line clippers and dipnets have been in place since October 13, 2000 (65 FR 60889). Specific handling and release guidelines designed to minimize injury to sea turtles were also implemented.

A BiOp was completed on June 14, 2001, that found that the actions of the pelagic longline fishery jeopardized the continued existence of the loggerhead and leatherback sea turtles. This document reported that the pelagic longline fishery interacted with an estimated 991 loggerhead and 1,012 leatherback sea turtles in 1999. The estimated take levels for 2000 were 1,256 loggerhead and 769 leatherback sea turtles (Yeung 2001).

On July 13, 2001 (66 FR 36711), NMFS published an emergency rule that closed the NED to pelagic longline fishing (effective July 15, 2001), modified how pelagic longline gear may be deployed effective August 1, 2001, and required that all longline vessels (pelagic and bottom) post safe handling guidelines for sea turtles in the wheelhouse. On December 13, 2001 (66 FR 64378), NMFS extended the emergency rule for 180 days through July 8, 2002. On July 9, 2002, NMFS published a final rule (67 FR 45393) that closed the Northeast Distant (NED) Area to pelagic longline fishing. As part of the Reasonable and Prudent Alternative, the BiOp required NMFS to conduct an experiment with commercial fishing vessels to test fishery-specific gear modifications to reduce sea turtle bycatch and mortality. This rule required the length of any gangions to be 10% longer than the length of any floatline on vessels where the length of both is less than 100 meters; prohibited stainless steel hooks; and required gillnet vessel

operators and observers to report any whale sightings and required gillnets to be checked every 0.5 to 2 hours.

The experimental program required in the BiOp was initiated in the NED area in 2001 in cooperation with the U.S. pelagic longline fleet that historically fished on the Grand Banks fishing grounds. The goal of the experiment was to test and develop gear modifications that might prove useful in reducing the incidental catch and post-release mortality of sea turtles captured by pelagic longline gear while striving to minimize the loss of target catch. The experimental fishery had a three year duration and utilized 100% observer coverage to assess the effectiveness of the measures. The gear modifications tested in 2001 included blue dyed squid and moving gangions away from floatlines. In 2002, the NED experimental fishery examined the effectiveness of mackerel bait, circle hooks, and reduced daylight soak time. The experiment tested various hook and bait type combinations in 2003.

On November 28, 2003, based on the conclusion of the three-year NED experiment, and preliminary data that indicated that the Atlantic pelagic longline fishery may have exceeded the ITS in the June 14, 2001 BiOp, NMFS published an NOI to prepare an SEIS to assess the potential effects on the human environment of proposed alternatives and actions under a proposed rule to reduce sea turtle bycatch (68 FR 66783). A new BiOp for the Atlantic pelagic longline fishery was completed on June 1, 2004. The BiOp concluded that long-term continued operation of the Atlantic pelagic longline fishery, authorized under the 1999 FMP is not likely to jeopardize the continued existence of loggerhead, green, hawksbill, Kemp's ridley, or olive ridley sea turtles; and is likely to jeopardize the continued existence of leatherback sea turtles.

NMFS implemented additional regulations for the Atlantic pelagic longline fishery to further reduce the mortality of incidentally caught sea turtles. These measures include requirements on hook type and size, bait type and the use of dipnets, lineclippers and safe handling guidelines for the release of incidentally caught sea turtles. NMFS is working to export this new technology to pelagic longline fleets of other nations to reduce global sea turtle bycatch.

Internationally, the United States is pursuing sea turtle conservation through international, regional, and bilateral organizations such as ICCAT, the Asia Pacific Fisheries Commission, and FAO Committee on Fisheries (COFI). The United States intends to provide a summary report to FAO for distribution to its members on bycatch of sea turtles in U.S. longline fisheries and the research findings as well as recommendations to address the issue. At the 24th session of COFI, the United States distributed a concept paper for an international technical experts meeting to evaluate existing information on turtle bycatch, to facilitate and standardize collection of data, to exchange information on research, and to identify and consider solutions to reduce turtle bycatch. COFI agreed that an international technical meeting could be useful despite the lack of agreement on the specific scope of that meeting. The United States has developed a prospectus for a technical workshop to address sea turtle bycatch in longline fisheries as a first step. Other gear-specific international workshops may be considered in the future.

3.8.1.4 Seabirds

The National Plan of Action for Reducing the Incidental Catch of Seabirds in Longline Fisheries was released in February 2001. The NPOA for Seabirds calls for detailed assessments of longline fisheries, and, if a problem is found to exist within a longline fishery, for measures to reduce seabird bycatch within 2 years. NMFS, in collaboration with the appropriate Councils and in consultation with the U.S. Fish and Wildlife Service, will prepare an annual report on the status of seabird mortality for each longline fishery. The United States is committed to pursuing international cooperation, through the Department of State, NMFS, and U.S. Fish and Wildlife Service, to advocate the development of National Plans of Action within relevant international fora. The HMS Management Division intends to meet with longline fishery participants and other members of the public in the future to discuss possibilities for complying with the intent of the plan of action. Because interactions appear to be relatively low in Atlantic HMS fisheries, the adoption of immediate measures is unlikely.

3.8.2 U.S. Atlantic pelagic longline fishery

Observer data from 1992 through 2003 indicate that bycatch is relatively low in the U.S. Atlantic pelagic longline fishery (Table 3.108). Since 1992, a total of 116 seabird interactions have been observed, with 79 seabirds observed killed. Approximately 80 to 100 active U.S. pelagic longline vessels currently operate in the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea.

Observed bycatch has ranged from one to 18 seabirds observed dead per year and zero to 15 seabirds observed released alive per year from 1992 through 2003. Half of the seabirds observed were not identified to species ($n = 58$). Of those seabirds identified, gulls represent the largest group ($n = 29$), followed by greater shearwaters ($n = 19$), and northern gannets ($n = 8$) (Table 3.109). Greater shearwaters experienced the highest mortality (100 percent), followed by gulls (76 percent), and unidentified seabirds (67 percent). Northern gannets had the lowest mortality rate (12 percent).

Preliminary estimates of expanded seabird bycatch and bycatch rates from 1995-2002, varied by year and species with no apparent pattern (Table 3.110). The estimated number of all seabirds caught and discarded dead ranged from zero to 468 per year, while live discards ranged from zero to 292 per year. The annual bycatch rate of birds discarded dead ranged from zero to 0.0486 birds per 1,000 hooks while live discards ranged from zero to 0.0303 birds per 1,000 hooks.

3.8.3 Atlantic bottom longline shark fishery

A single pelican has been observed killed from 1994 through 2003. The pelican was caught in January 1995 off the Florida Gulf Coast (between $25^{\circ} 18.68$ N, $81^{\circ} 35.47$ W and $25^{\circ} 19.11$ N, $81^{\circ} 23.83$ W) (G. Burgess, University of Florida, Commercial Shark Fishery Observer Program, pers. comm., 2001). No expanded estimates of seabird bycatch or catch rates are available for the bottom longline fishery.

Table 3.108 Seabird Bycatch in the U.S. Atlantic Pelagic Longline Fishery, 1992-2003. Source: NMFS, 2004.

Year	Month	Area	Type of Bird	Number observed	Status
1992	10	MAB	GULL	4	dead
1992	10	MAB	SHEARWATER GREATER	2	dead
1993	2	SAB	GANNET NORTHERN	2	alive
1993	2	MAB	GANNET NORTHERN	2	alive
1993	2	MAB	GULL BLACK BACKED	1	alive
1993	2	MAB	GULL BLACK BACKED	3	dead
1993	11	MAB	GULL	1	alive
1994	6	MAB	SHEARWATER GREATER	3	dead
1994	8	MAB	SHEARWATER GREATER	1	dead
1994	11	MAB	GULL	4	dead
1994	12	MAB	GULL HERRING	7	dead
1995	7	MAB	SEA BIRD	5	dead
1995	8	GOM	SEA BIRD	1	dead
1995	10	MAB	STORM PETREL	1	dead
1995	11	NEC	GANNET NORTHERN	2	alive
1995	11	NEC	GULL	1	alive
1997	6	SAB	SEA BIRD	11	dead
1997	7	MAB	SEA BIRD	1	dead
1997	7	NEC	SEA BIRD	15	alive
1997	7	NEC	SEA BIRD	6	dead
1998	2	MAB	SEA BIRD	7	dead
1998	7	NEC	SEA BIRD	1	dead
1999	6	SAB	SEA BIRD	1	dead
2000	6	SAB	GULL LAUGHING	1	alive
2000	11	NEC	GANNET NORTHERN	1	dead
2001	6	NEC	SHEARWATER GREATER	7	dead
2001	7	NEC	SHEARWATER GREATER	1	dead
2002	7	NEC	SEABIRD	1	dead
2002	8	NED	SHEARWATER GREATER	1	dead
2002	8	NED	SEABIRD	1	dead
2002	9	NED	SHEARWATER GREATER	3	dead
2002	9	NED	SEABIRD	3	alive
2002	9	NED	SHEARWATER SPP	1	dead
2002	10	NED	GANNET NORTHERN	1	alive
2002	10	NED	SHEARWATER SPP	1	dead
2002	10	NED	SEABIRD	2	dead
2002	10	MAB	GULL	3	alive
2002	10	MAB	GULL	1	dead
2002	11	MAB	GULL	3	dead
2003	1	GOM	SEABIRD	1	alive
2003	8	NED	SEABIRD	1	dead
2003	9	MAB	SEABIRD	1	dead

MAB - Mid Atlantic Bight, SAB - South Atlantic Bight, NEC - Northeast Coastal, GOM - Gulf of Mexico, NED - Northeast Distant Water

Table 3.109 Status of Seabird Bycatch in the U.S. Atlantic Pelagic Longline Fishery, 1992-2003. Source: NMFS PLL fishery observer program (POP) data.

Species	Release Status		Total	Percent Dead
	Dead	Alive		
GULLS (incl. Blackback, Herring, Laughing, and unid. gull)	22	7	29	75.9%
UNIDENTIFIED SEABIRD	39	19	58	67.2%
GREATER SHEARWATER	18	0	18	100%
SHEARWATER SPP	2	0	2	100%
NORTHERN GANNET	1	7	8	12.5%
STORM PETREL	1	0	1	100%
ALL SEABIRDS	83	33	116	71.6%

Table 3.110 Preliminary expanded estimates of seabird bycatch and bycatch rates (D=discarded dead and A=discarded alive) in the U.S. Atlantic pelagic longline fishery, 1995-2002. Source: NMFS, 2004.

Species	1995		1996		1997		1998		1999		2000		2001		2002	
	D	A	D	A	D	A	D	A	D	A	D	A	D	A	D	A
Unid. seabirds	134	0	0	0	468	292	155	0	14	0	0	0	0	0	3	3
Gulls	0	15	0	0	0	0	0	0	0	0	0	18	0	0	14	83
Shearwaters	0	0	0	0	0	0	0	0	0	0	0	0	210	0	6	0
Northern gannet	0	30	0	0	0	0	0	0	0	0	11	0	0	0	0	1
Storm petrel	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
All seabirds	170	44	0	0	468	292	155	0	14	0	11	18	210	0	23	87
Total hooks set	10,182,297		10,310,708		9,637,807		8,019,183		7,901,789		7,975,529		7,563,951		7,150,231	
Bycatch rate	0.0167	0.0044	0	0	0.0486	0.0303	0.0194	0	0.0017	0	0.0014	0.0023	0.0278	0	0.0032	0.0121

3.8.4 Bycatch of Highly Migratory Species in Other Fisheries

NMFS is concerned about bycatch mortality of Atlantic HMS in any Federal or state-managed fishery which captures them. NMFS plans to address bycatch of these species in the appropriate FMPs through coordination with the responsible management body. For example, capture of swordfish and tunas incidental to squid trawl operations is addressed in the Squid, Mackerel, and Butterfish FMP. Capture rates of tunas in coastal gillnet fisheries are being explored through issuance of exempted fishing permits and reporting requirements. NMFS continues to solicit bycatch data on HMS from all state, interjurisdictional, and federal data collection programs. NMFS supports development of an interstate management plan for coastal sharks by the Atlantic States Marine Fisheries Commission to protect sharks caught incidentally in state-managed fisheries.

3.8.4.1 Squid Mid-Water Trawl

U.S. squid trawl fishermen, using mid-water gear, landed 8.6 mt ww of yellowfin tuna, skipjack tuna, albacore tuna, bigeye tuna, and swordfish in 2003 incidental to the squid, mackerel, and butterfish trawl fishery (Table 3.111). Bycatch of HMS in other trawl fisheries may be included as a portion of the overall reported trawl landings in Table 3.111. Landings decreased from 2002 for bigeye tuna and albacore, and increased slightly for yellowfin and skipjack tuna. Swordfish landings increased by 50 percent but remain at a very low level relative to the directed fishery landings. A retention limit of five swordfish per trip allows squid trawl fishermen with swordfish limited access permits to land some of the swordfish that are encountered, although regulatory discards still occur.

Table 3.111 Atlantic HMS Landed (mt ww) Incidental to Trawl Fisheries, 1998-2003. Source: NMFS, 2004.

Species	1998	1999	2000	2001	2002	2003
Yellowfin tuna	0.7	4.1	1.76	2.7	0.3	2
Skipjack Tuna	0.2	1.0	<0.05	0.2	<0.05	0.5
Bigeye Tuna	0.5	1.2	1.7	0.4	0.5	<0.05
Albacore	2.4	0.4	<0.05	0.0	0.3	<0.05
Swordfish	5.9	7.5	10.9	2.5	3.9	6.0
Total	9.7	14.2	14.43	5.8	4.8	8.6

3.8.4.2 Menhaden Purse Seine

In the menhaden purse seine fishery, sharks were caught incidentally in approximately 30 percent of the purse seine sets observed (deSilva *et al.*, 2001). Ten species of sharks were identified with blacktip sharks being the most common species. Approximately 20 percent of the sharks were not identified to species. An estimated 30,000 sharks were taken in this fishery

annually in 1994 and 1995. At the time of release, 75 percent of sharks were dead, 12 percent were disoriented, and eight percent were healthy. The odds of observing shark bycatch was highest in April and May. Stomach analyses of sharks suggest that their occurrence in the fishery is probably the result of sharks preying on gulf menhaden (deSilva *et al.*, 2001). No new data are available at this time.

Industry workers in this fishery employ a fish excluder device to reduce the retention of sharks and other large species (Rester and Condrey, 1999). In addition, a recently introduced hose cage modification may prove to be effective in reducing shark bycatch. These devices vary in effectiveness and no standards exist for such bycatch reduction measures in this fishery. In addition, there are currently no reporting requirements for takes of sharks in the menhaden purse seine fishery. Recent estimates of large coastal sharks discarded in this fishery range from 24,000-26,200 individuals (Cortés, 2005).

3.8.4.3 Shrimp Trawl Fishery

Shark bycatch in the shrimp trawl fishery consists mainly of sharks too small to be highly valued in the commercial market. As a result, few sharks are retained. Bycatch estimates of LCS in this fishery have been generated and were reviewed in the most recent LCS assessment (Cortés *et al.* 2002). Cortés (2002) estimated bycatch in the south Atlantic shrimp trawl fishery (North Carolina, South Carolina, Georgia, and Florida) for Atlantic sharpnose, bonnethead, and finetooth sharks based on expansion by fishing effort. Annual estimates of bycatch ranged from zero to almost six million sharks from 1992 to 1997 (Table 3.112) (Cortés, 2002). The 2002 SCS assessment, included estimates of SCS bycatch because they were likely to exceed the actual landings for those species (Cortés, 2002). However, requirements for turtle excluder devices in this fishery have probably resulted in less bycatch because sharks are physically excluded from entering the gear.

Table 3.112 Expanded estimates of bycatch (number of fish) of bonnethead, Atlantic sharpnose, and finetooth sharks in the U.S. south Atlantic shrimp trawl fishery based on within stratum expansion by effort as trips by fishing year. Source: Cortés, 2002.

Year	Estimated number of trips	Bonnethead	Atlantic sharpnose	Finetooth
1992-93	20,181	53,674	1,753,829	0
1993-94	20,445	0	5,873,333	447,495
1995-96	23,333	34,378	0	0
1996-97	19,320	38,517	358,457	0

Bycatch of the SCS complex in the Gulf of Mexico shrimp trawl fishery consists mainly of Atlantic sharpnose and bonnethead sharks (Cortés, 2002). Estimates of the bycatch of SCS in this fishery ranged from 3.2 to 1.3 million sharks per year from 1972-2000 (Table 3.113).

Table 3.113 Estimates (in thousands of individuals and pounds dressed weight) of the bycatch of small coastal sharks (as a complex and by species) in the shrimp trawl fishery operating in the Gulf of Mexico. Source: S. Nichols, NMFS Pascagoula Lab., pers. comm. as cited in Cortés, 2002.

Year	All SCS (numbers)	All SCS (lbs dw)	Atlantic sharpnose (numbers)	Atlantic sharpnose (lbs dw)	Bonnethead (numbers)	Bonnethead (lbs dw)
1972	1,575	1,500	1,051	1,010	468	371
1973	1,579	1,580	831	842	620	525
1974	1,903	1,899	1,508	1,407	420	400
1975	2,055	1,997	1,587	1,473	347	313
1976	2,193	2,209	1,706	1,632	456	436
1977	2,187	2,142	1,507	1,457	520	427
1978	2,223	2,156	1,799	1,625	367	370
1979	2,829	2,754	2,384	2,254	388	341
1980	2,591	2,436	2,148	1,933	368	330
1981	2,081	2,007	1,830	1,649	242	252
1982	2,281	2,203	1,850	1,661	302	310
1983	2,138	2,193	1,856	1,821	255	250
1984	1,551	1,509	1,277	1,191	232	230
1985	1,767	1,796	1,451	1,442	260	249
1986	2,222	2,234	1,464	1,519	624	506
1987	3,216	3,123	2,636	2,392	516	519
1988	2,535	2,272	1,959	1,664	421	404
1989	2,116	2,216	1,632	1,713	336	286
1990	1,981	2,069	1,503	1,507	489	431
1991	2,350	2,322	1,784	1,756	365	323
1992	2,759	2,879	1,968	1,997	494	459
1993	2,226	2,213	1,710	1,626	416	400
1994	2,197	2,243	1,586	1,591	395	347
1995	2,401	2,362	1,806	1,636	311	299
1996	2,923	2,457	2,069	1,644	519	428
1997	2,883	2,926	1,732	1,681	486	439
1998	2,657	2,410	1,662	1,494	376	329
1999	1,282	1,257	906	848	218	198
2000	1,282	1,257	906	848	218	198

3.8.5 Analyses of the Effectiveness of the Time/Area Closures

3.8.5.1 Objectives

During the past several years, NMFS has implemented several time/area closures in the Atlantic Ocean and Gulf of Mexico to reduce discards and bycatch. During the formulation of the rules implementing these measures, NMFS utilized logbook data to estimate the effect of the closures on discarded species and target catch. Based on the nature of the data and the nature of the fishery, it is difficult to assess with any certainty what the impacts will be prior to a closure. For example, as a result of a time/area closure, fishermen may shift their effort to a different area, they may change gear, or they may leave the fishery. These decisions could change the estimates. Thus, the most effective way to assess the impact is to examine the data available in the time after a closure has been implemented.

Since most of the time/area closures were implemented in 2001 or earlier, data from 2001-2003 provide the basis for evaluating the effectiveness of the closures. The following provides an overview of the effectiveness of the closures in reducing discards and bycatch and in maintaining target catch for the entire fishery. These analyses are ongoing and additional data will be collected and reviewed annually.

3.8.5.2 Methods

Data used in these analyses were taken from the Pelagic Longline Logbook database administered through the NMFS Southeast Region. These analyses are based on self-reported data and have not been compared to observer data. Catch data for each species and the number of hooks were summarized on a monthly basis by year. The monthly and annual Atlantic wide totals were calculated for each species as well. A reference period of 1997-1999 was chosen for the initial comparisons to examine the effect of closures implemented in 2000-2001. The percent change in 2001-2003 from 1997-1999 in numbers kept and discarded were calculated for the entire Atlantic (Table 3.114). The reported distribution of hooks set by area each year was examined to evaluate trends and/or shifts in fishing effort. In addition, the reported number of fish kept and discarded in the MAB and NEC was compared to the reported numbers for all other areas combined in order to evaluate the effectiveness of the June Mid-Atlantic Bight closure.

Future analyses will include an economic analysis to estimate the impact on individual fishermen, in an attempt to evaluate changes in fishing behavior as a result of implementation of the closures.

3.8.5.3 Results

U.S. Domestic Fishery (Atlantic Ocean and Gulf of Mexico)

The cumulative effects of the individual area closures were examined by comparing the 2001-2003 catch and discards to the average for 1997-1999 throughout the entire U.S. Atlantic fishery. Changes in the numbers of fish caught and discarded were compared to the predicted values from Regulatory Amendment 1 to the 1999 FMP (NMFS, 2000). Overall effort, expressed as the number of hooks set, declined by 15 percent (Table 3.114). Declines were noted for both the numbers of kept and discards of all species examined including swordfish, tunas, sharks, billfish, and sea turtles. The number of reported discards of swordfish, bluefin, and bigeye tuna, pelagic sharks, dolphin, wahoo, blue and white marlin, sailfish, and spearfish all declined by more than 30 percent. The reported discards of blue and white marlin declined by about 50 percent and sailfish discards declined by almost 75 percent. The reported number of sea turtles caught and released declined by almost 28 percent.

The reported declines in swordfish kept and discarded, large coastal sharks kept and discarded, and dolphin kept were similar to the predicted values developed for Regulatory Amendment 1 (Table 3.114 and Table 3.115). Reported discards of bluefin tuna, pelagic sharks, all billfish with the exception of spearfish for which no predicted change was developed in Regulatory Amendment 1, and total BAYS kept all declined more than the predicted values.

Change in Effort Distribution

The distribution of effort in the Atlantic pelagic longline fishery based on reported number of hooks set does not indicate a major shift in fishing effort as a result of the time/area closures (Table 3.116). The average number of hooks reported set in 2001-2003 by area was compared to the average for 1997-1999. Declines in effort were reported for the majority of the areas. However, effort did increase in the Gulf of Mexico, by a little more than eight percent. This increase may be a result of a shift in effort due to the Florida East Coast closure. Reported effort also increased in the Sargasso (SAR) where little activity had been reported prior to 2002. This increase may also represent a shift in effort due to the closure off east Florida as well as the seasonal Charleston Bump closure. Effort in the South Atlantic Bight, where the Charleston Bump closure is located, declined by 30 percent from the 1997-1999 level. Effort in the MAB and NEC also declined, 26 and 31 percent, respectively. The June Mid-Atlantic Bight closure area is located within these two areas which probably contributed to the decline.

Table 3.114 Total number of swordfish, bluefin tuna, yellowfin tuna, bigeye tuna, total BAYS (bigeye, albacore, yellowfin and skipjack tuna), reported landed or discarded in the U.S. Atlantic pelagic longline fishery, 1997-2003. Source: Pelagic Longline Logbook (PLL) data.

Year	Number of hooks set (x1000)	Swordfish kept	Swordfish discards	Bluefin Tuna kept	Bluefin Tuna discards	Yellowfin Tuna kept	Yellowfin Tuna discards	Bigeye Tuna kept	Bigeye Tuna discards	Total BAYS kept	Total BAYS discards
1997	9,637.8	68,691	20,433	178	681	74,035	1,847	21,405	1,611	102,706	4,223
1998	8,019.2	70,310	23,234	231	1,320	54,662	2,628	19,259	874	81,610	3,932
1999	7,901.8	67,120	20,558	263	604	83,619	2,885	22,467	906	114,438	4,384
2000	7,975.5	62,978	17,074	235	737	72,385	1,769	13,678	344	94,136	2,944
2001	7,564.0	47,560	13,993	177	348	52,337	1,798	18,216	554	80,466	3,757
2002	7,150.2	49,320	13,035	178	585	59,255	1,635	13,826	277	79,917	2,552
2003	7,008.1	51,835	11,829	273	881	50,817	1,987	7,473	337	63,321	2,763
1997-99	8,519.6	68,707	21,408	224	868	70,772	2,453	21,044	1,130	99,585	4,180
2001-03	7,240.8	49,572	12,952	209	605	54,136	1,807	13,172	389	74,568	3,024
% dif	-15.0	-27.9	-39.5	-6.7	-30.3	-23.5	-26.3	-37.4	-65.6	-25.1	-27.7
Pred¹		-24.6	-41.5		-1.0					-5.2	
Pred²		-13.0	-31.4		10.7					10.0	

¹ Predicted change without effort redistribution (Table 7.19, Regulatory Amendment 1 to the Atlantic Tunas, Swordfish, and Sharks FMP; NMFS, 2000)

² Predicted change with effort redistribution (Table 7.19, Regulatory Amendment 1 to the Atlantic Tunas, Swordfish, and Sharks FMP; NMFS, 2000)

Table 3.115 Total number of pelagic sharks, large coastal sharks, dolphin (mahi mahi), and wahoo reported landed or discarded and number of billfish (blue and white marlin, sailfish, spearfish) and sea turtles caught and discarded in the U.S. Atlantic pelagic longline fishery, 1997-2003. Source: PLL data.

Year	Pelagic Sharks kept	Pelagic Shark discards	Large Coastal Sharks kept	Large Coastal Shark discards	Dolphin kept	Dolphin discards	Wahoo kept	Wahoo discards	Blue Marlin discards	White Marlin discards	Sailfish discards	Spearfish discards	Sea Turtles
1997	5,078	81,518	13,217	7,762	62,770	1,201	4,503	90	2,290	2,422	1,735	380	267
1998	3,717	44,516	6,401	5,470	23,503	298	5,253	305	1,295	1,506	843	103	886
1999	2,894	28,967	6,382	5,442	31,536	320	5,136	128	1,253	1,969	1,407	151	631
2000	3,065	28,046	7,896	6,973	29,125	292	4,193	46	1,443	1,261	1,091	78	271
2001	3,460	23,813	6,478	4,836	27,586	325	3,068	62	635	848	356	137	424
2002	2,987	22,828	4,077	3,815	30,384	185	4,188	32	1,175	1,438	379	148	465
2003	3,037	21,705	5,326	4,813	29,372	451	3,919	126	595	809	277	108	399
1997-99	3,896	51,667	8,667	6,225	39,270	606	4,964	174	1,613	1,966	1,328	211	595
2001-03	3,161	22,782	5,294	4,488	29,114	320	3,725	73	802	1,032	337	131	429
% dif	-18.9	-55.9	-38.9	-27.9	-25.9	-47.2	-25	-58.1	-50.3	-47.5	-74.6	-37.9	-27.9
Pred ¹	-9.5	-2.0	-32.1	-42.5	-29.3				-12.0	-6.4	-29.6		-1.9
Pred ²	4.1	8.4	-18.5	-33.3	-17.8				6.5	10.8	-14.0		7.1

¹ Predicted change without effort redistribution (Table 7.19, Regulatory Amendment 1 to the Atlantic Tunas, Swordfish, and Sharks FMP; NMFS, 2000)

² Predicted change with effort redistribution (Table 7.19, Regulatory Amendment 1 to the Atlantic Tunas, Swordfish, and Sharks FMP; NMFS, 2000)

Table 3.116 Reported distribution of hooks set by area, 1995-2003 (CAR=Caribbean, GOM=Gulf of Mexico, FEC=Florida East Coast, SAB=South Atlantic Bight, MAB=Mid-Atlantic Bight, NEC=Northeast Coastal, NED=Northeast Distant, SAR=Sargasso, NCA=North Central Atlantic, and TUNS=Tuna North & Tuna South). Source: PLL data.

Year	CAR	GOM	FEC	SAB	MAB	NEC	NED	SAR	NCA	TUNS	Total
1995	688,754	2,662,303	646,841	852,230	2,394,364	1,072,433	765,485	16,430	785,727	297,730	10,182,297
1996	651,673	3,530,127	574,284	1,588,944	1,039,594	1,137,229	588,782	87,285	501,674	611,116	10,310,708
1997	473,500	3,402,436	784,920	946,220	1,203,832	1,226,406	688,344	21,640	209,946	680,563	9,637,807
1998	333,766	3,003,054	667,592	719,125	1,319,860	883,059	503,579	3,500	247,457	338,191	8,019,183
1999	177,628	3,619,402	709,809	769,738	1,276,008	587,225	338,719	17,795	117,031	288,434	7,901,789
2000	259,369	3,648,345	700,505	810,272	1,032,173	610,103	544,549	10,959	236,864	122,390	7,975,529
2001	196,733	3,453,533	467,155	725,951	1,092,030	865,531	316,559	11,437	256,383	178,639	7,563,951
2002	169,562	3,577,753	495,245	435,231	1,011,138	550,096	456,668	104,165	215,121	135,252	7,150,231
2003	137,315	3,808,066	494,113	537,660	692,196	448,438	576,727	112,787	132,205	68,600	7,008,107
1997-99	328,298	3,341,631	720,774	811,694	1,266,567	898,897	510,214	14,312	191,478	435,729	8,519,593
2001-03	167,870	3,613,117	485,504	566,281	931,788	621,355	449,985	76,130	201,236	127,497	7,240,763
% dif	-48.9	8.1	-32.6	-30.2	-26.4	-30.9	-11.8	431.9	5.1	-70.7	-15.0

June Mid-Atlantic Bight Closure

The June Mid-Atlantic Bight (MAB) closure area was implemented as part of the implementation of the HMS consolidated regulations (64 FR 29090, May 28, 1999) in order to decrease bluefin tuna bycatch in the Atlantic pelagic longline fishery. The closure spans a portion of two reporting areas, the MAB and the NEC. The reported effort, catch and discards were combined for these two areas to evaluate the effectiveness of the closure (Table 3.117). The reported effort, catch, and discards for the remaining areas were also combined and presented.

It appears that bluefin tuna discards in the MAB & NEC have been reduced considerably since the implementation of the June closure in 1999 (Table 3.117). Reported discards of bluefin tuna prior to implementation of the closure ranged from 558 to almost 2,800 per year. Since 1999, the number of bluefin tuna reported discarded has remained below 500 per year. The number of swordfish kept in the MAB & NEC has increased since the closure was implemented while the number of billfish discarded has declined.

Table 3.117 Number of bluefin tuna (BFT), swordfish (SWO), sharks (PEL-pelagic; LCS-Large Coastal Sharks), billfish, and turtles kept and/or discarded in the Mid-Atlantic Bight (MAB) and Northeast Coastal (NEC) areas combined versus all other areas as reported in the pelagic logbook data, 1995-2003. Source: PLL Data.

AREA	YEAR	Hooks set (x1000)	SPECIES									
			BFT kept	BFT discards	SWO kept	SWO discards	PEL shark kept	PEL shark discards	LCS kept	LCS discards	Billfish discards	Turtle interactions
MAB & NEC	1995	3,466.8	95	2,755	5,824	5,382	2,647	36,395	7,717	2,121	1,454	80
	1996	2,176.8	74	1,596	3,108	871	2,456	37,638	6,433	1,975	1,179	20
	1997	2,430.2	71	558	6,247	3,642	3,043	40,085	6,423	928	800	52
	1998	2,209.2	93	1,156	9,659	4,943	2,136	27,889	1,837	907	399	54
	1999	1,863.2	70	335	8,168	4,308	1,727	12,468	1,974	746	816	174
	2000	1,892.5	29	437	11,168	3,756	2,229	15,689	4,796	1,433	262	39
	2001	1,957.6	45	200	10,559	3,981	2,506	8,903	4,383	991	307	69
	2002	1,561.2	18	380	10,704	4,212	2,324	7,005	2,331	1,207	311	40
	2003	1,140.6	67	471	10,752	2,951	2,135	6,875	2,761	1,384	169	42
All Other Areas (non- MAB/NEC)	1995	6,715.5	137	96	66,795	24,367	3,007	53,787	17,469	6,121	6,165	1,047
	1996	8,137.3	124	105	70,168	23,514	2,978	47,388	13,815	8,246	6,445	472
	1997	7,210.6	107	123	62,470	16,801	2,037	41,433	6,794	6,834	6,029	215
	1998	5,816.3	138	164	60,651	18,291	1,581	16,627	4,564	4,563	3,348	832
	1999	6,038.6	193	269	58,952	16,250	1,167	16,499	4,408	4,696	3,964	457
	2000	6,333.2	209	382	54,319	13,743	970	15,038	3,106	5,563	3,633	241
	2001	5,606.4	132	148	37,001	10,012	954	14,910	2,095	3,845	1,669	355
	2002	5,589	160	205	38,616	8,823	663	15,823	1,746	2,608	2,829	425
	2003	5,867.5	206	410	41,083	8,878	902	14,830	2,565	3,429	1,620	357

Prohibition of Live Bait in the Gulf of Mexico

Regulatory Amendment 1 to the 1999 FMP prohibited the use of live bait on pelagic longline gear in the Gulf of Mexico due to concerns over the incidental bycatch of billfish. Based on reported data, the number of hooks set with live bait or a combination of live and dead bait in the Gulf of Mexico decreased from 22.7 percent in 2000, to less than 0.1 percent in 2003 (Table 3.118). However, the number of hooks set with no bait type specified increased from zero in 1999-2001 to 3.7 percent in 2003. The reported number of hooks set in the Gulf of Mexico has increased in recent years. The reported effort in 2003 represents an increase of 13 percent from 2000. Further analysis of the effectiveness of the live bait prohibition in the Gulf of Mexico pelagic longline fishery will continue.

Table 3.118 Comparison of the number of hooks set in the Gulf of Mexico with dead or live bait, or a combination of both baits, 1999-2003 (numbers in parentheses are percent of the total number of hooks set in the Gulf of Mexico). Source: PLL data.

Bait Type	Year				
	1999	2000	2001	2002	2003
Dead	2,335,845 (70.9)	2,598,083 (77.3)	3,176,493 (98.3)	3,494,577 (97.63)	3,668,687 (96.27)
Live	372,162 (11.3)	259,256 (7.7)	5,500 (0.2)	750 (0.02)	1,514 (0.04)
Both	584,473 (17.8)	505,582 (15.0)	49,250 (1.5)	13,115 (0.37)	1,000 (0.03)
Unknown	0	0	0	71,011 (1.98)	139,569 (3.66)
Total	3,292,480	3,362,921	3,231,243	3,579,453	3,810,770

3.8.5.4 Conclusions

It appears as though the time/area closures and live bait prohibition in the Gulf of Mexico have been relatively successful at reducing bycatch in the HMS pelagic longline fishery. Reported discards of all species of billfish have all declined. The reported number of turtles caught, swordfish discarded, bluefin tuna discarded, and pelagic and large coastal shark discards have also declined. However, the reported number of target species kept such as swordfish and BAYS tuna, have decreased more than was predicted. This is contrary to the other objective of the regulations to minimize the reduction in target catch. However, all of these results should be considered preliminary. As described in the methods section of this subsection, NMFS will continue to analyze these measures as additional data becomes available and also examine the effects of ongoing regulatory change over time.

3.8.6 Smalltooth Sawfish

As of April 1, 2003, NMFS listed smalltooth sawfish as an endangered species (68 FR 15674) under the Endangered Species Act (ESA). After reviewing the best scientific and commercial information, the status review team determined that the continued existence of the U.S. DPS (Distinct Population Segment) of smalltooth sawfish is in danger of extinction

throughout all or a significant portion of its range from a combination of the following four listing factors: the present or threatened destruction, modification, or curtailment of habitat or range; overutilization for commercial, recreational, scientific, or educational purposes; inadequacy of existing regulatory mechanisms; and other natural or manmade factors affecting its continued existence.

To date there has been only one observed catch of a smalltooth sawfish in shark gillnet fisheries. The sawfish was taken on June 25, 2003, in a gillnet set off of southeast Florida and it was released alive (J. Carlson pers. comm., 2003). The set was characteristic of a typical drift gillnet set, with gear extending 30 to 40 feet deep in 50 to 60 feet of water. Prior to this event it was speculated that the depth at which drift gillnets are set above the sea floor may preclude smalltooth sawfish from being caught. Although sometimes described as a lethargic demersal species, smalltooth sawfish feed mostly on schooling fishing, thus they would occur higher in the water column during feeding activity. In fact, smalltooth sawfish and Atlantic sharks may be attracted to the same schools of fish, potentially making smalltooth sawfish quite vulnerable if present in the area fished. The previous absence of smalltooth sawfish incidental capture records is more likely attributed to the relatively low effort in this fishery and the rarity of smalltooth sawfish, especially in Federal waters. These factors may result in little overlap of the species with the gear. The recently observed smalltooth sawfish was cut from the net and released alive with no visible injuries. This indicates that smalltooth sawfish can be removed safely if entangled gear is sacrificed.

As discussed previously, gillnets are also used to “strikenet”. When strike gillnetting fishers target and encircle specific schools of sharks after visually detecting them (usually by spotter pilot). Given the large and or distinct morphology of smalltooth sawfish, this species would likely be detected visually, as well as distinguished from shark species, thus avoided. This fishing method has been shown to also reduce potential encounters by limiting the time that gear is in the water. Strike gillnet sets are typically only one to two hours in contrast to six to ten hours for each drift gillnet set. Endangered and threatened species, or protected marine mammals for that matter, have never been observed taken in strikenet sets.

Given the high rate of observer coverage in the shark gillnet fishery, NMFS believes that smalltooth sawfish takes in this fishery are very rare. The fact that there were no smalltooth sawfish caught during 2001 when 100 percent of the fishing effort was observed, indicates that smalltooth sawfish takes (observed or total) most likely do not occur on annual basis. Based on this information, the 2003 BiOp estimates that one incidental capture of a sawfish (released alive) over the next five years, will occur as a result of the use of gillnets in this fishery (NMFS, 2003a).

Smalltooth sawfish have been observed caught (seven known interactions, six released alive, one released in unknown condition) in shark bottom longline fisheries from 1994 through 2002 (A. Morgan pers. comm., 2003). Based on these observations, expanded sawfish take estimates for 1994-2002 were developed for the shark bottom longline fishery (NMFS, 2003a). A total of 466 sawfish were estimated to have been taken in this fishery during 1994-2002, resulting in an average of 52 per year. Additionally, it is important to note that all of the sawfish takes observed, except for one, were released alive.

3.8.7 Evaluation of Other Bycatch Reduction Measures

NMFS continues to monitor and evaluate bycatch in HMS fisheries through direct enumeration (pelagic and bottom longline observer programs, shark gillnet observer program), evaluation of management measures (closed areas), and vessel monitoring systems (VMS).

The following section provides a review of additional management measures or issues that may address bycatch reduction:

- **Atlantic Large Whale Take Reduction Plan (ALWTRP) regulations:**
Observers were placed on shark drift gillnet vessels during right whale calving season (November 15 - March 31, 2002) off the East Coast of Florida between Fort Pierce and West Palm Beach and covered 24 strikenet and 41 drift gillnet sets (Carlson and Baremore, 2002). No large whales or other marine mammals were observed caught by this gear during right whale calving season in 2002. No marine mammals or sea turtles were observed caught on strikenet sets. Three sea turtles (loggerhead and leatherback) were caught and all were released alive.

- **Atlantic Bottlenose Dolphin Take Reduction Team:**
Due to the observed takes of Atlantic bottlenose dolphin in the shark drift gillnet fishery, representatives of the fishery have been included in the Atlantic Bottlenose Dolphin Take Reduction Team. The Team completed initial deliberations in April of 2002 and another meeting to discuss issues specific to North Carolina and Virginia is planned for April of 2003. NMFS is working on developing a draft take reduction plan for Atlantic coastal bottlenose dolphins and expects to publish a proposed rule after the April 2003 meeting.

- **MMPA List of Fisheries Update/Stock Assessment:**
NMFS continues to update the MMPA List of Fisheries and the 2004 final list is available. The proposed 2005 List of Fisheries was published on December 2, 2004. Final 2003 marine mammal stock assessment reports and draft 2004 reports are also available. See Section 3.8.1.2 for information on obtaining these reports.

- **Atlantic Offshore Cetacean Take Reduction Team (AOCTRT):**
NMFS Office of Protected Resources has disbanded the AOCTRT due to the fact that two of the three fisheries addressed by the AOCTRT were closed by fishery management actions, leaving only the pelagic longline fishery, which has also been the subject of recent fishery management actions and increased observer coverage related to bycatch. NMFS intends to continue reviewing the fishery and any marine mammal interactions to determine if additional take reduction measures are necessary.

- **Observer coverage of shark drift gillnet fleet:**
On March 30, 2001, NMFS reduced the level of observer coverage required in the shark drift gillnet fishery from 100 percent year-round to 100 percent during right whale calving season and a statistically significant level during the rest of the year. Recent scientific analyses indicate that a 53 percent level of coverage is statistically significant and adequate to provide reasonable estimates of sea turtle and marine mammal takes outside of the right whale calving season. The level of observer coverage necessary will be re-evaluated annually and adjusted accordingly. In

2002, 14 strikenet and 28 driftnet sets were observed during non-right whale calving season (Carlson and Baremore, 2002). One bottlenose dolphin was discarded dead in a driftnet set. No other interactions with sea turtles or marine mammals were observed. Management options to address issues in the shark drift gillnet fishery will be considered in Amendment 2.

- Vessel monitoring systems in the pelagic longline fishery

NMFS adopted fleet-wide VMS requirements in the Atlantic pelagic longline fishery in May 1999, but was subsequently sued by an industry group. By order dated September 25, 2000, the U.S. District Court for the District of Columbia prevented any immediate implementation of VMS in the Atlantic pelagic longline fishery, and instructed to “undertake further consideration of the scope of the [VMS] requirements in light of any attendant relevant conservation benefits.”

On October 15, 2002, the court issued a final order that denied plaintiff’s objections to the VMS regulations. Based on this ruling NMFS implemented the VMS requirement in September 2003.

- Vessel monitoring systems in other HMS fisheries

Starting in 2004, gillnet vessels with a directed shark permit and gillnet gear onboard are required to install and operate a VMS unit during the Right Whale Calving Season (Nov. 15 – Mar. 31). In an attempt to better quantify bycatch, NMFS will attempt to include some of these vessels that are not subject to observer coverage, in its Directed Shark Gillnet Observer program. Directed shark bottom longline vessels located between 33° N and 36° 30’ N need to install and operate a VMS unit from January through July.

3.9 HMS Permits and Tournaments

This section provides updates for the number of permits that were issued in conjunction with HMS fishing activities for 2004. Furthermore, Section Atlantic HMS Tournaments, provides a comprehensive synthesis of recreational fishing tournaments and their role in the context of HMS management.

3.9.1 History of the Program Established in the 1999 Tunas, Swordfish, and Sharks FMP

The 1999 Tunas, Swordfish, and Sharks FMP initiated the limited access permit system for commercial swordfish, shark, and tuna fisheries. The objectives of this program were to:

- Minimize, to the extent practicable, economic displacement and other adverse impacts on fishing communities during the transition from overfished fisheries to healthy ones;
- Consistent with other objectives of this FMP, manage Atlantic HMS fisheries for continuing optimum yield 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;
- Reduce latent effort and overcapitalization in HMS commercial fisheries;