

**STOCK ASSESSMENT AND FISHERY
EVALUATION (SAFE) REPORT
FOR
ATLANTIC
HIGHLY MIGRATORY SPECIES**



2004

DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service



**Stock Assessment and Fishery Evaluation (SAFE) Report
for Atlantic Highly Migratory Species**

2004

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
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EXECUTIVE SUMMARY

The annual stock assessment and fishery evaluation (SAFE) report provides a summary of the best available scientific information on the condition of stocks, marine ecosystems, and fisheries being managed under federal regulation. Consistent with the guidelines for National Standard 2 of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), the SAFE report is used as a reference in the evaluation and refinement of fisheries management practices. The report summarizes the best scientific data necessary to determine appropriate annual harvest levels, document significant trends in the resource, marine ecosystems, and fisheries over time, and identify associated bycatch and safety issues. These data may be used in the decision-making process for future regulations.

The 2004 SAFE report for Highly Migratory Species (HMS) differs slightly from previous year's reports. Instead of a stand alone document, the 2004 SAFE report serves as an addendum to the 2003 SAFE report, and should be considered in conjunction with the 2003 report. This addendum updates information from 2003 and includes the latest stock assessment data, recommendations, and resolutions from the International Commission for the Conservation of Atlantic Tunas (ICCAT) and its Standing Committee on Research and Statistics (SCRS) through December 2003. The SAFE report also contains a full chapter updating the work of the HMS Management Division of NOAA Fisheries on bycatch (Section 8). Additional data will be included, as it becomes available, in Amendment 2 to the Fishery Management Plan for Atlantic Tunas, Swordfish and Sharks (HMS FMP) and Amendment 2 to the Atlantic Billfish FMP. The 2004 report is divided into ten sections that are similar in structure to the 2003 SAFE report to provide for easy cross-referencing. These sections are discussed briefly below.

Stock Assessment Update

With the exception of Atlantic sharks, stock assessments for Atlantic HMS are conducted by ICCAT's SCRS. In 2003, the SCRS conducted stock assessments for South Atlantic albacore (not considered part of the HMS management unit and thus not included in the HMS FMP) and yellowfin tuna. The National Marine Fisheries Service (NOAA Fisheries) expects ICCAT to conduct a stock assessment on pelagic sharks, particularly blue, porbeagle, and shortfin mako sharks, among other species, in 2004. Other stock assessment information for HMS species will be included as it becomes available in Amendment 2 to the HMS FMP (draft expected in 2004).

Essential Fish Habitat

Essential fish habitat (EFH) work continued throughout 2003 with an emphasis on tagging projects and programs for Atlantic sharks, billfish and bluefin tuna. Amendment 1 to the HMS FMP updated EFH for five species of sharks. In 2004, EFH updates for all Atlantic HMS for which new information is available will be included in Amendment 2 to the HMS FMP and Amendment 2 to the Atlantic Billfish FMP.

Fishery Data Update

_____ In this document, fishery dependent data are analyzed by gear type to more easily assess the implications for each of these multi-species fisheries, and updated information is presented in table format and should be used in conjunction with the 2003 SAFE Report. The 2003 report provides a full description of HMS gear types and fisheries.

Economic Status of HMS Fisheries

The 2004 SAFE report includes a section on the economic status of commercial and recreational HMS fisheries. Information in this section includes production (U.S. and international); ex-vessel prices; wholesale prices; fishing costs and revenues for commercial fisheries; costs and revenues for dealers; recreational fishing; and charter/headboat fisheries. This SAFE Report updates 2002 information regarding ex-vessel prices and total ex-vessel values in table format, for use with the 2003 SAFE Report. A full description of economic information sources is given in the 2003 SAFE Report.

Community and Social Data Update

Analyses relative to National Standard 8 of the Magnuson-Stevens Act rely heavily on the availability of community studies and profiles. This section of the SAFE report provides a summary of selected rules' socio-economic impacts. A brief bibliography of recent social science publications is given in Section 6 of the 2003 SAFE report.

Fish Processing, Industry and Trade

Domestic and international consumer preference continues to play a large role in HMS markets. Section 7 provides an overview of U.S. trade activities relative to HMS, required documentation, and summaries of U.S. imports and exports of HMS products. The use of trade data to supplement existing information sources is a new and important tool in the monitoring and management of HMS. Tables updating the 2003 SAFE report with 2003 trade data on tuna, shark, and swordfish are provided.

Bycatch

Bycatch and bycatch mortality of finfish, as well as incidental catches and fishing-induced mortality of marine mammals, sea turtles, and seabirds continue to be issues of great concern in the management of HMS. An HMS bycatch reduction 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 will be undertaken during 2004-05 and new activities may be added or removed as they are addressed or identified. This section of the 2004 SAFE Report includes an extensive discussion on the results of various bycatch reduction efforts as a result of time/area closures. A brief

evaluation of other bycatch reduction measures as well as bycatch reduction of HMS species in other fisheries is also included.

HMS Permits

NOAA Fisheries continues to monitor capacity in HMS fisheries. Updated vessel and dealer permit numbers for HMS fisheries as of October 2003 are included in Section 9. The overall number of limited access permits for Atlantic swordfish, tunas and sharks declined slightly in 2003. The overall number of tuna vessel permits increased in some categories and declined in others. The HMS angling permit requirement went into effect on March 1, 2003. The overall number of dealer permits increased as a result of an increase in tuna dealers. Additional information on HMS permit programs can be found in the 2003 SAFE Report.

NOAA Fisheries continues to modify and make significant improvements to its Atlantic tunas permitting system, including the website where constituents can purchase and renew permits for Atlantic tunas, update permit information, and report recreational landings of bluefin tuna (www.nmfspermits.com). Increasing the level of automation in the permitting process as well as the methods of renewal (i.e., phone, fax, internet) is expected to improve constituent satisfaction and reduce administrative costs. NOAA Fisheries hopes to build upon this success and consider automating other HMS permitting processes in the future. The planned amendment for the HMS FMP is expected to analyze the current permitting system and consider alternatives to further improve the existing program.

Issues for Consideration and Outlook

_____ In 2004, NOAA Fisheries plans to continue implementing and evaluating FMP measures in an attempt to rebuild stocks, address overfishing, and eliminate overcapitalization in HMS fisheries. The major effort planned for 2004 is a second Amendment to the HMS FMP. Issues that may be addressed in this amendment are reviewed in Section 10.

The 2004 HMS Advisory Panel meeting, scheduled for February 2004, provides an excellent opportunity to discuss these and other issues raised in the SAFE report which may require further action. Through continuous public and constituent interaction, increased monitoring, ongoing life history work, and additional socio-economic assessment, NOAA Fisheries strives to continue building sustainable fisheries for all Atlantic HMS.

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1. INTRODUCTION

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) establishes a long-range, transparent, and inclusive process to sustainably manage the fisheries of the United States. The fishery management plan (FMP) is the primary management instrument established by the Magnuson-Stevens Act. A component of both the *Final Fishery Management Plan for Atlantic Tunas, Swordfish, Sharks* (HMS FMP) and *Amendment One to the Atlantic Billfish Fishery Management Plan* (Billfish Amendment) is the production of an annual Stock Assessment and Fishery Evaluation (SAFE) report. Table 1.1 provides a list of most of the abbreviations, acronyms, and initialisms that are used in this document or that are commonly used in fishery management.

The SAFE report provides a summary of the best available scientific information on the condition of stocks, marine ecosystems, and fisheries being managed under federal regulation. It also provides updated information regarding the economic status of fisheries, fishing communities, and industries, as well as the socio-economic and environmental impacts of recently implemented regulations. Cumulatively, this information establishes the effectiveness of Federal and state management programs of Atlantic HMS, and provides the basis for future management decisions.

Consistent with the guidelines for National Standard 2 of the Magnuson-Stevens Act, the SAFE report is prepared annually and used as a reference in the evaluation and refinement of fisheries management practices. Because the HMS Management Division will be revisiting many of these issues in the development of amendments currently underway, the 2004 SAFE Report serves as an addendum to the 2003 SAFE Report and focuses on those updates to the data during 2003 that would be used to determine appropriate annual harvest levels, document significant trends in the resource, marine ecosystems, and fisheries over time, assess the relative success of state and Federal management programs, and identify bycatch and safety issues. Through a comprehensive annual update of key biological, economic, and social indicators, the National Marine Fisheries Service (NOAA Fisheries) can ensure use of the best available scientific data in its decision making process.

This SAFE report is a vehicle to introduce new information, identify additional management issues that may need to be addressed, and begin preliminary assessment and evaluation of fishery regulations. The SAFE report includes the latest stock assessment data, recommendations, and resolutions from the International Commission for the Conservation of Atlantic Tunas (ICCAT) and its Standing Committee on Research and Statistics (SCRS). The report also includes the latest domestic shark assessment information. In compliance with National Standard 2 guidelines, the report presents a comprehensive summary of the most recent Atlantic HMS fisheries-related data from a variety of sources across a wide range of disciplines.

The structure of the 2004 SAFE report is designed to provide a cohesive view of new information in a format that is easily accessible to managers, HMS and Billfish Advisory Panel

members, and the public. This report is an addendum to the 2003 SAFE Report, containing only significant changes and updates, and should be considered in conjunction with the 2003 report.

1.1 Summary and update on HMS Management Division Activities During 2003

Several significant actions were completed during 2003. On February 10-12, 2003, a combined HMS and Billfish Advisory Panel meeting was held in Silver Spring, Maryland and on September 30, 2003, an HMS Advisory Panel meeting was held in Silver Spring, Maryland. These meetings provided valuable comments on a suite of management actions considered during calendar year 2003. A summary of the discussion can be found in on the HMS website at: www.nmfs.noaa.gov/sfa/hms, along with the meeting transcripts. These documents are also available by calling the HMS Management Division at 301-713-2347.

A major accomplishment during 2003 was the successful completion of Amendment 1 to the HMS FMP regarding shark management measures. In addition, a Notice of Intent was published mid-year announcing plans to undertake Amendment 2 to the HMS FMP and Atlantic Billfish FMP and soliciting public comment on issues to be considered for the amendment process. Throughout 2003 there were numerous Atlantic tuna actions, with most relating to bluefin tuna, including annual quota specifications, season closure and opening notices, in-season transfers in quota distribution, and adjustments to Angling and General category retention limits. Regulatory amendments were also completed regarding BFT management measures, specifically involving adjusting the incidental catch requirements of BFT in the longline fishery and adjusting various commercial seasons and size limits in the Purse seine, Harpoon and General categories. Rulemaking was also conducted instituting recreational fishing permits for all HMS, and addressing recreational limits and reporting for billfish, and several actions regarding inseason management of Atlantic sharks and swordfish. At the end of the year, efforts were initiated to mitigate sea turtle bycatch in the Atlantic pelagic longline fishery.

As of December 31, 2003, there were no active lawsuits regarding HMS. In 2003, there were four pending cases in litigation. NOAA Fisheries received favorable rulings in each of these cases, as indicated below:

National Audubon Society v. Evans, Civ. No. 99-1707 (D.D.C. July 3, 2003). Plaintiffs challenged western Atlantic bluefin tuna rebuilding plan. Court ruled in government's favor in July 2003, but ordered the government to provide further explanation of its decision making timeframe. The government submitted the requested information in September 2003.

The Ocean Conservancy v. Evans, 8:01-cv-1399-T-24EAJ and 8:02-cv-163-T-24EAJ (M.D. Fla. March 31, 2003). Plaintiffs filed two lawsuits, which were consolidated, that challenged two 2001 emergency rules implementing Atlantic shark management measures. Court ruled in the government's favor in March 2003.

The Ocean Conservancy v. Evans, 8:03-cv-124-T-24EAJ (M.D. Fla. December 17, 2003):

The same plaintiffs, as above, challenged a December 2002, emergency rule implementing Atlantic shark management measures. Court ruled in the government's favor in December 2003.

1.2 2003 Accomplishments of the International Commission for the Conservation of Atlantic Tunas (ICCAT)

Information in this section was summarized from NOAA Public Affairs Press release (NOAA03-145, December 4, 2003) summarizing the results of the 2003 ICCAT Meeting held in Dublin, Ireland in November 2003.

The U.S. delegation to the International Commission for the Conservation of Atlantic Tunas (ICCAT) helped develop agreements aimed at promoting the conservation and rebuilding of transboundary fish stocks critical to U.S. fishermen. ICCAT is an international fishery management organization with 37 member nations, including the U.S.

Among the many proposals adopted in Ireland at the 18th annual ICCAT meeting were an agreement concerning the application of trade restrictive measures and a binding recommendation with additional measures to fight illegal, unregulated and unreported fishing. The trade resolution defines a comprehensive approach to the application of trade restrictive measures against countries that have not abided by ICCAT's conservation and management measures. Illegal and non-compliant fishermen make their profits at the expense of law-abiding fishermen and thwart ICCAT's efforts to rebuild internationally shared fish stocks. Fair and consistent application of trade sanctions to stop illegal and non-compliant fishing bolster management's ability to manage these fish stocks successfully.

The recommendation on illegal, unregulated and unreported fishing requires all parties to take measures, consistent with their rights and obligations under international law, to prohibit landings, transshipments or caging of ICCAT species from vessels that are engaging in illegal, unregulated and unreported fishing. Trade sanctions were ended against Belize and St. Vincent, which have made efforts to control their vessel registries and implement monitoring and control systems on their fishing activities. Sanctions for Bolivia, Cambodia and Sierra Leone will remain in effect, and Georgia will be added, due to evidence of continued non-compliance with ICCAT conservation measures. The Commission identified several countries that have recently become involved in Atlantic pelagic fisheries, including Costa Rica, Cuba and Togo. These countries face possible sanctions if they do not comply with the conservation measures. Building a framework for strict application of compliance rules has been a high priority for the U.S. Several parties recently not in compliance with conservation and management measures described regulations they have implemented to comply.

The Commission also took steps to improve data reporting and monitoring systems. New measures were adopted to control caging operations that are part of the rapid expansion of the bluefin tuna farming in the Mediterranean, and to improve the ICCAT statistical document program, which tracks the origin and trade of bluefin, swordfish and bigeye tuna. Parties agreed

to a proposal from the U.S. to establish a joint fund for developing countries to improve their data collection systems. International conservation measures rely on accurate fishery information from all nations participating in ICCAT fisheries.

ICCAT took action that encourages all parties to provide information on sea turtle interactions, including the bycatch of sea turtles. Parties agreed to share all available information on technical measures to reduce the incidental capture of sea turtles, and to ensure the safe handling of turtles that are released. ICCAT also resolved to have its scientific body develop standardized data collection and reporting methods to assess the problem of sea turtle bycatch. This action will help the U.S. determine the significance of fishery impacts on sea turtle populations around the world, while educating fishermen from every nation about the importance of safe handling and live release of turtles. The U.S. has been promoting the sea turtle resolution for over two years. Additionally, research and education about sea turtle conservation has been a longtime priority. NOAA Fisheries is conducting cooperative research with industry in the North Atlantic on methods to reduce bycatch of sea turtles in longline vessels and has been sharing this information with the international community.

ICCAT also took action to address the international bluefin tuna fishery, including a commitment to invest \$2 million over a three-year period to develop a comprehensive bluefin research program.

1.3 Summary of Regulatory Actions During 2003

During calendar year 2003, NOAA Fisheries' HMS Management Division completed numerous rulemakings and inseason actions, including Amendment 1 to the HMS FMP, which is expected to facilitate rebuilding of large coastal sharks (LCS) and to prevent overfishing of small coastal sharks (SCS). Each of these regulatory actions is consistent with existing HMS stock rebuilding plans, and is supported by a regulatory analysis, as required, of the action's socio-economic and/or ecological effects. These analyses are updates to previous environmental and regulatory impact analyses, and are found in supporting documents including but not limited to environmental assessments (EA), environmental impact statements (EIS), and/or regulatory impact reviews (RIR). As reflected in these supporting documents, which are available from NOAA Fisheries upon request, these actions are not expected to have adverse ecological impacts on target, non-target, or protected species, but are expected overall to have positive cumulative impacts. A summary of socioeconomic impacts for major rules is given in Section 6 of this report. Table 1.2 provides a list of all Federal Register notices filed during 2003 relating to specific actions taken by the HMS Management Division. Amendment 1 to the HMS FMP (Appendix 3) summarizes state rules and regulations pertaining to HMS.

Table 1.1 List of Commonly Used Fishery Management Abbreviations, Acronyms, and Initialisms.

AA	Assistant Administrator for Fisheries
ACCSP	Atlantic Coastal Cooperative Statistics Program
ACS	Angler consumer surplus
ANPR	Advanced Notice of Proposed Rulemaking
AOCTRP	Atlantic Offshore Cetacean Take Reduction Plan
AOCTRT	Atlantic Offshore Cetacean Take Reduction Team
AP	Advisory Panel
APA	Administrators Procedure Act
ASMFC	Atlantic States Marine Fisheries Commission
ATCA	Atlantic Tunas Convention Act
B	Biomass
BAYS	Bigeye, albacore, yellowfin, skipjack tunas
BET	Bigeye tuna
BFT	Bluefin tuna
BiOp	Biological Opinion
B_{MSY}	Biomass expected to yield maximum sustainable yield
B_{OY}	Biomass expected to yield optimum yield
CFMC	Caribbean Fishery Management Council
CFL	Curved fork length
CFR	Code of Federal Regulations
CHB	Charter/Headboat
CIE	Center for Independent Experts
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CPUE	Catch per unit effort
CSFOP	Commercial shark fishery observer program
CZMA	Coastal Zone Management Act
DEIS	Draft Environmental Impact Statement
DPS	Distinct population segment
dw	Dressed weight
EA	Environmental Assessment
EEZ	Exclusive economic zone
EFH	Essential fish habitat
EFP	Exempted fishing permit

EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
F	Instantaneous fishing mortality
FAO	Food and Agriculture Organization
FEIS	Final Environmental Impact Statement
FL	Fork Length
FMP	Fishery Management Plan
F_{MSY}	Instantaneous fishing mortality rate expected to yield maximum sustainable yield
FMU	Fishery management unit
F_{OY}	Fishing mortality rate expected to yield optimum yield
FR	Federal Register
FRFA	Final regulatory flexibility analysis
GSAFDF	Gulf and South Atlantic Fishery Development Foundation
GMFMC	Gulf of Mexico Fishery Management Council
GSMFC	Gulf States Marine Fisheries Commission
HAPC	Habitat area of particular concern
HMS	Highly migratory species: Atlantic sharks, tunas, swordfish, and billfish
HMS FMP	Fishery Management Plan for Atlantic Tunas, Swordfish, and Sharks
ICCAT	International Commission for the Conservation of Atlantic Tunas
IPOA	International Plan of Action
IRFA	Initial regulatory flexibility analysis
ITQ	Individual transferable quota
ITS	Incidental take statement
LAP	Limited access permit
LCS	Large coastal sharks
LOA	Letter of acknowledgment
LPS	Large Pelagic Survey
LWTRP	Large Whale Take Reduction Plan
LWTRT	Large Whale Take Reduction Team
MAFMC	Mid-Atlantic Fishery Management Council
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
MFMT	Maximum fishing mortality threshold
MMPA	Marine Mammal Protection Act

MPA	Marine protected area
MRFSS	Marine Recreational Fishing Statistics Survey
MSST	Minimum stock size threshold
MSY	Maximum sustainable yield
mt	Metric tons
NEFMC	New England Fishery Management Council
NEFSC	Northeast Fisheries Science Center
NEPA	National Environmental Policy Act
NERO	Northeast Regional Office
NGO	Non-governmental organization
nmi	Nautical mile
NOA	Notice of Availability
NOAA Fisheries	National Marine Fisheries Service
NOAA	National Oceanographic and Atmospheric Administration
NOI	Notice of Intent
NPOA	National Plan of Action
NRC	Natural Resources Consultants, Inc.
NS	National Standards
OSF	Office of Sustainable Fisheries
OY	Optimum yield
POP	Pelagic observer program
PR	Office of Protected Resources
PRA	Paperwork Reduction Act
Reg Flex Act	Regulatory Flexibility Act
RIR	Regulatory Impact Review
RPAs	Reasonable and Prudent Alternatives
RPMs	Reasonable and Prudent Measures
SAFE report	Stock Assessment and Fishery Evaluation report
SAFMC	South Atlantic Fishery Management Council
SCRS	Standing Committee for Research and Statistics
SCS	Small coastal sharks
SEFSC	Southeast Fisheries Science Center
SEIS	Supplemental environmental impact statement
SERO	Southeast Regional Office
SEW	Stock evaluation workshop

SFA	Sustainable Fisheries Act
SFL	Straight fork length
SK Program	Saltonstall-Kennedy Program
SRP	Scientific research permit
SSB	Spawning stock biomass
TAC	Total allowable catch
TAL	Total allowable landings
TCs	Terms and Conditions
TL	Total length
USFWS	United States Fish and Wildlife Service
VMS	Vessel monitoring system
WTP	Willingness to pay
ww	Whole weight

Table 1.2 Summary of NOAA Fisheries' HMS Division Actions

Action Type NOAA Fisheries ID#	CFR Part	Action Description	Action Pub Info
Final Rule ID 032900A; RIN 0648-AN06	635	Atlantic HMS; Monitoring of Recreational Landings; Retention Limit for Recreationally Landed North Atlantic Swordfish	68 FR 711 01/07/03
Notice ID 010203A	635	Atlantic HMS Fisheries; Atlantic Bluefin Tuna; Commercial Shark Management Measures	68 FR 1024 01/08/03
Proposed Rule ID 031501A; RIN 0648-AO79	635	Atlantic HMS; Exempted Fishing Activities: Reopening of Comment Period	68 FR 1430 01/10/03
Notice of Availability (NOA) ID 010903D	635	Atlantic HMS; Issues and Options paper for Amendment 1 to the Fishery Management Plan for Atlantic Tunas, Swordfish and Sharks (HMS FMP); Shark Management Measures	68 FR 3853 01/27/03
Notice ID 022103C	635	Vessel Monitoring Systems; List of Approved Mobile Transmitting Units and Communications Service Providers	68 FR 11534 03/11/03
Submission for OMB Review; Comment Request ID 031403B	635	Vessel Monitoring System for Atlantic HMS	68 FR 13280 03/19/03
Notice ID 082902A	635	Atlantic HMS; Swordfish Quota Adjustment	68 FR 14167 03/24/03

Action Type NOAA Fisheries ID#	CFR Part	Action Description	Action Pub Info
Notice ID 031903F	635	Vessel Monitoring Systems; List of Approved Mobile Transmitting Units and Communications Service Providers	68 FR 14949 03/27/03
Notice ID 082902A	635	Atlantic HMS; Swordfish Quota Adjustment	68 FR 16216 04/03/03
Notice ID 030703B	635	Submission of OMB Review; Comment Request	68 FR 17603 04/10/03
Notice ID 041603C	635	Vessel Monitoring Systems: Additional Approved Mobile Transmitting Unit	68 FR 23285 05/01/03
Notice ID 042503D	635	Submission of OMB Review; Comment Request	68 FR 23281 05/01/03
Emergency Rule ID 120901A RIN0648AQ39	635	Atlantic HMS Commercial Shark Management Measures; Extension of expiration date; request for comments; fishing season notification	68 FR 31983 05/29/03
Final Rule ID 110200D RIN 0648AO75	635	Atlantic HMS: Incidental Catch Requirements of Bluefin Tuna	68 FR 32414 05/30/03
Notice ID 052003C	635	Magnuson-Stevens Act Provisions; Atlantic HMS; Exempted Fishing Permits	68 FR 33680 06/05/03
Final Rule ID 071299C RIN 0648AM91	635	Atlantic HMS; Fishing Vessel Permits; Charter Boat Operations, Temporary Rule	68 FR 35185 06/12/03
Notice ID 061103B	635	Atlantic HMS: Bluefin Tuna Catch Limit Adjustments	68 FR 35822 06/17/03
Proposed Rule ID 030403C RIN 0648AQ90	635	Atlantic HMS; Atlantic Swordfish Quotas	68 FR 36967 06/20/03
Final Rule ID 061203E RIN 0648AR29	635	Atlantic HMS; Vessel Monitoring Systems (VMS); Amendment of Effective date	68 FR 37772 06/25/03
Final Rule ID 032900A RIN 0648AN06	635	Atlantic HMS; Monitoring of Recreational Landings; Retention Limit for Recreationally Landed North Atlantic Swordfish; Technical Amendment	68 FR 37773 06/25/03
Temporary Rule ID 071299C RIN 0648AM91	635	Atlantic HMS; Fishing Vessel Permits; Charter Boat Operations; Temporary Rule	68 FR 38233 06/27/03

Action Type NOAA Fisheries ID#	CFR Part	Action Description	Action Pub Info
Notice of Intent (NOI) ID 060303D	635	Atlantic HMS; Environmental Impact Statement (EIS) for Amendment 2 to the Fishery Management Plan (FMP) for Atlantic Tunas, Swordfish and Sharks and Amendment 2 to the Atlantic Billfish FMP	68 FR 40907 07/09/03
Proposed Rule ID 051903B RIN 0648AQ38	635	Atlantic HMS; Atlantic Bluefin Tuna Quota Specification, General Category Effort Controls, and Permit Revisions	68 FR 41103 07/10/03
Notice ID 070703E	635	Submission for OMB Review: Comment Request	68 FR 41299 07/11/03
Notice ID 070803B	635	Atlantic HMS; Swordfish and Bluefin Tuna Quotas; Public Hearings	68 FR 41769 07/15/03
Final Rule ID 061203E RIN 0648AR29	635	Atlantic HMS Fisheries; Vessel Monitoring Systems (MVS)	68 FR 45169 08/01/03
Proposed Rule ID 010903D RIN 0648AQ95	600, 635	Atlantic HMS; Atlantic Shark Management Measures	68 FR 45196 08/01/03
Notice of Availability	635	Environmental Impact Statement; Amendment 1 to the HMS FMP	68 FR 45237 08/01/03
Notice ID 010903D	635	Atlantic HMS; Atlantic Shark Management Measures; Notice of Public Hearing	68 FR 47904 08/12/03
Notice ID 082003C		Atlantic HMS; Advisory Panels; HMS and Billfish Advisory Panel Meetings; Request for Nominations	68 FR 51560 08/27/03
Notice ID 082203D	635	Atlantic HMS Fisheries; Atlantic Bluefin Tuna Retention Limit Adjustment	68 FR 52140 09/02/03
Proposed Rule ID 051603C RIN 0648AQ65	635	Atlantic HMS; Recreational Atlantic Blue and White Marlin Landings Limit; Clarification of Recreational HMS Reporting Requirements	68 FR 54410 09/17/03
Notice ID 010903D	635	Atlantic HMS; Atlantic Shark Management Measures; Rescheduling of Public Hearings	68 FR 54885 09/19/03
Notice ID 092403C	635	Atlantic HMS Fisheries; Bluefin Tuna Retention Limit	68 FR 56212 09/30/03
Final Specification ID 051903B RIN 0648AQ38	635	Atlantic HMS; Atlantic Bluefin Tuna Quota Specification, General Category Effort Controls, and Permit Revisions	68 FR 56783 10/02/03

Action Type NOAA Fisheries ID#	CFR Part	Action Description	Action Pub Info
Final Rule ID 051903B RIN 0648AQ38	635	Atlantic HMS; Atlantic Bluefin Tuna Quota Specification, General Category Effort Controls, and Permit Revisions; Correction	68 FR 59546 10/16/03
Proposed Rule ID 091603F RIN 0648AR12	635	Atlantic HMS; Bluefin Tuna Season and Size Limit Adjustments	68 FR 63747 11/10/03
Final Rule ID 031501A RIN 0648AO79	635	Atlantic HMS; Exempted Fishing Activities	68 FR 63738 11/10/03
Notice of Availability	635	Environmental Impact Statement; Amendment One to HMS FMP	68 FR 64621 11/14/03
Notice ID 111303B	635	Atlantic HMS; Bluefin Tuna Fisheries; Quota Transfer; Fishery Closure	68 FR 65990 11/18/03
Notice of Intent (NOI) ID 112403A	635	Atlantic HMS; Supplemental Environmental Impact Statement (SEIS) for Sea Turtle Bycatch Mitigation in the Atlantic Pelagic Longline Fishery	68 FR 66783 11/28/03
Notice of Intent ID 120103D	635	Atlantic HMS, Exempted Fishing and Scientific Research Permits	68 FR 68595 12/16/03
Notice ID 120903A	635	Atlantic HMS, Bluefin Tuna Fisheries	68 FR 68595 12/09/03
Final Rule ID 010903D RIN 0648AQ95	600, 635	Atlantic HMS; Shark Management Measures	68 FR 74746 12/24/03
Final Rule ID 091603F RIN 0648AR12	635	Atlantic HMS; Bluefin Tuna Season and Size Limit Adjustments	68 FR 74504 12/24/03
Notice ID 120302A	635	Atlantic HMS, Exempted Fishing Permit; Re-opening of comment period	68 FR 75217 12/30/03
Notice ID 1223303H	635	Atlantic HMS; Bluefin Tuna Fisheries; Quota Transfers; Fishery Reopening	50 FR 75466 12/31/03

References for Section 1

NOAA03-145, Susan Buchanan, 12/4/03, NOAA News Releases 2003, NOAA Home Page, NOAA Public Affairs, "International Commission Acts on Conservation, Illegal Fishing, and Promotes Sea Turtle Data Collection"
<http://www.publicaffairs.noaa.gov/releases2003/dec03/noaa03-145.html>

2. STOCK ASSESSMENT UPDATES

With the exception of Atlantic sharks, stock assessments for Atlantic HMS are conducted by ICCAT's Standing Committee for Research and Statistics (SCRS). In 2003, the SCRS conducted stock assessments for South Atlantic albacore (not included in HMS FMP management unit) and yellowfin tuna (SCRS, 2003). The most recent stock assessment for small and large coastal sharks is summarized in Amendment 1 to the HMS FMP. NOAA Fisheries expects ICCAT to conduct a stock assessment on pelagic sharks, particularly blue, porbeagle, and shortfin mako sharks in 2004. NOAA Fisheries has not yet scheduled additional stock assessments for either small or large coastal sharks. Other stock assessment information for HMS species will be incorporated as it becomes available in Amendment 2 to the HMS FMP (68 FR 40907; July 9, 2003; draft expected in 2004). Aside from the information included in Table 2.1, only information on new stock assessments is included in this document. For HMS stocks that were not assessed this year, please see the 2003 SAFE report.

Table 2.1 Stock Assessment Summary Table (SCRS, 2003). See Amendment 1 to the HMS FMP for a summary of the latest shark stock assessments.

Species	Current Relative Biomass Level	Minimum Stock Size Threshold	Current Fishing Mortality Rate	Maximum Fishing Mortality Threshold	Outlook
North Atlantic Swordfish	$B_{02}/B_{MSY} = 0.94$ (0.75-1.24)	$0.8B_{MSY}$	$F_{01}/F_{MSY} = 0.75$ (0.54-1.06)	$F_{year}/F_{MSY} = 1.00$	Overfished; overfishing is not occurring, stock is in recovery
South Atlantic Swordfish	<i>Not estimated</i>	$0.8B_{MSY}$	<i>Not estimated</i>	$F_{year}/F_{MSY} = 1.00$	Fully fished; Overfishing may be occurring.*
West Atlantic Bluefin Tuna	$SSB_{01}/SSB_{MSY} =$ 0.31 (low recruitment); 0.06 (high recruitment) $SSB_{01}/SSB_{75} =$ 0.13 (low recruitment); 0.13 (high recruitment)	$0.86SSB_{MSY}$	$F_{01}/F_{MSY} =$ 2.35 (low recruitment scenario) $F_{01}/F_{MSY} =$ 4.64 (high recruitment scenario)	$F_{year}/F_{MSY} = 1.00$	Overfished; overfishing is occurring.
East Atlantic Bluefin Tuna	$SSB_{00}/SSB_{70} =$ 0.80	<i>Not estimated</i>	$F_{00}/F_{max} = 2.4$	<i>Not estimated</i>	Overfished; overfishing is occurring.*

Species	Current Relative Biomass Level	Minimum Stock Size Threshold	Current Fishing Mortality Rate	Maximum Fishing Mortality Threshold	Outlook
Atlantic Bigeye Tuna	$B_{02}/B_{MSY} = 0.81-0.91$	$0.6B_{MSY}$ (age 2+)	$F_{01}/F_{MSY} = 1.15$	$F_{year}/F_{MSY} = 1.00$	May be overfished; overfishing is occurring.
Atlantic Yellowfin Tuna	$B_{01}/B_{MSY} = 0.73 - 1.10$	$0.5B_{MSY}$ (age 2+)	$F_{01}/F_{MSY} = .87-1.46$	$F_{year}/F_{MSY} = 1.00$	Not overfished; overfishing may be occurring.
North Atlantic Albacore Tuna	$B_{92}/B_{MSY} = 0.68$ (0.52-0.86)	$0.7B_{MSY}$	$F_{02}/F_{MSY} = 1.10$ (0.99 - 1.30)	$F_{year}/F_{MSY} = 1.00$	Overfished; overfishing is occurring.
South Atlantic Albacore Tuna	$B_{02}/B_{MSY} = 1.66$ (0.74-1.81)	<i>Not estimated</i>	$F_{02}/F_{MSY} = 0.62$ (0.46-1.48)	<i>Not estimated</i>	Not overfished; overfishing not occurring.*
West Atlantic Skipjack Tuna	<i>Unknown</i>	<i>Unknown</i>	<i>Unknown</i>	$F_{year}/F_{MSY} = 1.00$	Unknown
Atlantic Blue Marlin	$B_{00}/B_{MSY} = 0.4$ (0.25 - 0.6)	$0.9B_{MSY}$	$F_{99}/F_{MSY} = 4.0$ (2.5 - 6.0)	$F_{year}/F_{MSY} = 1.00$	Overfished; overfishing is occurring.
Atlantic White Marlin	$B_{01}/B_{MSY} = 0.12$ (0.06-0.25)	$0.85B_{MSY}$	$F_{00}/F_{MSY} = 8.28$ (4.5-15.8)	$F_{year}/F_{MSY} = 1.00$	Overfished; overfishing is occurring.
West Atlantic Sailfish	<i>Not estimated</i>	$0.75B_{MSY}$	<i>Not estimated</i>	$F_{year}/F_{MSY} = 1.00$	Overfished; overfishing is occurring.

* South Atlantic swordfish, South Atlantic albacore and East Atlantic bluefin tuna are not found in the U.S. EEZ.

2.1 Stock Assessment Update: ATLANTIC YELLOWFIN TUNA

The SCRS conducted a stock assessment for yellowfin tuna in 2003. The information below revises the 2003 SAFE Report.

2.1.1 Life History/Species Biology Information

The HMS FMP includes summary information on the life history of yellowfin tuna. Findings from recent research on yellowfin tuna life history as summarized in the 2003 report of the SCRS follow. Several collaborative studies were conducted by U.S. scientists in cooperation

with scientists from other countries. Cooperative research by NOAA Fisheries and the Instituto Nacional de la Pesca (INP) in Mexico continued and resulted in a joint analysis of the U.S. and Mexican longline catch per unit effort (CPUE) of yellowfin in the Gulf of Mexico (SCRS/03/061). Cooperative research plans include further development of research projects on other tunas, as well as the refinement of the yellowfin tuna indices as additional data become available. Cooperative research on yellowfin tuna abundance indices, catch at age, and life-history studies is also continuing with Venezuelan scientists. One document on Venezuelan longline catch rate patterns resulted from this collaboration in 2003 (SCRS/03/054) and additional working papers based on this collaboration are expected in future years.

Several other working papers were provided in support of the 2003 stock assessment of yellowfin tuna (July, Merida, Mexico). Two relative abundance patterns (one for the Gulf of Mexico and another for the Atlantic regions fished by U.S. longline vessels) based on U.S. pelagic longline data from 1981 to 2002 were presented in SCRS/03/060. Additionally, a relative abundance index based on data collected through the Large Pelagic Survey from the Virginia-Massachusetts rod and reel fishery (1986-2002) was presented in SCRS/03/062.

New information from a genetic study was presented in SCRS/03/063. The phylogenetic analysis conducted on samples from the Gulf of Mexico and the Gulf of Guinea by researchers at Texas A&M, Galveston, revealed the presence of siblings in several sampling tows for juvenile tuna. Given the high level of genetic diversity at both the mitochondrial and microsatellite loci, the probability of such sampling is extremely low and can best be explained by the unequal reproductive output of certain females. Increases in vulnerability of juvenile yellowfin could be of concern in terms of genetic integrity of the population if levels of reproductive variance are confirmed to be large.

2.1.2 Recent Stock Assessment Results

Based on movement patterns, as well as other information (e.g., time-area size frequency distributions and locations of fishing grounds), ICCAT manages Atlantic yellowfin tuna based on an Atlantic-wide single stock hypothesis. A full assessment was conducted for yellowfin tuna in 2003 (SCRS 2003) applying various age-structured and production models to the available catch data through 2001. At the time of the assessment meeting, only 19 percent of the 2002 catch had been reported (calculated relative to the catch reports available at the time of the SCRS Plenary). The results from all models were considered in the formulation of the Committee's advice. Both equilibrium and non-equilibrium production models were examined in 2003. The effective effort used for the production models was calculated by first creating a combined index from the available abundance indices by fleet and gear, and weighting each index by the catch of that fishery. One of the non-equilibrium models applied estimated the annual effective fishing effort internally, allowing the fishing power trends by fleet to vary.

The estimate of maximum sustainable yield (MSY) based upon the equilibrium models ranged from 151,300 to 161,300 metric ton (mt); the estimates of F_{2001}/F_{MSY} ranged from 0.87 to

1.29. The point estimate of MSY based upon the non-equilibrium models ranged from 147,200-148,300 mt. The point estimates for F_{2001}/F_{MSY} ranged from 1.02 to 1.46; the main differences in the results were related to the assumptions of each model. The Committee was unable to estimate the level of uncertainty associated with these point estimates.

An age-structured virtual population analysis (VPA) was made using eight indices of abundance. The results from this model were more comparable to production model results than in previous assessments, owing in part to a greater consistency between several of the indices used. The VPA results compare well to the trends in fishing mortality and biomass estimated from production models. The VPA estimates that the levels of fishing mortality and spawning biomass in recent years have been very close to MSY levels. The estimate of MSY derived from these analyses was 148,200 mt.

In summary, the age-structured and production model analyses implied that although current (2001) catches are slightly higher than MSY levels, effective effort may be either slightly below or above (up to 46 percent) the MSY level, depending on the assumptions. Consistent with these model results, yield-per-recruit analyses also indicated that 2001 fishing mortality rates could either be above or about the level which could produce MSY. Yield-per-recruit analyses further indicated that an increase in effort is likely to decrease the yield-per-recruit, while reductions in fishing mortality on fish less than 3.2 kg could result in substantial gains in yield-per-recruit and modest gains in spawning biomass-per-recruit.

Table 2.3.2 Summary Table for the Status of Atlantic Yellowfin Tuna

Age/size at Maturity	Age 3/~110 cm curved fork length
Spawning Sites	Tropical waters
Current Relative Biomass Level	$B_{01}/B_{MSY} = 0.73 - 1.10$
<i>Minimum Stock Size Threshold</i>	$0.5B_{MSY}$ (age 2+)
Current Relative Fishing Mortality Rate	$F_{01}/F_{MSY} = 0.87 - 1.46$
<i>Maximum Fishing Mortality Threshold</i>	$F_{year}/F_{MSY} = 1.00$
Maximum Sustainable Yield	~ 148,000 mt
Current (2001) Yield	159,000 mt
Current (2002) Yield	137,500 mt
Current (2001) Replacement Yield	May be somewhat below the current yield
Outlook	Stock not overfished, overfishing may be occurring

2.2 Stock Assessment Update: ATLANTIC ALBACORE TUNA

2.2.1 Life History/Species Biology Information

No new life history information is available for Atlantic albacore tuna. Please see the 2003 SAFE report.

2.2.2 Recent Stock Assessment Results

North Atlantic - Please see the 2003 SAFE report.

South Atlantic - In 2003, an age-structured production model (ASPM), using the same specifications as in 2000, was used to provide a Base Case assessment for South Atlantic albacore. Results were similar to those obtained in 2000, but the confidence intervals were substantially narrower. In part, this may be a consequence of additional data now available, but the underlying causes need to be investigated further. The estimated MSY and replacement yield from the 2003 Base Case (30,915 mt and 29,256 mt, respectively) were similar to those estimated in 2000 (30,274 mt and 29,165 mt). In both 2003 and 2000, the fishing mortality rate was estimated to be about 60 percent of F_{MSY} . Spawning stock biomass has declined substantially relative to the late 1980s, but the decline appears to have leveled off in recent years and the estimate for 2002 remains well above the spawning stock biomass corresponding to MSY. A statistical (Bayesian) age structured production model was used for the first time in 2003. The results from this model were qualitatively similar to those from the ASPM. Projections were carried out using this alternate model.

Table 2.3.4 Summary Table for the Status of South Atlantic Albacore Tuna

Age/size at Maturity	Age 5/~90 cm curved fork length
Spawning Sites	Subtropical western waters of the southern Hemisphere
Current Relative Biomass Level	$B_{02}/B_{MSY} = 1.66 (0.74 - 1.81)$
Current Relative Fishing Mortality Rate	$F_{02}/F_{MSY} = 0.62 (0.46 - 1.48)$
Maximum Sustainable Yield	30,200 mt (50 - 31,400)
Current (2002) Yield	31,582 mt
Current Replacement Yield (2002)	29,256 mt (24,530 - 32,277)
Outlook	Not overfished; overfishing is not occurring

¹This figure includes reported catch, provisional catch reported to the SCRS, and carry-overs

References for Section 2

- ICCAT/03/054. Standardized catch rates for yellowfin tuna (*Thunnus albacares*) from the observed Venezuelan longline fleet in the northwestern Atlantic 1991-2002. AROCHA, F., M. Ortiz, L. A. Marcano.
- ICCAT/03/060. Standardized catch rates for yellowfin tuna (*Thunnus albacares*) from the pelagic longline fishery in the western Atlantic. ORTIZ, M., G. Diaz.
- ICCAT/03/061. Updating standardized catch rates for yellowfin tuna (*Thunnus albacares*) in the Gulf of Mexico longline fishery for 1992-2002 based upon observer programs from Mexico and the U.S. BROWN, C. A., R. U. Pastor, R.S. Sansores, J. O. González.
- ICCAT/03/062. Standardized catch rates for yellowfin tuna (*Thunnus albacares*) in the Virginia -Massachusetts (U.S.) rod and reel fishery during 1986-2002. BROWN, C. A.
- ICCAT/03/063. Preliminary analysis of the comparison in levels of variation between juvenile and adult yellowfin tuna samples from the Atlantic Ocean using both mtDNA and microsatellite data. FARNHAM, T. T., B. Stequert, J. R. Alvarado Bremer.
- SCRS. 2003. Report of the Standing Committee on Research and Statistics, ICCAT SCRS.

3. ESSENTIAL FISH HABITAT

3.1 Atlantic Sharks

The Cooperative Atlantic States Shark Pupping and Nursery (COASTSPAN) Survey continued through 2003 and results for the 2002 sampling year were compiled. Juvenile sharks collected, tagged and released that year included the Atlantic sharpnose, blacknose, blacktip, dusky, finetooth, lemon, nurse, sandbar, sand tiger, scalloped hammerhead, spinner, and tiger sharks, and smooth dogfish. Included in the sampling were a number of recaptured sharks which were tagged in previous years. Environmental parameters were also sampled to indicate habitat preferences. In addition, in 2002, the random stratified sampling plan in Delaware Bay was refined, and the analytical methodology for estimating sandbar shark populations within the Bay was further developed (McCandless and Pratt 2003).

In 2003, NOAA Fisheries initiated the Cooperative Gulf of Mexico States Shark Pupping and Nursery (GULFSPAN) Survey to expand upon the Atlantic COASTSPAN Survey. Due to funding circumstances, a complete season of sampling on the part of all states involved was not possible. However, those sharks captured, tagged and released included the Atlantic sharpnose, blacktip, bonnethead, finetooth, spinner, blacknose, scalloped hammerhead, bull, and great hammerhead. Environmental parameters were also sampled for use in determining habitat preferences (Carlson et.al., 2003).

Amendment 1 to the HMS FMP, published in 2003, contains updated EFH designations for five shark species which were selected for review based on a change in management status (blacktip, sandbar, and finetooth sharks) and new information becoming available (dusky and nurse sharks). In addition, a time/area closure from January through July was specified for sandbar and dusky shark nursery and pupping areas encompassing EFH and habitat-of-particular-concern (HAPC) areas of approximately 4,490 nm identified off North Carolina. In 2004, EFH updates for all Atlantic HMS for which new information is available will be included in the development of Amendment 2 to the HMS FMP.

3.2 Atlantic Billfish

NOAA Fisheries and University of Miami scientists have continued work initiated in 2002 to electronically tag blue and white marlin adults and to sample newly-hatched larvae in western North Atlantic waters. To-date, archival tags have been deployed on 52 blue marlin and 9 white marlin, and several hundred larvae collected during respective spawning seasons. The program goals are to improve understanding of reproductive season movements, and delineate spawning and nursery grounds through examination of larval distribution with respect to oceanographic features and forces. As the result of adult and larval sampling off the Dominican Republic, and applying conventional histological techniques and new genetic methods in identifying newly hatched marlin larvae, the research team broke new ground in 2003 by identifying a white marlin spawning area and showing that it is shared with spawning blue marlin. This information will be used for the protection and management of these spawning grounds and rebuilding the stocks (Prince, 2003).

3.3 Atlantic Bluefin Tuna

The Tag-A-Giant (TAG) program, a collaborative effort among scientists from Stanford University, the Monterey Bay Aquarium, and NOAA Fisheries, continued in 2003, placing electronic tags internally and externally on Atlantic bluefin tuna in the North Atlantic to continuously record data. The major goals of continued deployments are to discern habitat preferences for spawning and feeding grounds, spawning site fidelity, and the level of mixing between eastern and western stocks. An additional objective is to determine the influence of environmental parameters on behaviors, abundance and distribution of adolescent and mature bluefin tuna. As of September 2003, over 750 electronic tags, 55 percent of these being surgically implanted archival tags, have been deployed in Atlantic bluefin tuna off North Carolina and Massachusetts, and in the Gulf of Mexico. In 2003, experiments were designed for calculating the error around geolocation estimations, and researchers have acquired a robust statistical system for position estimation, the first step required to temporal and spatial modeling of the tag results (Block, 2003).

References for Section 3

Block, B.A. 2003. Report on the Electronic Tagging of Atlantic Bluefin Tuna: The tag-A-Giant Program in 2003 (unpublished summary report submitted to the HMS).

Carlson, J.K., I.E. Baremore, and D.M. Berta. 2003. GULFSPAN Gulf of Mexico-FY03 Report to NOAA Fisheries Highly Migratory Species Office. NOAA Fisheries, SEFSC, Panama City, FL.

McCandless, C. and H.L. Pratt. 2003. 2002 Report of the Cooperative Atlantic States Shark Pupping and Nursery (COASTSPAN) Survey. Apex Predators Program. NOAA Fisheries, NEFSC, Narragansett, RI.

Prince, E.D. 2003. Personal Communication. NOAA Fisheries, SEFSC, Miami, FL.

4. FISHERY DATA UPDATE

In this section of the SAFE report, HMS fishery data are analyzed by gear type (pelagic longline, purse seine, commercial handgear, and recreational handgear), with the exception of some data on Atlantic sharks. HMS fishermen generally target particular species. However, the non-selective nature of most fishing gears promotes more effective analysis and management on a gear-by-gear rather than species-by-species basis. International catches of HMS are also provided (Table 4.1) for comparison to U.S. catches. The data in this section are preliminary and subject to revision.

For more detailed information regarding historical and current management for each gear type and other issues associated with each gear type, please see the 2003 SAFE report for Atlantic HMS.

Table 4.1 Calendar Year 2002 U.S. vs International Catch of HMS (mt ww) other than sharks (SCRS 2003, NOAA Fisheries, 2003).

Species	Total International Reported Catch	Region of U.S. Involvement	Total Regional Catch	U.S. Catch	U.S. Percentage of Regional Catch	U.S. Percentage of Total Atlantic Catch
Atlantic Swordfish	33,772* (includes N. & S. Atlantic and Mediterranean)	North Atlantic	9,607*	2655	27.63%	8.02%
		South Atlantic	13,569*	54	0.40%	
Atlantic Bluefin Tuna	33,558**	West Atlantic	3,215	1,875 (38 mt discards)	58.30%	5.58%
Atlantic Bigeye Tuna	73,085	Total Atlantic	73,085	576	0.79%	0.79%
Atlantic Yellowfin Tuna	137,350	West Atlantic	29,971	5,845	19.50%	4.25%
Atlantic Albacore Tuna	64,109 (includes N. & S. Atlantic and Mediterranean)	North Atlantic	22,465	497	2.20%	0.78%
		South Atlantic	31,582	1	0.003%	
Atlantic Skipjack Tuna	114,432	West Atlantic	21,374	90	0.42%	0.08%
Atlantic Blue Marlin	2,324	North Atlantic	480	55	11.40%	2.35%

Atlantic White Marlin	794	North Atlantic	243	35	14.52%	4.44%
Atlantic Sailfish	2,249	West Atlantic	1464	110	7.51%	4.89%

* Actual catches are likely higher given significant non-compliance with ICCAT reporting requirements.

** Significant non-compliance with ICCAT reporting requirements affects SCRS from estimating aggregate 2002 eastern Atlantic bluefin tuna catches accurately.

4.1 Fishery Data: PELAGIC LONGLINE

Table 4.1.1 Estimated U.S. Pelagic Longline HMS Catches: Calendar Years 1998-2002 (mt ww)*(NOAA Fisheries, 2003).

	1998	1999	2000	2001	2002
Swordfish <i>landings</i>	3159	3048	2969	2526	2401
Swordfish <i>dead discards</i> **	433	494	490	293	240
Yellowfin Tuna	2448	3375	2901	2200	2542
Bigeye Tuna	695	929	532	702	511
Bluefin Tuna <i>landings</i>	49	74	66	38	50
Bluefin Tuna <i>dead discards</i> ***	64 - 102	30 - 151	67 - 173	25 - 86	38
Albacore Tuna	180	195	147	194	147
Skipjack Tuna	1	2	2	4	2
Blue Marlin****	52	82	60	22	37
White Marlin****	32	57	41	17	29
Sailfish****	27	72	45	11	7
Total	7,139.9 - 7,177.9	8,356.0 - 8,477.0	7,319.7 - 7,425.7	6,012.0 - 6,073.0	6004

* Atlantic sharks are caught on pelagic longlines; however, the methods for reporting data on Atlantic sharks do not allow for their inclusion in this table. The table also does not include other species caught by this gear, e.g., dolphin, wahoo, etc.

** Post-release mortality of swordfish released alive is not estimated by NOAA Fisheries at this time. Source: SCRS 2003 (N. Atlantic area only).

*** Estimates of bluefin tuna discards vary depending upon the method used to calculate discards; the methodology was changed for 2003.

**** Indicates longline dead discards of these species.

Table 4.1.2 Estimated International Longline Landings of HMS, other than Sharks, for All Countries in the Atlantic: 1998-2002 (mt ww)* (SCRS, 2003).

	1998	1999	2000	2001	2002
Swordfish (N.Atl + S. Atl)	24,432	25,362	24,934	21,420	21,770

Yellowfin Tuna (W. Atl)**	8,795	11,596	11,465	12,535	12,141
Bigeye Tuna	71,825	76,513	70,902	54,842	43,773
Bluefin Tuna (W. Atl.)**	764	914	859	610	727
Albacore Tuna (N. Atl + S. Atl)	23,574	27,209	28,881	28,959	27,491
Skipjack Tuna (N. Atl + S. Atl)	99	51	60	70	88
Blue Marlin (N. Atl. + S. Atl.)***	2,467	2,378	2,108	1,499	1,198
White Marlin (N. Atl. + S. Atl.)***	885	923	854	557	672
Sailfish (W. Atl.)***	1,229	719	934	531	1,043
Total	134,070	148,197	140,310	121,218	108,903
U.S. Longline Landings (from U.S. Natl. Report, 2000) [#]	7,140	8,356	7,320	6,012	6,004
U.S. Longline Landings as a Percent of Total Longline Landings	5.3	5.6	5.2	5.0	5.5%

* Landings include those classified by the SCRS as longline landings for all areas.

** Note that the U.S. has not reported participation in the E. Atl yellowfin tuna fishery since 1983 and has not participated in the E. Atl bluefin tuna fishery since 1982.

***Includes U.S. dead discards.

Includes swordfish longline discards and bluefin tuna discards.

4.2 Fishery Data: PURSE SEINE

Table 4.2.1 Domestic Atlantic Tuna Landings for the Purse Seine Fishery: 1998-2002 (mt ww), NW Atlantic Fishing Area (NOAA Fisheries, 2003).

Species	1998	1999	2000	2001	2002
Bluefin Tuna	248.6	247.9	275.2	195.9	207.7
Yellowfin Tuna	0	0	0	0	0
Skipjack Tuna	0	0	0	0	0

Table 4.2.2 Estimated International Purse Seine Atlantic Tuna Landings in the Atlantic and Mediterranean: 1998-2002 (mt ww) (SCRS, 2003).

Species	1998	1999	2000	2001	2002
Bluefin Tuna	21,857	15,884	17,616	8,122	16,038
Yellowfin Tuna	92,816	83,379	79,749	103,326	95,435

Species	1998	1999	2000	2001	2002
Skipjack Tuna	77,594	95,367	80,768	77,995	70,750
Bigeye Tuna	16,370	20,931	17,917	22,060	16,192
Total	208,637	215,561	196,050	220,901	198,415
U.S. Total	249	248	275	196	207
U.S. Percentage	0.12%	0.12%	0.14%	0.09%	0.10%

4.3 Fishery Data: COMMERCIAL HANDGEAR

Table 4.3.1 Domestic Landings for the Commercial Handgear Fishery, by Species and Gear, for 1998-2002 (mt ww) (NOAA Fisheries, 2003).

Species	Gear	1998	1999	2000	2001	2002
Bluefin Tuna	Rod and Reel	603.4	643.6	579.3	889.7	878.8
	Handline	29.2	15.5	3.2	9.0	4.5
	Harpoon	133.4	115.8	184.2	101.9	55.5
	TOTAL	766.0	774.9	766.7	1,000.6	983.8
Bigeye Tuna	Troll	4.0	0.0	0.0	0.0	0.0
	Handline	0.1	12.3	5.7	33.7	13.7
	TOTAL	4.1	12.3	5.7	33.7	13.7
Albacore Tuna	Troll	5.8	0.0	0.0	0.0	0.0
	Handline	0.0	4.4	7.9	3.9	6.1
	TOTAL	5.8	4.4	7.9	3.9	6.1
Yellowfin Tuna	Troll	177.5	0.0	0.0	0.0	0.0
	Handline	64.7	219.2	283.7	300.2	227
	TOTAL	242.2	219.2	283.7	300.2	227
Skipjack Tuna	Troll	0.4	0.0	0.0	0.0	0.0
	Handline	0.0	6.4	9.7	10.5	12.4
	TOTAL	0.4	6.4	9.7	10.5	12.4
Swordfish	Troll	0.7	0.0	0.0	0.0	0
	Handline	0.0	5.0	8.9	8.9	10.7
	Harpoon	1.5	0.0	0.6	7.4	2.8
	TOTAL	2.2	5.0	9.5	16.3	13.5

Table 4.3.2 Domestic Landings for the Commercial Handgear Fishery by Species and Region for 1998-2002 (mt ww) (NOAA Fisheries, 2003).

Species	Region	1998	1999	2000	2001	2002
Bluefin Tuna	NW Atl	766.0	774.4	766.7	1,000.6	938.3
Bigeye Tuna	NW Atl	4.0	11.9	4.1	33.7	13.1
	GOM	0.1	0.2	0.1	0.5	0.6
	Caribbean	0.0	0.2	1.5	0.0	0.0
Albacore Tuna	NW Atl	5.8	0.6	2.9	1.7	3.4
	GOM	0.0	≤ .05	0.0	0.0	0.0
	Caribbean	0.0	3.8	5.0	2.2	2.7
Yellowfin Tuna	NW Atl	177.5	192.0	235.7	242.5	127.5
	GOM	60.8	12.7	28.6	43.4	92.3
	Caribbean	3.9	14.5	19.4	14.3	7.2
Skipjack Tuna	NW Atl	0.4	0.2	0.2	0.2	0.2
	GOM	0.0	0.4	0.7	0.0	0.0
	Caribbean	0.0	5.8	8.8	10.0	12.2
Swordfish	NW Atl	2.2	5.0	8.3	16.0	11.0
	GOM	0.0	≤ .05	1.2	0.3	2.5

Table 4.3.3a Estimated total trips targeting large pelagic species from June 4 through November 4, 2001 (LPS telephone and dockside interviews).

State/Area	Private Vessel Trips	Charter Trips	Total
VA	910	307	1,217
MD/DE and Cape May County, NJ	2,675	655	3,330
NJ (not including Cape May County)	3,040	660	3,700
NY	2,039	280	2,319
CT/RI	497	203	700
MA	3,641	567	4,208
NH/ME	1,944	133	2,077
Total	14,746	2,805	17,551

Table 4.3.3b Estimated total trips targeting large pelagic species from June 2 through November 2, 2002 (LPS telephone and dockside interviews).

State/Area	Private Vessel Trips	Charter Trips	Total
VA	6814.5	1498.8	8313.3
MD/DE	11331.1	4099.9	15431.0
NJ	10095.5	3046.0	13141.5
NY	6344.3	1779.5	8123.8
CT/RI	2894.0	903.0	3797.0
MA	14512.1	3432.8	17944.9
NH/ME*	2114.5	102.0	2216.5
Total	54106.0	14862.0	68968.0

*NH/ME incomplete data, lacking 2002 dockside data.

4.4 Fishery Data: RECREATIONAL HANDGEAR

Table 4.4.1 Domestic Landings for the Atlantic Tunas, Swordfish and Billfish Recreational Rod and Reel Fishery: Calendar years 1997-2001 (mt ww)* (NOAA Fisheries Large Pelagic Survey; SEFSC Recreational Billfish Survey). Recreational shark landings are provided in Tables 4.4.3 through 4.4.5.

Species	Region	1997	1998	1999	2000	2001
Blue fin tuna**	NW Atlantic	299	184	99.9	49.5	249.3
	GOM	0	0	0.4	0.9	1.7
	Total	299	184	100.3	50.4	251
Bigeye tuna	NW Atlantic	333.5	228.0	316.1	34.4	366.2
	GOM	0	0	1.8	0	0
	Total	333.5	228.0	317.9	34.4	366.2
Albacore	NW Atlantic	269.5	601.1	90.1	250.75	122.3
	GOM	65.2	0	0	0	0
	Total	334.7	601.1	90.1	250.75	122.3
Yellowfin tuna	NW Atlantic	3,560.9	2,845.7	3,818.2	3,809.5	3690.5
	GOM	7.7	80.9	149.4	52.3	494.2
	Total	3,569	2,927	3,967.6	3,861.8	4184.7
Skipjack tuna	NW Atlantic	42.0	49.5	63.6	13.1	32.9
	GOM	21.7	37.0	34.8	16.7	16.1
	Total	63.7	86.5	98.4	29.8	49.0
Blue marlin***	NW Atlantic	25.0	34.1	24.8	13.8	9.0
	GOM	11.5	4.5	7.5	4.7	5.1
	Caribbean	8.6	10.6	4.6	5.7	2.3
	Total	45.1	49.2	36.9	24.2	16.4
White marlin ***	NW Atlantic	0.9	2.4	1.5	0.23	2.8
	GOM	0.9	0.2	0.1	0	0.3
	Caribbean	0.0	0.02	0	0	0
	Total	1.8	2.6	1.6	0.23	3.1
Sailfish***	NW Atlantic	0	0.1	0.07	1.75	61.2
	GOM	0.4	1.0	0.6	0.24	0.6
	Caribbean	0.2	0.05	0	0.06	0

Species	Region	1997	1998	1999	2000	2001
	Total	0.6	1.5	0.67	2.05	61.8
Swordfish	Total	10.9	4.7	21.3	15.6	1.5

* Rod and reel catches and landings for Atlantic tunas represent estimates of landings and dead discards based on statistical surveys of the U.S. recreational harvesting sector.

** Rod and reel catch estimates for bluefin tuna in the U.S. National Report to ICCAT include both recreational and commercial landings. Rod and reel catch of bluefin less than 73" curved fork length (CFL) are recreational, and rod and reel catch of bluefin 73 inches CFL or greater are commercial. Rod and reel catch of bluefin > 73" CFL also includes a few metric tons of "trophy" bluefin (recreational bluefin 73").

*** Blue marlin, white marlin, and sailfish landings are based on the U.S. National Report to ICCAT and consist primarily of reported tournament landings.

Table 4.4.2 Observed Catch and Reported Releases of HMS in the Rod and Reel Fishery from Dockside Interviews. Source: Large Pelagics Survey* (LPS) raw data (i.e., not expanded catch estimates).

Species	Number of Fish Observed Kept							Number of Fish Reported Released Alive						
	1997	1998	1999	2000	2001	2002	2003	1997	1998	1999	2000	2001	2002	2003
White Marlin	7	11	6	2	5	8	12	203	465	156	59	118	215	160
Blue Marlin	3	3	3	0	1	0	4	30	27	28	17	14	30	39
Sailfish	0	1	0	6	0	0	0	2	2	3	0	2	6	6
Swordfish	5	1	3	14	1	5	9	6	5	1	5	10	6	21
Bluefin Tuna	1,153	653	396	317	909	1,203	943	1,174	1,105	327	244	237	447	237
Bigeye Tuna	26	17	27	16	9	32	21	6	9	0	0	8	1	3
Yellowfin Tuna	2,472	2,646	2,501	2,366	2,423	2,595	3,216	222	645	682	97	74	328	200
Skipjack Tuna	296	261	146	32	100	117	681	468	267	88	69	130	250	526
Albacore Tuna	146	558	133	513	302	534	546	43	92	52	17	52	95	31
Thresher Shark	7	7	3	2	5	20	24	2	2	2	1	0	5	8
Mako Shark (Shortfin)	74	78	49	49	27	72	141	94	92	49	114	65	120	208
Sandbar Shark	5	2	2	1	2	0	9	30	56	6	4	10	17	26
Dusky Shark	6	6	1	0	0	1	1	50	54	7	32	8	9	44
Longfin Mako	0	0	3	0	0	3	0	0	0	8	0	0	6	0
Porbeagle	0	1	0	0	0	1	0	5	6	0	0	0	14	1
Blacktip Shark	2	1	0	0	1	0	1	0	2	5	0	0	6	0
Tiger Shark	0	2	0	0	1	1	0	5	5	0	3	2	3	12
Blue Shark	27	26	11	12	2	36	65	1,897	780	572	374	141	505	2,018
Hammerhead Shark	2	1	1	1	2	0	0	4	4	5	0	1	6	38

Species	Number of Fish Observed Kept							Number of Fish Reported Released Alive						
	1997	1998	1999	2000	2001	2002	2003	1997	1998	1999	2000	2001	2002	2003
Atl. Sharpnose Shark	0	1	0	0	0	0	0	0	3	0	0	0	0	0
Sand Tiger Shark	0	0	0	10	0	2	0	2	10	13	0	0	44	11
White Shark	0	0	0	0	0	0	0	0	2	0	0	0	0	3
Uncl. Shark	0	1	0	0	1	0	1	0	0	2	2	2	4	10
Uncl. Tuna	0	1	0	0	0	3	1	0	1	0	0	0	0	0
Wahoo	10	71	45	41	34	49	68	1	2	0	0	13	6	3
Dolphinfish (Mahi mahi)	1,022	7,263	2,139	955	1,294	2,509	4,209	61	194	73	48	108	111	677
King Mackerel	171	198	141	289	19	36	66	1	10	8	24	10	5	5
Atlantic Bonito	384	328	254	194	77	704	315	203	300	166	27	49	176	282
Little Tunny	428	1,231	97	139	48	240	121	1,015	1,507	133	118	118	585	443
Amberjack	2	6	9	6	19	7	44	18	40	24	20	14	57	111
Spanish Mackerel	0	2	1	13	3	5	35	1	1	0	0	0	0	1

* Preliminary LPS data as of November 19, 2003; Virginia to Maine (1997-2002); Virginia to New Hampshire (2003).

Shark Recreational Fishery

Recreational shark fishing with rod and reel is a popular sport at all social and economic levels, largely because the resource is accessible. Below are updates to the information presented in the 2003 SAFE report and Amendment 1 to the HMS FMP regarding recreational harvest of Atlantic sharks. In addition to the tables below, landings of unidentified sharks during the last three years (by number) include 10,984 sharks in 2000; 22,187 sharks in 2001; and 2,395 sharks in 2002 (Cortés, 2003). More information regarding shark landings can be found in Amendment 1 to the HMS FMP.

Table 4.4.3 Recreational Harvest of Atlantic LCS by Species, in number of fish: 2000-2002 (2002 data are incomplete; Cortés, 2003).

LCS Species	2000	2001	2002
Basking**	0	0	0
Bignose*	0	0	0
Bigeye sand tiger**	0	0	0
Blacktip	67,600	48,841	35,620
Bull	6,057	4,268	1,653
Caribbean Reef*	122	0	0
Dusky*	2,285	5,575	962
Galapagos*	0	0	0
Hammerhead, Great	921	3,378	0
Hammerhead, Scalloped	3,403	1,128	998
Hammerhead, Smooth	1,274	703	0
Hammerhead, Unclassified	3,668	0	5,293
Lemon	2,782	5,480	1,680
Night*	0	0	0
Nurse	2,233	3,672	2,150
Sandbar	10,867	36,059	8,162
Sand tiger**	0	0	0
Silky	5,168	3,809	1,685
Spinner	4,474	3,605	2,677
Tiger	1,480	757	170
Whale**	0	0	0

LCS Species	2000	2001	2002
White**	0	0	0
Large Coastal Unclassified	17,096	16,210	8,996
Total:	129,430	134,089	70,046

*indicates species that were prohibited in the recreational fishery as of July 1, 1999.

** indicates species that were prohibited as of April 1997.

Table 4.4.4 Recreational Harvest of Atlantic Pelagic sharks by Species, in number of fish: 2000-2002 (2002 data are incomplete; Cortés, 2003).

Pelagic Shark Species	2000	2001	2002
Bigeye thresher*	0	0	65
Bigeye sixgill*	0	0	0
Blue	7,010	950	0
Mako, Longfin*	0	0	0
Mako, Shortfin	5,808	2,870	3,199
Mako, Unclassified	0	0	0
Oceanic whitetip	0	0	0
Porbeagle	0	0	0
Sevengill*	0	0	0
Sixgill*	0	0	0
Thresher	528	0	1,468
Total:	13,346	3,820	4,732

* indicates species that were prohibited in the recreational fishery as of July 1, 1999.

Table 4.4.5 Recreational Harvest of Atlantic SCS by Species, in number of fish: 2000-2002. (2002 data are incomplete, Cortés, 2003).

SCS Species	2000	2001	2002
Atlantic Angel*	0	0	0
Blacknose	9,773	15,254	11,346
Bonnethead	56,554	58,496	50,631
Finetooth	1,487	6,700	2,834
Sharpnose, Atlantic	118,888	125,743	64,488
Sharpnose, Caribbean*	0	0	0
Smalltail*	13	0	0

SCS Species	2000	2001	2002
Total:	186,715	206,193	129,299

* indicates species that were prohibited in the recreational fishery as of July 1, 1999.

4.5 Fishery Data: ATLANTIC SHARKS

In 2003, NOAA Fisheries finalized Amendment 1 to the HMS FMP. This amendment makes a number of changes to shark management including changing the LCS and SCS quotas, eliminating the commercial LCS minimum size, modifying the recreational bag and size limits, authorizing certain gears for recreational fishing, requiring several bycatch reduction measures including a time/area closure off of North Carolina, and establishing criteria for adding or removing species to or from the prohibited species list. For more information, please see Amendment 1 to the HMS FMP.

On October 29, 2003, NOAA Fisheries released a biological opinion (BiOp) pursuant to the Endangered Species Act (ESA) regarding Atlantic shark fisheries. This BiOp concluded that the level of anticipated take in the Atlantic shark fishery is not likely to jeopardize the continued existence of endangered green, leatherback, and Kemp's ridley sea turtles, the endangered smalltooth sawfish, or the threatened loggerhead sea turtle. Furthermore, it concluded that the actions in the rule are not likely to adversely affect marine mammals. As a result of this conclusion, the BiOp issued a 5-year total incidental take statement for the fishery by gear type. If the actual calculated incidental captures or mortalities exceed the incidental take statement, a formal consultation for that gear type must be re-initiated immediately. More information is available in Amendment 1 to the HMS FMP and the October 2003 BiOp and is not repeated here.

NOAA Fisheries continues to conduct an observer program in the shark bottom longline fishery and the shark gillnet fishery. Both of these programs are mandatory for selected vessels. More information regarding the observer programs and their levels of take can be found in Amendment 1 to the HMS FMP, the October 2003 BiOp, and the latest observer reports.

The following tables update shark landings included in Amendment 1 to the HMS FMP.

Table 4.5.1 Commercial landings of Large Coastal Sharks in lb dw: 2000-2002 (Cortés and Neer, 2002; Cortés, 2003).

Large Coastal Sharks	2000	2001	2002
Basking**	0	0	0
Bignose*	672	1,442	0
Bigeye sand tiger**	0	0	0
Blacktip	1,633,919	1,135,199	1,096,455
Bull	24,980	27,037	40,463
Caribbean Reef*	0	1	34
Dusky*	205,746	1,884	16,367

Large Coastal Sharks	2000	2001	2002
Dusky, fins*	0	89	0
Galapagos*	0	0	0
Hammerhead, Great	0	0	0
Hammerhead, Scalloped	0	0	0
Hammerhead, Smooth	0	0	0
Hammerhead, Unclassified	35,060	69,356	107,905
Large Coastal		172,494	147,431
Lemon	45,269	24,453	56,945
Narrowtooth*	0	0	0
Night*	0	0	0
Nurse	429	387	69
Sandbar	1,491,908	1,404,186	1,851,447
Sandbar, fins	996	2,364	24,289
Sand tiger**	6,554	1,248	415
Silky	31,959	14,197	30,731
Spinner	14,473	6,970	8,447
Tiger	24,443	26,973	16,115
Whale**	0	0	0
White**	1,201	26	0
Large Coastal Unclassified	108,692	525,661	708,049
Unclassified fins	86,824	23,988	9,017
Total	3,713,125 (1,684 mt dw)	3,437,955 (1,559 mt dw)	4,114,179 (1,866 mt dw)

* indicates species that were prohibited in the commercial fishery as of June 21, 2000.

** indicates species that were prohibited as of April 1997.

Table 4.5.2 Commercial landings of Pelagic Sharks in lb dw: 2000-2002 (Cortés and Neer, 2002; Cortés, 2003).

Pelagic Sharks	2000	2001	2002
Bigeye thresher*	4,376	330	0
Bigeye sixgill*	0	0	0
Blue	3,508	65	8
Mako, Longfin*	6,560	9,453	1,971

Pelagic Sharks	2000	2001	2002
Mako, Shortfin	129,088	171,888	156,540
Mako, Unclassified	74,690	73,556	58,545
Oceanic whitetip	657	922	1,590
Porbeagle	5,272	1,152	2,659
Porbeagle, fins	0	12	7
Sevengill*	0	0	0
Sixgill*	0	0	0
Thresher	81,624	56,893	53,260
Thresher, fins	0	201	340
Unclassified pelagic	41,184	31,639	18,392
Unclassified pelagic, fins	3,746	12,026	12,325
Total:	350,705 (159 mt dw)	358,137 (162 mt dw)	305,637 (139 mt dw)

* indicates species that were prohibited in the commercial fishery as of June 21, 2000.

Table 4.5.3 Commercial Landings of Small Coastal Sharks in lb dw: 2000-2002 (Cortés and Neer, 2002; Cortés, 2003).

Small coastal sharks	2000	2001	2002
Atlantic Angel*	86	0	439
Blacknose	178,083	160,990	144,616
Bonnethead	69,411	63,461	36,553
Finetooth	202,572	303,184	185,120
Sharpnose, Atlantic	142,511	196,441	213,140
Sharpnose, Atlantic, fins	0	209	10
Sharpnose, Caribbean*	353	205	0
Unclassified Small Coastal	11	51	2
Total:	593,027 (269 mt dw)	724,541 (329 mt dw)	579,880 (263 mt dw)

* indicates species that were prohibited in the commercial fishery as of June 21, 2000.

References for Section 4:

Cortés, E. and J.A. Neer. 2002. Updated catches of sharks. Shark Bowl Working Document SB/02/15. Document presented at the 2002 Shark Evaluation Workshop, NOAA Fisheries, Panama City, Florida.

Cortés, E. 2003. Updated catch of Atlantic sharks. SFD Contribution 2003-0031. NOAA Fisheries, Southeast Fisheries Science Center, Panama City, Florida. 75 p.

NOAA Fisheries. 2003. National Report of the U.S. (to ICCAT): 2003. NOAA, U.S. Department of Commerce, Silver Spring, MD. NAT/03/06. 40 p.

NOAA Fisheries. 2003. U.S. National Report to ICCAT, 2003.

5. ECONOMIC STATUS OF HMS FISHERIES

This section of the annual SAFE report provides recent information on the economic value of HMS fisheries. Baseline data from 1996 commercial fisheries is also included for comparative purposes. For additional information on the economic status of HMS fisheries, please see the 2003 SAFE Report.

Table 5.1 Average ex-vessel prices per lb. dw for Atlantic HMS by gear and area. 2002 dollars are converted to 1996 dollars using the consumer price index conversion factor of 0.872. Source: Dealer weigh out slips from the Southeast Fisheries Science Center and Northeast Fisheries Science Center, and bluefin tuna dealer reports from the Northeast Regional Office. HND=Handline, harpoon, spears, trot lines, and trolls, PLL=Pelagic longline, BLL=Bottom longline, Net=Gillnets and pound nets, TWL=Trawls, SEN=Seines, TRP=Pots and traps, DRG=Dredge, and UNK=Unknown. Gulf of Mexico includes: TX, LA, MS, AL, and the west coast of FL. S. Atlantic includes: east coast of FL, GA, SC, and NC dealers reporting to Southeast Fisheries Science Center. Mid-Atlantic includes: NC dealers reporting to Northeast Fisheries Science Center, VA, MD, DE, NJ, NY, and CT. N. Atlantic includes: RI, MA, NH, and ME. For bluefin tuna, all NC landings are included in the Mid-Atlantic.

Species	Gear	Gulf of Mexico		S. Atlantic		Mid-Atlantic		N. Atlantic	
		1996	2002	1996	2002	1996	2002	1996	2002
Bigeye tuna	HND	\$0.68	\$1.26	\$1.30	\$2.00	\$5.74	\$3.46	\$3.69	-
	PLL	-	\$4.44	\$1.33	\$2.03	\$3.51	\$3.59	\$3.36	\$3.56
	BLL	-	\$3.70	\$1.30	\$2.39	\$2.61	\$2.48	\$2.15	-
	NET	-	-	\$1.30	-	\$3.87	-	\$3.31	-
	TWL	-	-	-	-	\$4.68	-	\$8.00	\$3.28
	DRG	-	-	-	-	-	\$1.31	-	-
	UNK	-	-	-	-	-	\$4.36	-	-
Bluefin tuna	HND	-	\$2.35	-	\$2.92	\$14.70	\$3.54	\$10.73	\$6.92
	PLL	\$5.83	\$5.58	\$4.62	\$4.32	\$6.12	\$4.99	\$5.56	\$5.20
	NET	-	-	-	-	\$15.71	-	-	-
	SEN	-	-	-	-	-	-	\$11.05	\$5.76
	TWL	-	-	-	-	-	-	-	-
	BLL	-	\$3.92	-	\$4.49	-	\$6.10	-	-
Yellowfin tuna	HND	-	\$2.47	\$1.55	\$1.34	\$2.49	\$1.74	\$2.50	\$2.83
	PLL	-	\$3.21	\$1.63	\$1.65	\$2.51	\$1.87	\$2.14	\$2.41
	BLL	-	\$2.82	\$1.41	\$2.00	\$3.28	\$1.58	\$2.03	-
	NET	-	-	-	\$0.98	\$1.07	\$1.58	\$2.43	\$4.14
	TWL	-	-	-	\$0.38	\$2.40	-	\$2.67	\$1.91

Species	Gear	Gulf of Mexico		S. Atlantic		Mid-Atlantic		N. Atlantic	
		1996	2002	1996	2002	1996	2002	1996	2002
	TRP	-	-	-	-	-	\$1.72	-	\$3.92
	DRG	-	-	-	-	-	\$1.69	-	-
	UNK	-	-	-	-	-	\$2.40	-	-
Other tunas	HND	\$0.28	\$0.79	\$0.75	\$0.41	\$1.34	\$0.60	\$1.90	\$1.77
	PLL	-	\$0.69	\$0.79	\$0.95	\$1.84	\$0.75	\$0.98	\$1.00
	BLL	-	\$0.65	\$0.87	\$1.46	-	\$0.72	\$1.50	-
	NET	\$0.38	\$0.72	\$0.35	\$0.18	\$0.45	\$0.65	\$0.73	\$0.61
	TWL	-	\$0.35	\$0.31	\$0.23	\$0.45	\$0.37	\$1.08	\$0.60
	SEN	-	\$0.17	-	-	-	-	-	-
	TRP	-	\$0.26	-	-	-	\$0.50	-	\$0.30
	DRG	-	-	-	-	-	\$0.87	-	\$2.62
	UNK	-	-	-	-	-	\$0.90	-	-
Swordfish	HND	-	\$2.78	\$2.48	\$3.43	\$3.61	-	\$5.20	\$4.64
	PLL	-	\$2.56	\$2.88	\$2.48	\$4.31	\$2.77	\$4.01	\$2.88
	BLL	-	\$2.51	\$2.46	\$2.41	\$4.88	\$3.49	\$3.07	-
	NET	-	-	-	\$2.18	\$4.63	\$3.06	\$5.62	\$3.71
	TWL	-	-	-	-	\$4.56	\$2.91	\$3.08	\$2.66
	TRP	-	-	-	-	-	-	-	\$3.26
Large coastal sharks	HND	\$0.23	\$0.38	\$0.72	\$0.88	\$0.74	\$1.82	-	\$0.39
	PLL	-	\$0.31	\$1.54	\$2.29	\$0.58	\$2.42	\$1.03	\$0.25
	BLL	\$0.60	\$0.31	\$0.73	\$0.96	\$0.54	\$0.97	\$0.99	\$0.87
	NET	\$0.38	\$0.34	\$1.30	\$1.39	\$0.45	\$0.89	\$0.83	\$0.78
	TWL	\$0.15	\$0.22	\$0.86	\$0.71	\$0.47	\$0.45	\$0.80	\$0.75
	TRP	-	-	-	\$0.20	-	\$2.18	-	\$0.24
	SEN	-	-	-	-	-	\$1.10	-	-
	UNK	-	-	-	-	-	\$0.44	-	-
Pelagic sharks	HND	-	\$0.81	\$0.82	\$0.59	\$1.47	\$1.23	\$1.60	\$1.49
	PLL	-	\$0.92	\$0.68	\$0.81	\$1.25	\$1.14	\$1.26	\$1.14
	BLL	-	\$1.04	\$0.59	\$0.65	\$1.47	\$0.98	\$1.85	\$0.57

Species	Gear	Gulf of Mexico		S. Atlantic		Mid-Atlantic		N. Atlantic	
		1996	2002	1996	2002	1996	2002	1996	2002
	NET	-	-	\$0.33	\$0.30	\$0.99	\$0.85	\$1.12	\$0.52
	TWL	-	-	-	\$0.23	\$1.00	\$0.90	\$0.96	\$0.71
	TRP	-	-	-	-	-	-	-	\$0.60
	DRG	-	-	-	-	-	\$1.74	-	-
Small coastal sharks	HND	-	\$0.33	\$0.25	\$0.46	-	\$0.39	-	-
	PLL	-	\$0.28	-	\$0.36	\$0.25	\$0.44	-	-
	BLL	-	\$0.46	-	\$0.47	-	-	-	-
	NET	-	\$0.40	\$0.25	\$0.47	-	\$0.37	-	-
	TWL	-	-	-	-	-	\$1.10	-	\$0.51
	TRP	-	-	-	-	-	-	-	-
Shark fins	HND	-	\$18.56	\$14.00	\$13.54	\$2.74	-	-	-
	PLL	-	-	-	\$5.94	\$7.79	-	\$4.25	-
	BLL	-	\$19.81	\$14.00	\$19.41	\$8.00	-	\$3.00	-
	NET	-	-	-	\$9.08	\$4.77	-	\$1.96	-
	TWL	-	-	\$9.11	\$12.21	\$1.99	-	\$2.32	-

Table 5.2 Average ex-vessel prices per lb. for Atlantic HMS by area. 2002 dollars are converted to 1996 dollars using the consumer price index conversion factor of 0.872.

Species	Gulf of Mexico		S. Atlantic		Mid-Atlantic		N. Atlantic	
	1996	2002	1996	2002	1996	2002	1996	2002
Bigeye tuna	\$0.68	\$3.78	\$1.32	\$2.14	\$3.99	\$3.33	\$3.59	\$3.51
Bluefin tuna	\$5.83	\$4.85	\$4.62	\$3.29	\$9.48	\$4.10	\$10.78	\$6.37
Yellowfin tuna	-	\$2.82	\$1.56	\$1.51	\$2.43	\$1.76	\$2.35	\$2.53
Other tunas	\$0.29	\$0.73	\$0.62	\$0.43	\$1.10	\$0.64	\$1.31	\$1.02
Swordfish	-	\$2.54	\$2.79	\$2.74	\$4.43	\$2.83	\$4.09	\$3.03
Large coastal sharks	\$0.21	\$0.31	\$1.02	\$1.11	\$0.55	\$1.36	\$0.88	\$0.67
Pelagic sharks	-	\$0.97	\$0.62	\$0.58	\$1.21	\$1.02	\$1.31	\$0.87
Small coastal sharks	-	\$0.42	\$0.25	\$0.46	\$0.25	\$0.42	-	\$0.51
Shark fins	-	\$19.74	\$10.74	\$14.91	\$4.60	-	\$2.69	-

Table 5.3 Estimates of the total ex-vessel value of Atlantic HMS fisheries. Note: Average ex-vessel prices are the average of the values noted in Table 5.5 and may have some weighting errors, except for bluefin tuna which is based on a fleet-wide average. 2002 prices are converted to 1996 dollars using a conversion factor of .872 (NOAA Fisheries, 1997; NOAA Fisheries, 2003a; Cortes, 2003; and bluefin tuna dealer reports from the Northeast Regional Office).

Species	1996			2002		
	Ex-vessel price (\$/lb dw)	Weight (lb dw)	Fishery Value	Ex-vessel price (\$/lb dw)	Weight (lb dw)	Fishery Value
Bigeye tuna	\$2.40	1,212,706	\$2,910,494	\$3.19	1,267,645	\$4,043,788
Bluefin tuna	\$10.58	1,652,989	\$17,488,624	\$4.65	4,133,625	\$19,221,356
Yellowfin tuna	\$2.11	6,679,938	\$14,094,669	\$2.16	12,885,887	\$27,833,516
Other tunas*	\$0.83	368,433	\$305,799	\$0.71	1,298,509	\$921,942
Total tuna	--	--	\$34,799,586	--	--	\$52,020,601
Swordfish**	\$3.77	7,170,619	\$27,033,234	\$2.79	5,985,489	\$16,699,514
Large coastal sharks	\$0.67	5,262,314	\$3,525,750	\$0.86	4,097,363	\$3,523,732
Pelagic sharks	\$1.05	695,531	\$730,308	\$0.86	303,666	\$261,153
Small coastal sharks	\$0.25	460,667	\$115,167	\$0.45	579,441	\$260,748
Shark fins (weight = 5% of all sharks landed)	\$6.01	320,926	\$218,561	\$17.33	249,024	\$4,315,577
Total sharks	--	--	\$4,589,786	--	--	\$8,361,211
Total HMS	--	--	\$66,422,606	--	--	\$77,081,326

* Other tunas includes skipjack and albacore.

**Swordfish estimates do not include dead discards.

References for Section 5

Cortes, E. 2003. Updated Catches of Atlantic Sharks. NOAA, NOAA Fisheries, Southeast Fisheries Science Center, Panama City, FL. SFD Contribution SFD-2003-0031. 75 p.

NOAA Fisheries. 1997. 1997 Shark Evaluation Report. NOAA, Southeast Fisheries Science Center, Miami, FL. 12 p.

NOAA Fisheries. 2003a. National Report of the U.S. (to ICCAT): 2003. NOAA, U.S. Department of Commerce, Silver Spring, MD. NAT/03/06. 40 p.

NOAA Fisheries. 2003b. Fisheries of the U.S.: 2002. E.S. Pritchard, Editor. Office of Science and Technology, Fisheries Statistics and Economics Division, NOAA, U.S. Department of Commerce, Silver Spring, MD. 126 p.

6. COMMUNITY AND SOCIAL DATA UPDATE

According to National Standard 8 (NS 8), conservation and management measures should provide for the continued participation of a community and minimize the economic effects on the community. Complying with NS 8 is contingent upon the availability of community studies and profiles as well as regional economic analyses. Several new studies were summarized in the 2003 SAFE Report and new information will be included in Amendment 2 to the HMS FMP, currently under development. This section of the SAFE Report reviews the impact of significant regulatory measures enacted in the past year. For background information on guidelines for social impact assessment and the development of social information for the HMS FMP and Billfish Amendment, please see the 2003 SAFE Report.

6.1 Social Impacts of Selected 2003 Regulatory Actions

Emergency Rule to Implement Management Measures in the Atlantic Shark Fisheries Consistent with the 2002 Stock Assessments (67 FR 78990, December 27, 2002) and Extension (68 FR 31983; May 29, 2003).

These actions finalized an emergency rule and extension which expired on December 29, 2003, and implemented annual quotas for the commercial ridgeback and non-ridgeback large coastal shark fisheries and the commercial small coastal shark fishery. The emergency regulations also suspended the regulation regarding the commercial ridgeback large coastal shark minimum size. These actions were not expected to have negative socio-economic impacts for fishermen because they were of limited duration, and the quotas were established at recent landings levels. Since the minimum size requirement had never gone into place, its suspension was not expected to negatively impact fishermen. In fact, the final action to suspend the commercial minimum size promotes safety by not forcing fishermen to fish further offshore in order to catch fish that meet the minimum size requirement. The remaining actions in this rule were not expected to cause fishermen to fish in an unsafe manner. For further background information, please see the Environmental Assessment and associated Final Regulatory Flexibility Analysis for this emergency rule, available from the HMS Division of NOAA Fisheries or at <http://www.nmfs.noaa.gov/sfa/hms/hmsdocuments.html#shark>.

Final Rule to Reduce Discards of, and Modify the Target Catch Requirements for Pelagic Longline Vessels Retaining Incidental Catch of Atlantic Bluefin Tuna (68 FR 32414; May 30, 2003).

In this action, NOAA Fisheries amended regulations governing incidentally caught Atlantic bluefin tuna (BFT) in the Atlantic pelagic longline fishery. The intent of the action was to minimize dead discards of BFT and improve management of the Atlantic pelagic longline fishery. Specifically, target catch requirements were adjusted in all areas, at all times, to 2,000 lbs. (907 kg) to retain one incidentally caught BFT, 6,000 lbs. (2,722 kg) to retain two BFT, and 30,000 lbs (66,138 kg) to retain three BFT. The regulations also moved the boundary line between the northern and southern areas and allocated a percentage of the quota to each area; and established a degree of inseason adjustment authority for BFT retention limits. These actions are

expected to have positive economic and social effects on longline fishermen. The action increases the opportunity for retention of truly incidentally caught BFT while avoiding a targeted fishery for this species. The change to the north-south boundary and addition of inseason adjustment authority will help minimize closures and confusion, which will also result in positive effects on fishermen. The actions in this rule would not require fishermen to fish in an unsafe manner. For further background information, please see the Environmental Assessment and associated Final Regulatory Flexibility Analysis for this rule available from the HMS Division of NOAA Fisheries or at <http://www.nmfs.noaa.gov/sfa/hms/hmsdocuments.html#tuna>.

Final Rule Implementing Amendment 1 to the Fishery Management Plan for Atlantic Tunas, Swordfish, and Sharks and the Atlantic Shark Commercial Quotas and Fishing Season for the First 2004 Semiannual Fishing Season (68 FR 74746; December 24, 2003)

This action implements reductions in commercial quotas, trimester seasons, regional quotas, vessel monitoring system (VMS) requirements, and a time/area closure that would likely result in economic and social impacts to the fishery as a whole, some of which may be significant for vessel owners. However, all of these alternatives, when compared to the other alternatives considered, mitigate undesirable or greater economic impacts associated with continued overfishing, shortened seasons, bycatch of vulnerable species, and economic instability of fishery participants and associated fishing communities in the long-term. The combination of these preferred alternatives is necessary for the large coastal shark complex (LCS) to rebuild and the small coastal shark complex (SCS) to achieve optimum yield.

In order to mitigate some of the socio-economic impacts, NOAA Fisheries will delay effectiveness of trimester seasons, VMS requirements, and the time/area closure in order to give fishermen time to (1) purchase VMS units, (2) work with dealers to enhance market prices and plan out advertising strategies with grocers, and (3) prepare and plan for the closure. Furthermore, NOAA Fisheries re-evaluated and refined the size of the proposed time/area closure.

In terms of safety, the preferred alternatives described in Amendment 1 to the HMS FMP will not require fishermen to fish in an unsafe manner. Additionally, the alternatives that require the use of VMS and remove the commercial minimum size limit help to promote the safety of life at sea. In general, NOAA Fisheries urges fishermen to use caution, but cannot control what individual fishermen do in response to the time/area closure or other final actions in this rule. For more information, please see Amendment 1 to the HMS FMP.

7. FISH PROCESSING, INDUSTRY, AND TRADE

This section of the SAFE Report updates international trade data for HMS, including imports and exports of managed species. This information is collected through a variety of programs, some of which are external to NOAA Fisheries. For a review of NOAA Fisheries trade programs and discussions regarding the relative importance of HMS trade, please see Section 7 of the 2003 SAFE report.

Table 7.1 1997-2002 U.S. Exports (mt dw) of Atlantic and Pacific Bluefin Tuna (U.S. Bluefin Tuna Statistical Document Program).

	Atlantic BFT Commercial Landings	Atlantic BFT Exports	Pacific BFT Exports	Total U.S. BFT Exports
1997	826.8	698.7	917.4	1,616.1
1998	849.2	660.2	702.4	1,362.6
1999	874.0	735.6	95.7	831.3
2000	903.8	757.8	76.0	833.8
2001	987.0	812.3	67.0	879.0
2002	964.0	730.4	0.1	730.5

Note: most exports of Pacific BFT were in round (whole) form, although some exports were of dressed and gilled/gutted fish

Table 7.2 1997-2002 U.S. Exports of Shark Products by weight (kg) and value (US\$) (U.S. Bureau of the Census).

Year	Shark Fins Dried		Non-specified Fresh Shark		Non-specified Frozen Shark		Total for all Products	
	kg	US\$	kg	US\$	kg	US\$	kg	US\$
1997	NA*	NA*	459,542	920,887	439,992	884,588	899,534	1,805,475
1998	141,149	1,264,077	524,249	814,319	102,939	250,107	768,337	2,328,503
1999	106,723	911,671	270,343	487,610	155,275	461,362	532,341	1,860,643
2000	365,146	3,512,863	430,725	784,704	345,942	814,456	776,667*	1,599,160*
2001	335,265	3,166,628	332,948	545,568	634,060	2,341,215	967,008*	2,886,783*
2002	123,890	3,468,458	968,915	1,477,305	982,774	2,340,756	2,075,579	7,286,519

* There was no product code for the export of shark fins prior to 1998. Therefore, any exported shark fins may have been identified as unspecified shark product or as unspecified dried fish.

•Values do not include dried shark fin data.

Table 7.3 Imports of Bluefin Tuna into the U.S. (mt) (BSD program and U.S. Customs, 1997-2002).

Year	U.S. BSD Program		U.S. Customs Data
	Imports	Re-exports	
1997	7.0	0.8	109.5
1998	102.6	1.8	225.6
1999	411.9	16.6	558.6
2000	361.9	99.3	453.4
2001	512.9	7.0	532.4
2002	529.3	94.1	605.0

Note: most imports BFT were in dressed form, although some imports were of round and gilled/gutted fish. There were also some imports of BFT fillets and belly meat.

Table 7.4 2001-2002 U.S. Imports of Bigeye Tuna Products by weight (kg) and value (US\$) (Bureau of Census).

Year	Fresh		Frozen		Total for all Products	
	kg	US\$	kg	US\$	kg	US\$
2001	4,684,847	25,703,005	135,192	322,158	4,820,039	26,025,163
2002	6,312,988	39,843,124	319,231	708,633	6,632,219	40,551,787

Table 7.5 Swordfish import data collected under the Swordfish Certificate of Eligibility (COE) Import Monitoring Program (mt dw) for the 2002 calendar year.

Flag of Harvesting Vessel	Ocean of Origin			Not Provided	Total*
	Atlantic	Pacific	Indian		
Not Provided	2.7	0.0	0.0	2.8	5.5
Australia	0.0	217.4	41.1	7.2	265.7
Barbados	0.5	0.0	0.0	0.0	0.5
Brazil	1,075.2	0.0	0.0	0.0	1,075.2
Canada	324.9	0.0	0.0	0.0	324.9
Chile	0.0	963.3	0.0	0.0	963.3
Columbia	0.0	0.0	0.0	0.0	0.0
Costa Rica	0.3	406.6	0.0	0.0	406.9
Ecuador	0.5	458.7	0.0	0.0	459.2
El Salvador	0.0	30.3	0.0	0.0	30.3
Fiji Islands	0.0	36.0	0.0	0.0	36.0
Grenada	19.8	0.0	0.0	0.0	19.8
Indonesia	0.0	0.0	17.2	0.0	17.2
Japan	0.0	16.6	0.0	0.0	16.6
Malaysia	0.5	29.8	0.0	0.0	30.2
Mexico	0.0	78.1	0.0	2.8	80.8
Namibia	87.0	0.0	0.0	1.4	88.4
New Zealand	0.0	257.9	0.0	0.0	257.9
Panama	0.0	755.5	0.0	0.0	755.5
Philippines	0.0	34.0	0.0	1.0	35.0
R.S.A	0.0	0.0	86.9	0.0	86.9
Samoa	0.0	14.3	0.0	0.0	14.3
Seychelles	0.0	0.0	0.1	0.0	0.1
Singapore	0.0	139.7	3,062.1	0.0	3,201.8

Flag of Harvesting Vessel	Ocean of Origin			Not Provided	Total*
	Atlantic	Pacific	Indian		
South Africa	146.0	0.7	309.2	0.0	455.9
Taiwan	37.3	0.0	99.8	0.0	137.2
Tonga	0.0	3.8	0.0	0.7	4.5
Trinidad & Tobago	15.4	0.0	0.0	0.2	15.6
Uruguay	245.2	2.3	0.0	0.0	247.5
Venezuela	50.9	4.7	0.0	1.3	56.9
Vietnam	0.0	14.7	0.0	0.0	14.7
TOTAL	2,006.1	3,464.2	3,616.5	17.4	9,104.2
% of total swordfish imports	22.0	38.0	39.7	0.2	100.0

* COE Data as of February 23, 2003.

Table 7.6 1997-2002 U.S. Imports of Swordfish Products by weight (kg) and value (US\$) (Bureau of the Census).

Year	Frozen (kg)			Fresh (kg)		Total for all products (kg)	
	Fillets	Steaks	Other	Steaks	Other	kg	\$
1997	6,872,850	129,935	117,983	282,106	8,195,182	15,598,056	95,423,460
1998	7,224,329	207,816	259,675	92,560	8,497,451	16,281,831	82,577,668
1999	4,377,159	401,870	386,865	81,233	8,595,843	13,842,970	71,700,000
2000	4,833,867	524,148	167,441	161,763	8,626,856	14,314,075	85,579,449
2001	3,814,454	710,003	119,211	71,323	8,982,601	13,697,592	81,899,112
2002	4,156,755	956,459	677,351	195,211	9,726,199	15,711,975	88,266,887

Note: Prior to 1997, Customs codes specific to products beyond the frozen and fresh designations did not exist.

Table 7.7 1997-2002 U.S. Imports of Shark Products by weight (kg) and value (US\$) (Bureau of the Census).

Year	Shark Fins Dried		Non-specified Fresh Shark		Non-specified Frozen Shark		Total For All Products	
	kg	US\$	kg	US\$	kg	US\$	kg	US\$
1997	77,626	3,060,438	1,191,044	3,044,984	59,641	914,783	1,328,278	7,020,205
1998	62,169	1,698,646	947,545	2,160,985	148,167	1,125,994	1,157,881	4,985,625
1999	59,872	2,104,846	1,095,119	2,038,016	105,398	621,499	1,260,389	4,764,361
2000	66,107	2,355,575	1,066,144	1,859,203	90,166	575,226	1,222,417	4,790,004
2001	50,664	1,086,716	913,421	1,389,054	123,809	1,780,726	1,087,894	4,256,496
2002	39,141	1,023,914	797,538	1,240,650	91,792	1,090,428	928,471	3,354,992

8. BYCATCH

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. As a result, other species such as seabirds and marine mammals are considered “incidental catch.” This chapter provides a brief overview of the actions NOAA Fisheries has taken to reduce bycatch and incidental catch in HMS fisheries and any results of those actions. A more comprehensive review will be conducted during the development of Amendment 2 to the HMS FMP.

8.1 Bycatch Reduction Strategy

The NOAA Fisheries 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. Details on bycatch and bycatch reduction measures can be found in Section 3.5 of the HMS FMP, in Regulatory Amendment 1 to the HMS FMP (NOAA Fisheries, 2000), in Regulatory Adjustment 2 to the HMS FMP (NOAA Fisheries, 2002), and in Amendment 1 to the HMS FMP. In addition, a Bycatch 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 will be undertaken during 2004-05 and new activities may be added or removed as they are addressed or identified.

Bycatch Reporting Methodology

NOAA Fisheries utilizes self-reported data (HMS logbook program and the new 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.

Marine Mammals

NOAA Fisheries 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. Final 2002 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#Overview.

The final 2003 Marine Mammal Protection Act (MMPA) List of Fisheries published on July 15, 2003 (68 FR 41725). 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 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, swordfish, and shark 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/PR2/Fisheries_Interactions/list_of_fisheries.html.

Sea Turtles

NOAA Fisheries has taken several steps in the past few years to reduce sea turtle bycatch and bycatch mortality in domestic longline fisheries. These include requirements to carry and to use line clippers and dipnets to remove gear on incidentally captured sea turtles, handling and release guidelines designed to minimize injury, closed areas, and gillnet tending requirements. In addition, an experimental fishery was conducted in the Northeast Distant Statistical Reporting area (NED) during 2001-03. The results of the experiment are currently being analyzed.

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 be developed within 2 years. Because interactions appear to be relatively low in Atlantic HMS longline fisheries, the adoption of immediate measures is unlikely.

8.2 Bycatch of Highly Migratory Species in Other Fisheries

NOAA Fisheries is concerned about bycatch mortality of Atlantic HMS in any federal or state-managed fishery which captures them. NOAA Fisheries plans to address bycatch of these species in the appropriate FMPs. For example, capture of swordfish and tunas incidental to squid trawl operations is to be 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. NOAA Fisheries continues to solicit bycatch data on HMS from all state, interjurisdictional, and federal data collection divisions. NOAA Fisheries supports development of an interstate plan for coastal sharks by the Atlantic States Marine Fisheries Commission which would support protection of sharks caught incidentally by state-managed fisheries.

Squid Mid-Water Trawl

U.S. squid trawl fishermen, using mid-water gear, landed 4.8 mt ww of yellowfin tuna, skipjack tuna, albacore tuna, bigeye tuna, and swordfish in 2002 incidental to the squid, mackerel, and butterfish trawl fishery (Table 8.1). Bycatch of HMS in other trawl fisheries may be included as a portion of the overall reported trawl landings in Table 8.1. Landings decreased from 2001 for yellowfin tuna, and increased slightly for swordfish. 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 8.1 Atlantic HMS Landed (mt ww) Incidental to Trawl Fisheries, 1998-2002. Data based on tally sheets submitted to NOAA Fisheries (NOAA Fisheries, 2003).

Species	1998	1999	2000	2001	2002
Yellowfin tuna	0.7	4.1	1.76	2.7	0.3
Skipjack Tuna	0.2	1.0	0.04	0.2	<0.05
Bigeeye Tuna	0.5	1.2	1.7	0.4	0.3
Albacore	2.4	0.4	0.03	0.0	0.3
Swordfish	5.9	7.5	10.9	2.5	3.9
Total	9.7	14.2	14.43	5.8	4.8

Menhaden Purse Seine

In the menhaden purse seine fishery, sharks were caught incidentally in approximately 30 percent of the purse seine sets (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 8 percent were healthy. No new data are available at this time.

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 (Cortes *et al.*, 2002). Annual estimates of bycatch ranged from zero to almost six million sharks from 1992 to 1997 (Cortes, 2002). Requirements for turtle excluder devices in this fishery have probably resulted in less bycatch because sharks are physically excluded from entering the gear. Bycatch of the SCS complex in the Gulf of Mexico shrimp trawl fishery consists mainly of Atlantic sharpnose and bonnethead sharks (Cortes, 2002). Estimates of the bycatch of SCS ranged from 3.2 to 1.3 million sharks per year from 1972-2000.

8.3 Preliminary Analysis of the Effectiveness of Current Time/Area Closures

8.3.1 Objectives

During the past several years, NOAA Fisheries has implemented several time/area closures in the Atlantic Ocean and the Gulf of Mexico to reduce discards and bycatch. During the formulation of the rules implementing these measures, NOAA Fisheries 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 the closure has been implemented.

The 2001-02 fishing years provide the first data following the implementation of most of the HMS area 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. Because the following analyses are based only on two year's worth of data, any results should be considered preliminary. A more complete review of the effectiveness of the closures will be conducted during the development of Amendment 2 to the HMS FMP.

8.3.2 Methods

Data used in these analyses were taken from the HMS Logbook database administered through the NOAA Fisheries 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 1999-2000 was chosen for the initial comparisons to examine the effect of closures implemented in 2001. The percent change in 2001-02 from 1999-2000 in numbers kept and discarded were calculated for the entire Atlantic (Tables 8.2 and 8.3). Future analyses will also include: (1) a comparison of 1999-2001 data to pre-1999 data; (2) a comparison of the location of fishing effort before and after the closures; and (3) an economic analysis to estimate the impact on individual fishermen, to evaluate changes in fishing behavior as a result of implementation of the closures.

8.3.3 Results

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

The cumulative effects of the individual area closures were examined by comparing the 2001-02 catch and discards to the average for 1999-2000 throughout the entire U.S. Atlantic fishery. Changes in the numbers of fish caught and discarded were compared to the predicted values from Amendment 1 to the HMS FMP (NOAA Fisheries, 2000). Overall effort, expressed as the number of hooks set, declined by 7.3 percent (Table 8.4). Declines were noted for both numbers of kept and discards of almost all of the species of note: swordfish, tunas, sharks, billfish and sea turtles. The only exceptions being the number of pelagic sharks kept increased 8.2 percent and spearfish discards increased 24.5 percent (Table 8.3). Relatively low numbers of spearfish are caught each year such that small increases in the actual number caught can appear to represent a large increase. Discards of swordfish, bluefin, yellowfin, and bigeye tuna, large coastal sharks, wahoo, blue and white marlin, and sailfish, all declined by more than 20 percent.

The declines in swordfish kept and discarded, large coastal sharks kept and discarded, and sea turtles caught were similar to the predicted values developed for Amendment 1 (Tables 8.2 and 8.3). Discards of bluefin tuna, pelagic sharks, all billfish with the exception of spearfish, and total BAYS caught all declined more than the predicted values. The number of pelagic sharks kept increased more than the predicted values and the number of dolphin kept declined less than

predicted.

Individual Closed or Restricted Areas

A detailed analysis of the effects of each of the closed or restricted areas will be conducted during the development of Amendment 2. A brief overview is presented here. The De Soto Canyon closure went into effect on November 1, 2000, as a result of the implementation of Regulatory Amendment 1 to the HMS FMP (NOAA Fisheries, 2000). Based on data presented in the 2003 SAFE Report, compliance with this closure was almost 100 percent. Since the number of hooks reported set in the Gulf of Mexico has remained relatively constant (3.4 to 3.6 million hooks), effort from the closed area is assumed to have shifted into open areas in the Gulf (Table 8.4).

The Charleston Bump Closure Area was implemented by Regulatory Amendment 1 to the HMS FMP, effective March 1, 2001 (66 FR 8903; February 5, 2001 and NOAA Fisheries, 2000). This area is closed from February to April of each year. In comparing the percent change from 1999-2000 to 2001 (Tables 8.4 and 8.5, 2003 SAFE Report), most of the species kept and discarded showed declines, but to a lesser extent than the Florida East Coast and De Soto Canyon areas because it is not a year-round closure.

The Florida East Coast Closure was implemented by Regulatory Amendment 1 to the HMS FMP, effective March 1, 2001 (66 FR 8903; February 5, 2001 and NOAA Fisheries, 2000). In comparing the percent change from 1999-2000 to 2001 (Tables 8.4 and 8.5; 2003 SAFE Report), most of the species categories showed considerable declines (80-100 percent) which was expected since this was intended to be a year-round closure.

The Northeast Distant Statistical Reporting (NED) Area was closed by an emergency rule on July 15, 2001 (July 13, 2001; 66 FR 36711), to reduce interactions with sea turtles in the pelagic longline fishery. The closure was implemented on a more permanent basis by a final rule published on July 9, 2002 (67 FR 45393). In an effort to test experimental fishing measures designed to reduce the incidental capture of sea turtles in pelagic longline gear, NOAA Fisheries has recently sponsored an experimental fishery in the NED area.

Table 8.2 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, 1995-2002. Source: Pelagic Longline Logbook 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	T BAYS
1995	10,182	72,619	29,749	232	2,851	81,869	2,934	22,416	1,323	1
1996	10,311	73,252	24,043	198	1,701	64,064	2,180	17,355	1,168	1
1997	9,638	68,691	20,433	178	681	74,035	1,847	21,405	1,611	1

1998	8,019	70,310	23,234	231	1,320	54,662	2,628	19,259	874	
1999	7,902	67,120	20,558	263	604	83,619	2,885	22,467	906	1
2000	7,976	62,978	17,074	235	737	72,385	1,769	13,678	344	
2001	7,564	47,560	13,993	177	348	52,337	1,798	18,216	554	
2002	7,150	49,320	13,035	178	585	59,255	1,635	13,826	277	
1999-00	7,939	65,049	18,816	249	671	78,002	2,327	18,073	625	1
2001-02	7,357	48,440	13,514	178	467	55,796	1,717	16,021	416	
% dif	(7)	(26)	(28)	(29)	(30)	(29)	(26)	(11)	(34)	
Pred ¹		(25)	(42)		(1)					
Pred ²		(13)	(31)		11					

¹ Predicted change without effort redistribution (Table 7.19; NOAA Fisheries, 2000)

² Predicted change with effort redistribution (Table 7.19; NOAA Fisheries, 2000)

Table 8.3 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, 1995-2002. Source: Pelagic Longline Logbook 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
1995	5,654	90,182	25,186	8,242	71,884	4,152	5,275	442	2,872	3,150	1,167	430	1,127
1996	5,432	85,026	20,248	10,221	36,863	871	3,733	502	3,092	2,503	1,464	565	492
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
1999-00	2,980	28,507	7,139	6,208	30,331	306	4,665	87	1,348	1,615	1,249	115	451
2000-02	3,224	23,321	5,278	4,326	28,985	255	3,628	47	905	1,143	368	143	445
% dif	8	(18)	(26)	(30)	(4)	(17)	(22)	(46)	(33)	(29)	(71)	25	(1)
Pred ¹	(10)	(2)	(32)	(43)	(29)				(12)	(6)	(30)		(2)
Pred ²	4	8	(19)	(33)	(18)				7	11	(14)		7

¹ Predicted change without effort redistribution (Table 7.19; NOAA Fisheries, 2000)

² Predicted change with effort redistribution (Table 7.19; NOAA Fisheries, 2000)

Table 8.4 **Reported distribution of hooks set by area, 1995-2002 (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 SAT=South Atlantic). Source: Pelagic Longline Logbook data.**

Year	CAR	GOM	FEC	SAB	MAB	NEC	NED	SAR	NCA	SAT	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
1999-00	218,499	3,633,874	705,157	790,005	1,154,091	598,664	441,634	14,377	176,948	205,412	7,938,659
2001-02	183,148	3,515,643	481,200	580,591	1,051,584	707,814	386,614	57,801	235,752	156,946	7,357,091
% dif	(16)	(3)	(32)	(27)	(9)	18	(12)	302	33	(24)	(7)

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 pelagic longline fishery. Caution should be exercised in evaluating the effectiveness of this closure with the 2001-02 data since it was already in effect in 1999 and 2000. Further evaluation of this closure may be possible by examining pre-1999 data. Large decreases in the number of bluefin tuna kept (-60 percent) and discarded (-81.5 percent), yellowfin tuna kept (-50.6 percent) and discarded (-88.7 percent), bigeye tuna kept (-33.1 percent) and discarded (-46.6 percent) and pelagic sharks discarded (-47.9 percent) occurred in 2001 relative to the average for 1999-2000 (Tables 8.4 and 8.5; 2003 SAFE Report).

It appears that bluefin tuna discards in the MAB have been reduced considerably since 1998 due to the June closure (Table 8.5). Annual landings and discards of bluefin tuna from both the MAB closure area and remaining open areas were reduced in 2001 but increased in 2002. These data also indicate that discards of swordfish and pelagic sharks from the MAB closure area were reduced in 2001. The number of pelagic sharks kept increased in both the open areas and the MAB closure area in 2001 but decreased again in 2002. Landings of large coastal sharks from the MAB closed area doubled in 2001 but declined to previous levels the following year. Discards of billfish increased in the MAB closure area in 2001, declining to only 44 fish in 2002, while in the open areas billfish discards declined in 2001 but increased to just under previous levels in 2002.

Change in Effort Distribution

A preliminary review of the distribution of effort in the pelagic longline fishery based on the reported number of hooks set does not indicate any major shift in fishing effort as a result of the time/area closures (Table 8.4). The average number of hooks reported set in 2001-02 by area were compared to the average from 1999-2000. Declines were noted for the majority of fishing areas. The increase in effort in the NEC might be a result of the June Mid-Atlantic Bight closure as well as the closure of the NED. Changes in effort distribution will be reviewed in more detail during the development of Amendment 2 to the HMS FMP.

Table 8.5 Number of bluefin tuna, swordfish, sharks, billfish, and turtles kept and discarded inside and outside of the June, Northeast/Mid-Atlantic Bight as reported in the pelagic logbook data.

Species	Closed area								Open area							
	1995	1996	1997	1998	1999	2000	2001	2002	1995	1996	1997	1998	1999	2000	2001	2002
BFT kept	55	47	39	43	20	15	7	4	177	151	140	188	243	220	170	174
BFT discarded	1,877	1,345	417	598	30	229	24	71	974	356	264	722	574	508	324	514
Swordfish kept	2,677	1,188	2,567	4,247	1,656	4,300	2,826	2,671	69,942	72,064	66,124	66,063	65,464	58,678	44,734	46,649
Swordfish discarded	2,336	194	1,234	1,918	990	1,269	1,049	1,022	27,413	23,849	19,199	21,316	19,568	15,805	12,944	12,013
Pelagic sharks kept	934	473	486	471	276	432	635	331	4,720	4,959	4,592	3,246	2,618	2,663	2,825	2,656
Pelagic sharks discarded	18,314	17,868	17,646	13,499	5,378	5,430	2,816	1,711	71,868	67,158	63,872	31,017	23,589	22,616	20,997	21,117
LCS kept	1,787	3,440	1,726	860	1,030	1,040	2,118	1,060	23,399	16,808	11,491	5,541	5,352	6,856	4,360	3,017
LCS discarded	355	214	77	64	90	129	156	146	7,887	10,007	7,685	5,406	5,352	6,844	4,680	3,669
Billfish discarded	564	321	384	161	411	93	130	44	7,055	7,303	6,444	3,586	4,369	3,780	1,846	3,096
Turtle interactions	61	6	19	29	49	15	16	10	1,066	486	248	857	582	256	408	455

8.3.4 Prohibition of Live Bait in the Gulf of Mexico

Regulatory Amendment 1 to the HMS 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 1.7 percent in 2001 and less than 0.4 percent in 2002 (Table 8.6). The number of hooks set with no bait type specified increased from zero in 1999-2001 to almost 2 percent in 2002. Overall, the number of hooks set in the Gulf of Mexico in 2002 increased by almost 11 percent from 2001. Further analysis of the effectiveness of the live bait prohibition in the Gulf of Mexico pelagic longline fishery may continue in 2004.

Table 8.6 Comparison of the number of hooks set in the Gulf of Mexico with dead or live bait, or a combination of both baits, 1999-2001 (numbers in parentheses are percent of the total number of hooks set in the Gulf of Mexico). Source: Pelagic Longline Logbook data.

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

8.3.5 Conclusions

Based on two years of self-reported data, it appears as though the time/area closures and live bait prohibition in the Gulf of Mexico have been successful at reducing some bycatch in the HMS pelagic longline fishery. Billfish discards, except for spearfish, have all declined. The number of turtles caught, swordfish discarded, bluefin tuna discarded, and large coastal sharks have also declined. However, the number of target species kept such as swordfish and yellowfin tuna, have also decreased. This is contrary to the other objective of the regulations to minimize the reduction in target catch. All of these results should be considered preliminary. Additional years of data are needed before the effect of these measures can be analyzed fully. As described in the methods section of this subsection, NOAA Fisheries plans to continue to analyze these measures as additional data becomes available.

8.4 Evaluation of Other Bycatch Reduction Measures

A detailed review of additional management measures or issues that may address bycatch reduction will be included in the development of Amendment 2. NOAA Fisheries is currently developing a Sea Turtle Bycatch Mitigation Rule to address sea turtle bycatch in HMS Fisheries. When implemented, the measures contained in the rule should reduce the bycatch of endangered and threatened sea turtles as well as bycatch of other non-target fish species such as billfish. NOAA Fisheries 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).

8.5 Recent Bycatch Analyses of HMS Fisheries

8.5.1 October 2003 Biological Opinion

A new Biological Opinion for Atlantic shark fisheries was prepared in October 2003 in response to the proposed measures in Amendment 1 to the HMS FMP. It concluded that the continued operation of the shark fisheries as amended by the actions in Amendment 1 would not adversely affect marine mammals. However, other protected resources, specifically sea turtles and smalltooth sawfish, may be affected but were not likely to appreciably reduce their survival or recovery. Sea turtles and smalltooth sawfish have been documented as taken incidentally in one or more components of the Atlantic shark fishery. A detailed review of the October 2003 BiOp can be found in Amendment 1 to the HMS FMP (NOAA Fisheries, 2003).

8.5.2 Bycatch of Marine Mammals and Sea Turtles in the U.S. Atlantic Pelagic Longline Fishery

NOAA Fisheries has recently analyzed the marine mammal and sea turtle bycatch in the U.S. Atlantic pelagic longline fishery from 2001 and 2002 (Garrison, 2003). The primary marine mammal species interacting with this fishery were pilot whales (*Globicephala sp.*) and Risso's dolphin (*Grampus griseus*). There were also interactions with leatherback (*Dermochelys coriacea*) and loggerhead sea turtles (*Caretta caretta*). Additional interactions were observed with striped dolphin (*Stenella coeruleoalba*), common dolphin (*Delphinus delphis*), northern bottlenose whale (*Hyperodon sp.*) and two unidentified marine mammals.

The majority of marine mammal serious injury and mortality occurred in the mid-Atlantic Bight during the second quarter. Pilot whales and Risso's dolphin were the only marine mammal species with observed interactions and mortality outside of the Northeast Distant Water (NED) experimental fishery. During 2001, high incidental takes of leatherback turtles occurred during quarter 1 off the Florida east coast (FEC) and in the Gulf of Mexico (GOM) in the 2nd and 3rd quarters. Leatherback interactions during 2002 were mainly in the GOM, primarily during the 2nd - 4th quarters. The highest takes of loggerhead turtles occurred during the 3rd quarter in the Northeast Coastal area (NEC) in 2001 and the NEC and GOM during the 2nd quarter of 2002.

A total of 70.2 pilot whales and 69.3 Risso's dolphin were estimated to have suffered serious injury or mortality in the longline fishery during 2001, and 53.9 pilot whales and 28.4 Risso's dolphin in 2002. There were an additional 4 documented serious injuries of Risso's dolphin

during the NED experiment in 2001 and 3 in 2002.

An total of 1208.4 and 962.3 leatherback turtle interactions were estimated to have occurred in 2001 and 2002. The majority of interactions in 2001 occurred in the FEC, GOM, SAB and MAB. During 2002, the interactions with leatherback turtles was very high in the Gulf of Mexico while in other regions the 2002 levels were considerably lower than 2001. There were an estimated total of 331.8 loggerhead interactions during 2001 and 574.6 during 2002. The majority of these occurred in the NEC in 2001 and in the NEC, GOM, FEC, and MAB during 2002. During the NED experimental fishery, there were an additional 77 and 158 interactions with leatherback turtles during 2001 and 2002. There were 142 and 100 interactions with loggerhead turtles in 2001 and 2002 during the NED experimental fishery.

8.6 Recommendations to Reduce Bycatch

In 1998, NOAA Fisheries published a National Bycatch Plan (NOAA, 1998). The plan recommended numerous actions to address bycatch mortality. A summary of recommendations and actions taken by NOAA Fisheries to address these issues was included in the 2003 SAFE Report. Many of the same activities were continued in 2003 and will be reviewed in Amendment 2. A draft HMS Bycatch Implementation Plan was developed in 2003 and identifies priority issues to be addressed for: (1) monitoring, (2) research, (3) management, and (4) education/outreach. The plan is available on the web at: <http://www.nmfs.noaa.gov/bycatch.html>.

In Table 3.47 of the HMS FMP, NOAA Fisheries identified the significance of bycatch of certain species in various HMS fisheries. Actions NOAA Fisheries has taken to address those issues and reduce bycatch were summarized in Table 8.10 of the 2003 SAFE Report.

References for Section 8:

- Cortes, E. 2002. Stock Assessment of Small Coastal Sharks in the U.S. Atlantic and Gulf of Mexico. NOAA, NOAA Fisheries, Southeast Fisheries Science Center, Panama City, FL. SFD-02/03-177. 222 pp.
- Cortes, E., L. Brooks, and G. Scott. 2002. Stock Assessment of Large Coastal Sharks in the U.S. Atlantic and Gulf of Mexico. NOAA, NOAA Fisheries, Southeast Fisheries Science Center, Panama City, FL. SFD-01/02-152. 133pp.
- DeSilva, J.A., R.E. Condrey, B.A. Thompson. 2001. Profile of Shark Bycatch in the U.S. Gulf Menhaden Fishery. *N. Amer. J. of Fish. Mgmt.* 21:111-124.
- Garrison, L.P. 2003. Estimated bycatch of marine mammals and turtles in the U.S. Atlantic pelagic longline fleet during 2001-2002. NOAA Technical Memorandum NMFS-SEFSC-515.

NOAA Fisheries. 1999. Final Fishery Management Plan for Atlantic Tunas, Swordfish and Sharks. NOAA, NOAA Fisheries, Highly Migratory Species Management Division.

NOAA Fisheries. 2000. Regulatory Amendment 1 to the HMS FMP. Reduction of Bycatch, Bycatch Mortality, and Incidental Catch in the Atlantic Pelagic Longline Fishery, June 14, 2000.

NOAA Fisheries. 2002. Regulatory Adjustment 2 to the Atlantic Tunas, Swordfish, and Sharks Fishery Management Plan. NOAA, NOAA Fisheries, Highly Migratory Species Management Division, 174 pp.

NOAA Fisheries. 2003. National Report of the U.S. (to ICCAT): 2003. NOAA, U.S. Department of Commerce, Silver Spring, MD. NAT/03/06. 40 p.

NOAA 1998. Managing the Nation's Bycatch: Programs, Activities, and Recommendations for the National Marine Fisheries Service. 174 pp.

9. HMS PERMITS

NOAA Fisheries' HMS Management Division continues to monitor capacity in HMS fisheries. Updated vessel and dealer permit numbers for HMS fisheries as of October 2003 are included in Tables 9.1 to 9.4. The overall number of limited access permits for Atlantic swordfish, tunas and sharks declined slightly in 2003 from 1,262 to 1,245 (Table 9.1). The overall number of tuna vessel permits increased in some categories and declined in others. For instance, the number of longline permits increased from 226 to 235, whereas Harpoon, Trap and General category permits all declined. The HMS angling permit requirement which went into effect on March 1, 2003, (67 FR 77434; December 18, 2002) likely resulted in the observed increase in angling permits from 23,646 to 28,789, and charter/headboat permits increased for the third year in a row (Table 9.2). The overall number of dealer permits increased from 1,067 to 1,089, largely as a result of an increase in tuna dealers, rather than shark or swordfish dealers (Table 9.3), and the number of exempted fishing permits (EFPs) increased from 29 to 49 (Table 9.4). Scientific research permits (SRPs) declined from four to two in 2003.

Please see the 2003 SAFE Report for more detailed information on HMS permit programs, including capacity in HMS fisheries, limited access and other vessel permits, and dealer permits.

Table 9.1 Distribution of Shark, Swordfish, and Tuna longline Limited Access Permits as of October 2003. The actual number of permit holders in each category and state is subject to change as permits are renewed or expire.

State	# Directed Swordfish	# Incidental Swordfish	# Swordfish Handgear	# Directed Shark	# Incidental Shark	# Tuna Longline	# Permit Holders/# Permits
ME	1	1	6	1	5	1	12/15
NH	-	-	1	1	2	-	4/4
MA	11	3	19	3	14	8	35/58
RI	6	3	25	1	12	6	34/53
CT	-	-	1	-	1	-	2/2
NY	16	5	10	9	13	17	31/70
NJ	35	14	10	31	30	37	69/157
DE	1	-	-	1	1	2	2/5
MD	8	1	-	4	8	8	12/29
VA	1	5	-	5	3	3	8/17
NC	8	11	3	22	19	10	43/73
SC	4	1	-	8	14	5	22/32
GA	1	-	-	3	3	1	6/8

State	# Directed Swordfish	# Incidental Swordfish	# Swordfish Handgear	# Directed Shark	# Incidental Shark	# Tuna Longline	# Permit Holders/# Permits
FL	71	34	20	152	159	81	329/517
AL	1	2	-	3	2	2	6/10
MS	-	2	-	0	8	1	8/11
LA	33	9	-	4	45	43	51/134
TX	5	8	-	3	16	9	19/41
CA	2	-	-	-	2	1	2/5
IN	1	-	-	-	1	-	1/2
VI	1	-	-	-	1	-	1/2
Total October 2003	206	99	95	251	359	235	696/1,245
October 2002	205	110	94	251	376	226	713/1,262
October 2001	208	112	100	252	390	213	752/1,275
October 2000	240	203	125	287	585	292	982/1,732
December 1999	243	208	114	279	599	451	976/1,892

Table 9.2 The number of Atlantic tuna permit holders in each category. The actual number of permit holders in each category is subject to change. Note: some of the permit categories reflect changes from tuna only to all HMS.

Category	As of October 2000	As of October 2001	As of October 2002	As of December 2003
Longline	292	213	226	235
Angling	14,908	12,685	13,263	18,804*
Harpoon	44	53	56	47
Trap	4	1	6	2
General	6,705	6,072	6,431	5,529

Category	As of October 2000	As of October 2001	As of October 2002	As of December 2003
Purse Seine	5	5	5	5
Charter/headboat	2,728	3,260 No longer a tuna-only permit, now a HMS Charter/HB permit	3,659 No longer a tuna-only permit, now a HMS Charter/HB permit	4,167 No longer a tuna-only permit, now a HMS Charter/HB permit
Total	24,686	22,289	23,646	28,789

* HMS angling permit became effective March 1, 2003 (67 FR 77434, December 18, 2003) and includes all HMS, not just tunas.

Table 9.3 Number of dealer permits issued in each state as of December 2003. The actual number of permits per state may change as permit holders move or sell their businesses.

State	Atlantic tunas	Atlantic swordfish	Atlantic sharks	# of permits
AL	1	2	4	7
CA	36	29	8	73
CT	5	-	-	5
DE	4	1	-	5
FL	22	107	96	225
GA	1	2	1	4
GU	1	-	-	1
HI	6	10	5	21
IL	-	-	-	0
KY	-	-	-	0
LA	18	16	17	51
MA	114	34	22	170
MD	10	4	4	18
ME	38	4	3	45
MO	-	-	1	1
MS	-	-	2	2
NC	43	13	18	74
NH	6	-	-	6
NJ	40	12	11	63

State	Atlantic tunas	Atlantic swordfish	Atlantic sharks	# of permits
NY	72	29	14	115
OR	1	-	-	1
OH	-	1	1	2
PA	2	3	1	6
PR	4	-	-	4
RI	39	11	9	59
SC	13	11	18	42
TX	3	6	7	16
VA	26	5	6	37
VI	10	1	1	12
WA	1	7	1	9
Canada	-	7	2	9
Chile	-	1	1	2
New Zealand	-	1	-	1
Uruguay	-	1	-	1
Ecuador		1	1	2
Nova Scotia	-	6	3	
Total December 2003	516	319	254	1,089
Total October 2002	479	321	267	1,067
Total October 2001	522	302	249	1,073
Total October 2000	544	312	251	1,107

Table 9.4 Number of Exempted Fishing Permits (EFPs) and Scientific Research Permits (SRPs) issued as of October 2003.

Permit type		2000	2001	2002	2003
Exempted Fishing Permit	Sharks for display	14	8	7	8
	HMS for display	0	1	1	1
	Tunas for display	0	0	0	0
	Shark research on a non-scientific vessel	1	5	5	9
	Tuna research on a non-scientific vessel	4	8	4	5
	HMS research on a non-scientific vessel	1	4	5	18
	Billfish research on a non-scientific vessel	0	1	0	0
	Shark Fishing	0	0	1	1
	HMS Fishing	0	0	0	0
	Tuna Fishing	3	1	6	7
	TOTAL	23	28	29	49
Scientific Research Permit	Shark research	0	2	2	1
	Tuna research	4	1	1	0
	Billfish research	0	0	0	0
	HMS (multi-species) research	1	2	1	1
	TOTAL	5	5	4	2
Letters of Acknowledgment	Shark research	3	1	3	3
	Tuna research	0	0	0	0
	Billfish research	0	0	0	0
	HMS (multi-species) research	1	0	0	0
	TOTAL	4	1	3	3

10. ISSUES FOR CONSIDERATION AND OUTLOOK

The NOAA Fisheries strives to create economically and biologically healthy fisheries. By identifying and addressing emerging issues in a timely manner, the HMS Management Division can work towards achieving and maintaining the balance of biological and economic imperatives necessary to realize NOAA Fisheries' goal of stable, prosperous, and sustainable HMS fisheries.

The list of topics provided in this section serves as a means of introducing important unresolved, and in some cases, novel HMS management issues. This section is included for discussion purposes and is based on input from the general public, federal advisory panels, staff concerns, and other forums. The order of issues does not reflect any order of importance, and this list is not meant to be an exhaustive list of management issues facing the HMS Management Division. Rather, the intent is to inspire discussion on these topics trigger identification of other important issues, and in some cases take regulatory action if necessary. NOAA Fisheries welcomes further input on issues pertaining to HMS fisheries. This section will also serve as a starting point for discussions by the joint HMS and Billfish Advisory Panels.

Possible Issues for Future Rules and/or FMP Amendments

Tunas

1. Development of a rebuilding plan for Northern Albacore
2. Bluefin quota allocations
3. Individual transferable quotas
4. Tag and release v. Catch and release program
5. Spotter planes

Billfish

6. Scope of Certificate of Eligibility Form
7. Tournament registration and reporting - electronic v. call-in system
8. Recreational reporting - electronic v. call-in system
9. Estimating recreational effort and released fish

Swordfish

10. Quota allocations (incidental, directed, recreational category)
11. Use of reserve category
12. Quota adjustments - "large" underharvests or overharvests
13. Recreational bag limit inseason adjustment authority
14. Recreational reporting mechanisms

Sharks

15. Allocations (directed, incidental, reserve)
16. Recreational quota and reporting mechanisms
17. Quota adjustments - "large" underharvests or overharvests
18. Large coastal shark trip limit for directed permit holders
19. Reduce bycatch in gillnet fishery - e.g., gear modifications

General

20. Essential Fish Habitat five year review
21. Combine HMS and Billfish FMPs
22. Kill v. Catch and Release Tournaments
23. Aquaculture and Fish Farming
24. Fishing year v. Calendar year
25. Circle v. J hooks
26. Authorized gears
27. Improving outreach to anglers

Definitions

28. Pelagic v. Bottom longline
29. Tournaments v. “rodeos”
30. International chartering agreements - bareboat charter v. charter

Tuna Longline/Shark/Swordfish Limited Access Program

31. Upgrading restrictions
32. Incidental trip limits
33. Gear based v. species based permit
34. Further rationalization of permits with harvesting capacity
35. Revisiting handgear permit issuance

Bycatch Reduction

36. Examining the efficacy of existing pelagic longline time/area closures
37. Sea turtle bycatch mitigation as a result of the Northeast Distant experiment
38. Time/area closures for gears other than longline particularly in nursery areas
39. Use of VMS
40. Bottom longline closure off the Florida Keys to protect smalltooth sawfish
41. Coordinating with closures in other fisheries (e.g., Madison and Swanson, Steamboat Lumps)
42. Implementing other Items in Bycatch Reduction Implementation Plan

Recordkeeping and Reporting

43. Streamlining reporting process and/or revising/creating logbooks for all fishermen and dealers (e.g., one logbook for each fishery, electronic logbooks)
44. Tournament reporting (e.g., electronic, call-in, logbooks)
45. Recreational surveys v. direct reporting for all HMS
46. Observer coverage on all fishing vessels including recreational
47. Paying for observer coverage on fishing vessels

Workshops

48. Purpose (e.g., species identification, regulations, use of release equipment)
49. Commercial and/or Recreational
50. Mandatory or voluntary

51. Implementation issues (where, captain/crew/owner, presentation e.g. video/web/live)
52. Compliance monitoring

Exempted Fishing/Scientific Research/Public Display Permits

53. Issuance in compliance with rebuilding plans
54. Monitoring and enforcement issues

Review of State Regulations Under the Atlantic Tunas Conservation Act and Magnuson-Stevens Fishery Conservation and Management Act

55. Formal review of swordfish and billfish regulations under ATCA
56. Update tuna review under ATCA
57. Formal review of shark regulations under Magnuson-Stevens Act