

10. ISSUES FOR CONSIDERATION AND OUTLOOK

The HMS Management Division strives to create economically and biologically healthy fisheries that can serve as an exemplary model of fisheries management. By identifying and addressing emerging issues in a timely manner, NOAA Fisheries can achieve and maintain the balance of biological and economic imperatives necessary to realize stable, prosperous, and sustainable HMS fisheries.

The information provided in this section serves as a means of introducing important unresolved and 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 issues discussed in it are intentionally broad in scope. The order of discussion within each time-delineated subsection does not reflect any order of importance. It is also important to note that the information presented below is not meant to be an exhaustive list of management issues facing the HMS Management Division, and NOAA Fisheries welcomes input on issues pertaining to HMS fisheries. This section can also be used as a starting point for discussions by the joint HMS and Billfish Advisory Panels.

10.1 Issues In Process

The following issues are active in the federal rule making process.

10.1.1 Incidental Catch of Atlantic Bluefin Tuna

Since the early 1980s, NOAA fisheries has implemented and evaluated target catch requirements in an effort to minimize bycatch and discards of BFT, while implementing the prohibition on the use of longline gear in a directed BFT fishery. In 1981, NOAA Fisheries prohibited the use of longlines for a directed BFT fishery and implemented incidental catch limits (46 FR 8012, January 26, 1981). Longline fishermen were restricted to two BFT per vessel per trip in a southern region and two percent by weight of all other fish on board in a northern region. In 1982, ICCAT recommended a ban on directed fishing for BFT in the Gulf of Mexico. Over the following decade, the value of BFT increased dramatically and fishing practices evolved with respect to incidental catch of BFT. In response, NOAA Fisheries established various strategies to discourage pelagic longline vessels from developing a target fishery for this valuable species while allowing for the retention of incidentally caught BFT.

The current target catch requirements have not changed since 1994, and currently restrict longline vessels to one fish per vessel per trip in the southern region (south of 34° N. Latitude) with a minimum of 1,500 lbs. of other fish landings from January through April, and 3,500 lbs. of other fish landings from May through December. North of 34° N. Latitude, BFT landings by longline vessels are restricted to two percent by weight of all other landed catch. Despite efforts to alter target catch requirements and adjust geographic management areas, bycatch and discards

of BFT by U.S. pelagic longline vessels have continued, and NOAA Fisheries has continued to evaluate management alternatives to address this issue. Over time, NOAA Fisheries has adjusted the regulations to try to achieve a balance between allowing the retention of truly incidentally caught BFT while preventing a directed fishery and reducing discards.

NOAA Fisheries published a proposed rule on December 24, 2002 (67 FR 78404) evaluating several options, weighing the ability of each option to meet objectives and analyzing the economic and policy implications. The proposed rule, if adopted, would adjust the coastwide target catch requirements to 2,000 lbs. of other fish landings to retain one BFT, and 6,000 lbs. of other fish landings to retain two BFT, in all areas. The preferred alternative would maintain a boundary line between the northern and southern areas to prevent one area from consuming all the incidental longline quota, but would move the boundary line to an area with little longline fishing activity nearby, and would adjust the longline quota subdivision to reflect the change in areas. The North/South boundary line is proposed to be moved to 31°00' N. Latitude, near Jekyll Island, Georgia, and the North/South quota subdivision within the Longline category would be adjusted to allocate 30 percent to the northern area and 70 percent to the southern area (the current subquota allocation is 21.1 percent to the northern area and 78.9 percent to the southern area). The proposed action would also provide NOAA Fisheries with in-season authority to adjust the BFT retention limits for pelagic longline vessels (within a range of zero to three BFT per trip by number and/or within a 25 percent range of the target catch requirements by weight).

10.1.2 Bigeye Tuna/Swordfish Statistical Document and Re-export Certificate

To comply with recommendations from ICCAT's 2001 annual meeting, NOAA Fisheries must implement a trade monitoring program for the import, export, and re-export of swordfish and bigeye tuna. The underlying purpose of this program is to prohibit international trade in illegal, unregulated and unreported landings as well as to further understanding of catches and trade for these species. Under the Atlantic Tunas Convention Act, the United States is obligated to implement ICCAT recommendations.

The overall program will be similar to ICCAT's existing bluefin tuna statistical document program. A statistical document is generated for each shipment by the exporting country and accompanies the shipment to its final destination. If an imported shipment is then exported, a re-export certificate must be employed. The most significant issue associated with this action is the evident need to develop a comprehensive, agency-wide approach to trade monitoring programs. An interim approach of adding to current programs is supported, with future re-evaluation of NOAA Fisheries trade programs slated for the near future.

NOAA Fisheries will be developing an economic analysis of the impact of this program, and formulating the best method for implementation during early 2003. As part of the analysis, impacts on dealers must be ascertained, particularly in regards to the number of U.S. dealers (importers/exporters) affected on the Pacific, Gulf of Mexico, and Atlantic coasts as well as in the

Pacific Islands. Impacts to the nature of trade are also of interest, taking into account product form and the most frequently used ports of entry and/or export. Finally, any additional administrative burdens on dealers associated with completion of forms will be considered.

10.2 HMS Issues Under Short-term Consideration

The following is an anticipatory look at some of the issues NOAA Fisheries HMS Management Division expects to consider for rule making in the next three to 18 months.

10.2.1 Atlantic Bluefin Tuna Purse Seine Fishery Start Date

An objective of the HMS FMP is to manage Atlantic HMS fisheries for continuing optimum yield, which includes consideration of economic and market concerns. A related objective is to coordinate domestic management of fishery sectors, including minimizing gear conflict, and coordinating overlapping regional and individual participation. Historically, scheduling of the purse seine bluefin tuna fishery has taken into account both of these objectives, and attempted to avoid over-supply of bluefin on domestic and international markets by coordinating activity patterns between purse seiners and other sectors of the commercial fishery. In the early to mid 1980's, the purse seine season was postponed for about a month to avoid a market-glut of landings from both purse seine and general category fisheries. Delaying the purse seine season until August staggered the purse seine start date from the June 1st general category opening, and improved earnings for both fishery sectors. This strategy was an effective approach for many years.

Recently, however, the bulk of landings from the general category fishery has shifted to later in the season, again overlapping the purse seine season. By shifting the purse seine start date back to earlier in the year, this category may be able to provide the market with product during time when other fisheries are less active. In order to investigate this approach and provide the purse seine sector with access to a better market, NOAA Fisheries issued exempted fishing permits in 2002, which allowed purse seine vessels to fish earlier in the season. One of the five vessels comprising this category took advantage of this opportunity.

A number of factors must be investigated as this issue is further considered. Would an earlier start date in fact decrease market glut and improve earnings? Would this type of action be an overall benefit to the fishery and the nation? Would it adversely affect any other fishery sector? If a change in start date is warranted based on the answers to these questions and other information, it could be enacted either through the current exempted fishing permit approach, or through a change to the HMS regulations.

10.2.2 Atlantic Bluefin Tuna Allocation

The FMP for Atlantic tunas, swordfish, and sharks established quota allocation among the bluefin tuna fishery sectors based on historical patterns in the bluefin fishery. A suballocation in many sectors has also been made to maximize fishing opportunities and provide equitable access to the fishery. In addition, NOAA Fisheries has the ability to make in-season transfers among sectors to address changes in fish behavior, distribution, and fishing patterns.

During the Fall of 2002, NOAA Fisheries received a petition from the North Carolina Division of Marine Fisheries (NCDMF) requesting that a rulemaking to amend the HMS regulations be initiated in order to modify the current bluefin allocation criteria and create a General category winter time-period sub-quota. Specifically, NCDMF requested that 23% of the General category quota (an amount equal to 153 mt for 2002) be allocated to a new December 1 through January 31 time-period subquota. The petition states that the quota allocated to the late season General category fishery does not provide reasonable opportunity to harvest bluefin when they appear off the South Atlantic coast during the winter months. In the past, the HMS Advisory Panel has discussed this issue extensively without reaching consensus and NOAA Fisheries has maintained the status quo in the annual fishery specifications.

NOAA Fisheries issued a Federal Register notice announcing receipt of the petition and requesting comments by the December 18, 2002 deadline. These comments will be summarized and made available to the petitioner and HMS Advisory Panel for further consideration and discussion.

10.2.3 On-line Atlantic HMS Tournament Registration, Reporting, & Calendar

NOAA Fisheries' HMS Management Division is constantly searching for new ways to improve constituent services and streamline constituent requirements while improving the agency's ability to manage Atlantic HMS. To that end, the HMS Management Division is interested in creating a public access on-line system for tournament operators to register tournaments, fulfill tournament reporting requirements, and possibly view a calendar displaying the dates and venues of other registered tournaments. After March 2, 2003, this site could also potentially serve as the central location for anglers to report their recreational landings of sailfish, Atlantic blue and white marlin, and swordfish. A similar system exists and has been successful for reporting Atlantic bluefin tuna at www.nmfspermits.com.

NOAA Fisheries collects information on fishing tournaments involving the catch and/or landing of Atlantic highly migratory species. This information is necessary to estimate tournament fishing effort and landings of HMS for stock assessments and national statistical reports. The HMS regulations require that tournament operators notify NOAA Fisheries of the purpose, dates, and location of all tournaments targeting HMS conducted from ports in Atlantic coastal states, including the U.S. Virgin Islands and Puerto Rico, at least 4 weeks prior to commencement of the tournament.

Presently, tournament registration is accomplished using a fax/mail-in system where tournament operators submit hard copies of the tournament registration form and NOAA Fisheries employees enter it into the existing HMS Fish Tournament Registry. NOAA Fisheries notifies tournament operators in writing, when their tournament has been selected for reporting. Tournament operators that are selected must maintain and submit to NOAA Fisheries records of catches and effort on forms available from NOAA Fisheries. Tournament operators must submit completed forms to NOAA Fisheries postmarked no later than the 7th day after the conclusion of the tournament and must attach a copy of the tournament rules. These results are then faxed to the NOAA Fisheries Southeast Fisheries Science Center for inclusion in stock assessments and national statistical reports.

The HMS Management Division believes that the creation of a publically accessible on-line registration database could improve constituent service by streamlining registration and reporting procedures, improve compliance with the mandatory HMS tournament registration and reporting requirements by easing access, and provide a proven system for recreational anglers to report their landings, all while minimizing NOAA Fisheries internal workload.

10.2.4 Shark Regulations and an Amendment to the HMS FMP

NOAA Fisheries intends to amend the Fishery Management Plan for Atlantic tunas, swordfish, and sharks (HMS FMP) to revise the management measures for Atlantic sharks based on the results of the 2002 large and small coastal shark stock assessments and the subsequent peer review of the 2002 large coastal shark stock assessment (see the Notice of Intent to do an Environmental Impact Statement 67 FR 69180, November 15, 2002). The amendment will examine management alternatives available to rebuild or prevent overfishing of Atlantic sharks, consistent with the results of the 2002 stock assessments for large and small coastal sharks, the Magnuson-Steven Act, and other relevant federal laws. The ensuing management decisions will affect the well-being of shark fishery communities and their economic condition as well as the status of the resource.

The first step in the development of an amendment to the HMS FMP is to collect comments and ideas from the interested public. In order to provide a means for the public to consider different management options, NOAA Fisheries has prepared an Issues and Options (IO) paper. The IO paper describes the major issues, current management and legal requirements, and identifies potential management measures (including measures already in effect) to address these issues in the fisheries for Atlantic sharks. While the IO paper lists many different issues and options, NOAA Fisheries anticipates that additional issues and options will be identified by the public during the public comment period. All comments received on the IO paper and during the public comment period will assist NOAA Fisheries in determining the options for rulemaking to conserve and manage shark resources and shark fisheries.

For details regarding the issues and options for shark management, please see the IO

paper. Below is a list of a few of the topics contained in the IO paper.

1. Commercial quotas (e.g., Group, Species-specific, Spatial-specific, Temporal-specific, Gear-specific, Combination of above options, Individual fishing quota)
2. Commercial fishery closures (e.g., Fishing season notification 30 days prior to opening, Five day advanced notice of closure, 14 day advanced notice of closure)
3. Commercial minimum size and other limits (e.g., Group-specific, Species-specific, Sex-specific, Time/Area Closures)
4. Commercial trip limits for directed permit holders (e.g., Limits on all species groups, Limits on some species groups such as the, 4,000 lb dw for LCS, Limits based upon average catch, Allow incidental landings during a directed closure, None)
5. Commercial trip limits for incidental permit holders
6. Recreational retention limits (e.g., Group-specific, Sex-specific, Charter/Headboat-specific, Tournament-specific, Male harvest only)
7. Recreational minimum sizes and other limits (e.g., Group-specific, Species-specific, Sex-specific, Charter/Headboat-specific, Tournament-specific, Time/Area closures)
8. Reduction of shark bycatch (e.g., Close nursery and pupping grounds, Close overwintering grounds, Issue non-transferable permits allowing access to selected areas, Close EFH or areas of particular concern)
9. Prohibited species (e.g., Status quo, Remove dusky shark or other species from list, Return to the 5 species in 1997, Allow limited numbers of display species to be collected with a separate collection permit, None)

In the course of amending the HMS FMP, NOAA Fisheries is also going to examine its designations of EFH for sharks. Under the Magnuson-Stevens Act, EFH designations must be periodically reviewed and revised or amended as warranted, based on new information.

This amendment to the HMS FMP will also examine the regulations that allow the issuance of exempted fishing permits (EFPs) for all HMS. Issuance of EFPs or scientific research permits (SRP) may be necessary because possession of certain shark species is prohibited, possession of billfishes on board commercial fishing vessels is prohibited, and because the commercial fisheries for bluefin tuna, swordfish and large coastal sharks may be closed for extended periods, during which collection of live animals and/or biological samples would otherwise be prohibited. NOAA Fisheries has been made aware of growing concerns about the EFP/SRP issuance process. Specifically, current concerns relate to lenient accountability requirements in the live capture of HMS. Concerns have also been noted that EFPs should not allow access to closed areas for the purposes of research (i.e., bycatch reduction experiments), that commercial sale of fish caught during exempted fishing activities should not be allowed to offset the costs of conducting scientific research, and that EFPs should not allow the capture of prohibited sharks for the purpose of public display. Some of the options listed in the IO paper

include, but are not limited to:

10. Issue EFPs for all species groups within the management unit
11. Issue EFPs for some species groups within the management unit (e.g., LCS, SCS, and pelagic sharks for public display and scientific research only; prohibited species for public display and scientific research only)
12. Issue EFPs for none of the species groups within the management unit
13. Improve overall accountability in the EFP/SRP issuance process (i.e., call in and out 72 hours in advance of activity, passive integrated transponder tags required for implantation in live collections, application must include gear deployment, monitoring, and soak time in order to minimize mortality of live captures, mandatory observer placement, VMS employed on directed swordfish vessels will negate necessity for EFP to allow delayed offloading)
14. Limit or prohibit commercial sale of fish caught during exempted fishing activities

10.3 HMS Issues Under Long-term Consideration

The following is an overview of some of the issues the HMS Management Division expects to examine in more detail in the future.

10.3.1 Commercial Atlantic Bluefin Tuna Minimum Size Limits

Over the last few years NOAA Fisheries has received comments from several organizations and individuals in support of adjusting the minimum size for commercial BFT and liberalizing the Large medium bluefin tuna (BFT measuring between 73 and less than 81 inches) allowance for Purse Seine and Harpoon category vessels. Until July of 1992, commercial BFT vessels had the ability to land and sell Large school/Small medium BFT (BFT measuring between 47 and less than 73 inches). On July 24, 1992, NOAA Fisheries published a final rule that prohibited the sale of BFT less than the Large medium size class (57 FR 32905). Effective June 1, 1998, NOAA Fisheries also prohibited persons aboard vessels permitted in the General category from retaining BFT less than the Large medium size class. These actions effectively separated the commercial and recreational fisheries and quotas, with the exception of HMS CHB permitted vessels.

Since 1998, landings of the Large school/Small medium size class BFT have been minimal. This has led to large amounts of quota transfer of this size class from one fishing year to the next. Also, over the last several years NOAA Fisheries has implemented a number of in-season quota transfers of the Large school/Small medium size class to provide U.S. fishing vessels with a reasonable opportunity to harvest the U.S. BFT quota.

Since 2001, public comments have been received requesting HMS to reconsider the minimum size for commercially harvested BFT. A number of reasons have been articulated to

justify these requests including reducing discards, access to a broader range of fishing opportunities, and reducing the amount of quota that is transferred from year to year. Reducing the commercial BFT minimum size limit and/or liberalizing the large medium bluefin tuna allowance for Purse Seine and Harpoon category vessels may have a number of impacts to the BFT stock rebuilding and fishing sectors. Further discussion of these potential impacts is encouraged by the Advisory Panel members.

10.3.2 Review of EFH for HMS

Regulations implementing Magnuson-Stevens Act essential fish habitat (EFH) provisions (67 FR 2343, January 17, 2002) specify that EFH designations periodically be reviewed and subsequently revised or amended as warranted, based on new information. The review of new information should be reported in the annual SAFE report. The regulations also specify that a complete review of all EFH information be conducted at least once every 5 years. In addition, shark EFH designations are about to undergo a complete review and be amended or revised as new information warrants, for incorporation into Amendment 1 of the HMS FMP, which is scheduled for publication in 2003. Following publication of the FMP amendment pertaining to sharks, the HMS Division intends to review EFH designations for other HMS, as well, although at this time the exact time-frame has not been determined.

10.3.3 Extension of NED Experimental Measures to Minimize Sea Turtle Interactions

The June 14, 2001, Biological Opinion included a recommendation that NOAA Fisheries conduct a three-year experimental fishery in the northeast distant statistical reporting (NED) area to attempt to reduce the interactions between pelagic longline gear and sea turtles. In the fall of 2001, NOAA Fisheries conducted the first year of the experimental fishery. The measures that were examined included the use of blue-dyed squid and spacing the gangions lines farther away from the float lines. Following an examination of the data, NOAA Fisheries discovered that the measures had no significant effect upon the catch of sea turtles. In the summer and fall of 2002, NOAA Fisheries conducted the second year of the experimental fishery. The use of circle hooks, mackerel bait, and shortened daylight soak time were tested to examine their usefulness in reducing the capture of sea turtles. NOAA Fisheries is currently waiting for statistical analyses to be performed to assess the effectiveness of the experimental fishing measures, results are expected by early February.

Based on the success of the measures examined in 2002, NOAA Fisheries will discuss what should be examined in 2003. If the target of a 55% reduction in the incidental catch of sea turtles can be reached following the conclusion of the NED experimental fishery, then the NED area can be reopened to pelagic longline fishing with the adoption of the successful fishing methods. In addition, NOAA Fisheries will assess the appropriateness of adopting the successful sea turtle reduction measures for the pelagic longline vessels fishing outside the NED area to

further comply with the Endangered Species Act.

10.3.4 Authorized Fishing Gears

Innovative fishing gears and techniques are essential to increasing efficiency and reducing bycatch in fisheries for Atlantic HMS. As current or traditional gears are modified and new gears are developed, NOAA Fisheries needs to be cognizant of these advances to gauge their potential impacts on the resource and resource use. New or modified fishing gears and techniques may have significant positive or negative impacts on target catch rates, bycatch rates, or protected species interactions, all of which can have important management implications. New gears and techniques need to be evaluated by NOAA fisheries for qualification as an authorized gear type.

NOAA Fisheries has become aware that one unclassified gear type, referred to as the “green stick rig”, may be being used by fishermen to target Atlantic HMS with increasing frequency and success. Green stick fishing gear has been used in other parts of the world for many years. The green stick technology made its U.S. debut in Hawaii during the 1980's but was originally developed in Japan. The term green stick refers to a certain brand of gear developed in Japan that used an olive green pole. Other brands have marketed gears with poles in orange, black, and blue, but regardless of the brand or color, the generic “green stick” nickname is still used. The green stick fishing rig is a gear that is used primarily to target tunas (Wescott, 1996).

The configuration of the gear may vary, but generally consists of a 35 - 45 foot fiberglass pole mounted to the deck of a vessel or on top of the wheelhouse. A mainline housed in a spool at the stern of the vessel is hoisted by a tether rope mounted to the top of the pole. The mainline is connected to the tether rope with a cotton breakaway. At the end of the mainline a floating decoy is attached. This decoy, also called a “shava” or bird, provides drag as the vessel moves forward and puts tension on the mainline. Several leaders of specific lengths hang down from the mainline at regularly spaced intervals and suspend lures so that they brush across the top of the water. As this gear is towed, the bird jumps, bobs, and splashes, creating commotion and tugs at the green stick. As the lures attached to the mainline skip across the water's surface, flex in the fiberglass pole produces a “jigging” action that attracts fish. This gear was designed so that the mainline breaks away from the tether rope when one or more fish are hooked. The mainline and fish are then reeled in using the spool (Wescott, 1996).

Commercial fishermen have found that tuna caught on the green stick offer little resistance, as they are subjected to the pull of the mainline in one direction, the pull of the bird in the other, as well as the pull from other hooked fish. Because tunas caught on the green stick are landed quickly and with minimal fight, the fish may be less stressed and the meat may be of better quality. The commercial green stick fishing gear has also been modified for sportfishing, allowing multiple anglers to fish individually tended lines hoisted by the green stick's one mainline

(Wescott, 1996).

NOAA Fisheries intends to work with the fishing community to obtain a more complete understanding of green stick gear impacts on catches of target and non-target species, bycatch post-release mortality, seabird interactions, interactions with protected resources, the potential for conflicts with other gear types, changes in patterns of fishing effort, as well as the frequency and scope of its use in targeting HMS fisheries. Absent an understanding of these and other factors, it is difficult for NOAA fisheries to make a determination on whether or not this or any novel gear should qualify as an authorized gear type.

10.3.5 HMS Observer Programs

The regulations for HMS allow NOAA Fisheries to select any vessel that has an Atlantic HMS, tunas, shark or swordfish permit for observer coverage. Vessels permitted in the HMS Charter/Headboat and Atlantic Angling categories can be requested to take observers on a voluntary basis. Among other things, observer programs allow NOAA Fisheries to collect biological information on individual fish (e.g., species, sex, and length), to verify self-reported logbook data—including bycatch data, to observe how the fishery operates, and to collect information regarding protected species. The June 14, 2001, Biological Opinion also requires NOAA Fisheries to collect observer information specific to sea turtles and marine mammals, such as genetic samples, and for trained observers to tag sea turtles.

Currently, the only HMS fishermen that have been selected for observer coverage are: fishermen with directed swordfish limited access permits that use pelagic longline gear and fishermen with directed shark limited access permits that use bottom longline gear or gillnet gear. While there are issues that need to be addressed (e.g., budget, insurance, safety, and observer forms and data entry), NOAA Fisheries would like to move forward with observer programs in other HMS fisheries and believes that working with affected constituents to determine the best method of doing so is essential to establishing a successful program.

10.3.6 HMS Vessel Logbook and Cost-Earnings Reporting

The HMS FMP requires permitted shark, tuna and swordfish vessels, and Atlantic HMS Charter/Headboat vessels to submit logbooks for all HMS trips, if selected by NOAA Fisheries. Vessel logbook programs provide critical fishery dependent information to the Agency on fishing behavior, including vessel characteristics, effort, and amounts of fish caught (landed as well as discarded). The data is used by the agency for a variety of purposes including quota monitoring, stock assessments and monitoring the impacts of management measures on the industry and the stocks.

In the 2001 SAFE Report, NOAA Fisheries included a discussion regarding reporting in logbooks, possible options regarding the selection of people to report in logbooks (e.g., 10

percent of General category permit holders, 10 percent of charter/headboat permit holders, etc.), and possible options for logbook formats (e.g., electronic logbooks, a whole new HMS only logbook, etc.). Since that time, NOAA Fisheries has received approval from the Office of Management and Budget to expand the vessel logbook collection requirement to include the collection of information regarding the cost of fishing equipment for trips and payments to crew (cost-earning information). This cost-earnings information is needed to help NOAA Fisheries evaluate the economic impact of different management options as required under the Regulatory Flexibility Act, Executive Order 12866, and NEPA and to minimize any potential impacts of fishermen and communities.

Since 1996, this type of cost-earnings information had been collected voluntarily from vessels reporting swordfish and shark catches in the HMS pelagic logbook form. However, the voluntary program failed to provide information for all sectors of these HMS fisheries and did not provide information on HMS fishermen using gear types other than longline. In order to improve the type and scope of data collected, NOAA Fisheries decided to make the reporting of this information mandatory if selected. The mandatory cost-earnings reporting for selected vessels was formally implemented in the commercial swordfish and shark fisheries on January 1, 2003. NOAA Fisheries plans to expand the selection process to include tuna and charter/headboat permit holders within the next year or two. Before this expansion occurs, NOAA Fisheries will need to examine other logbooks that permit holders currently use to minimize the chance of duplication in other logbook programs.

Additionally, in October 2002, NOAA Fisheries received approval from the court to implement a vessel monitoring system (VMS) in the HMS pelagic longline fishery. NOAA Fisheries expects to implement VMS this year. While VMS will help NOAA Fisheries enforce a number of regulations, including the time/area closures, it can also be expanded to allow for the use of electronic logbooks. NOAA Fisheries plans to examine this issue and looks forward to working with fishermen to streamline the reporting system and possibly developing a working electronic logbook system.

Section 10 References

Wescott, W. 1996. The Wanchese Green Stick Tuna Rig. North Carolina Sea Grant. UNC-SG-96-04.

APPENDIX A: FINAL NATIONAL PLAN OF ACTION (NPOA) FOR THE CONSERVATION AND MANAGEMENT OF SHARKS

Summary

Sharks, skates, rays (elasmobranchs) and the chimaeras together comprise the class Chondrichthyes, or cartilaginous fishes.¹ As a group, elasmobranchs present an array of problems for fisheries management and conservation. Elasmobranchs are primarily at the top of the food web, often top-level carnivores (Cortés, 1999), and their abundance is relatively small compared to groups situated in lower trophic levels. Thus, fishing elasmobranchs down to unsustainable levels may occur rapidly, and successful management of elasmobranch fisheries requires a stronger commitment to fishery monitoring, biological research, and proactive management than many teleost fisheries (Walker, 1998).

Few countries (including Canada, New Zealand, Australia, South Africa, and the United States) have specific fishery management plans for certain shark fisheries and there are no international management mechanisms effectively addressing the capture of sharks at present. However, a number of international bodies, e.g., the International Commission for the Conservation of Atlantic Tunas (ICCAT), the Northwest Atlantic Fisheries Organization, and the Inter-American Tropical Tuna Commission, have initiated efforts to encourage member countries to collect information about shark catches and, in some cases, develop regional databases for the purpose of stock assessments. In addition, some countries already have laws that facilitate international management. For instance, U.S. participation in international management initiatives is guided by the Atlantic Tunas Convention Act and the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks.

In recognition of the need for improved international coordination, in 1994, the Ninth Conference of the Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) adopted a Resolution on the Biological and Trade Status of Sharks, requesting that: (1) The United Nations Food and Agriculture Organization (FAO) and other international fisheries management organizations establish programs to collect and assemble the necessary biological and trade data on shark species; and (2) all nations utilizing and trading specimens of shark species cooperate with FAO and other international fisheries management organizations. In February 1999, the FAO Committee on Fisheries (COFI) endorsed the *International Plan of Action for the Conservation and Management of Sharks* (IPOA). This plan was commended by the March 1999 FAO Fisheries Ministerial, endorsed by the June 1999 FAO Council, and adopted by the November 1999 FAO Conference. The IPOA builds upon the FAO

¹ The International Plan of Action for the Conservation and Management of Sharks considers the term “shark” to include all species of sharks, skates, rays, and chimaeras.

Code of Conduct for Responsible Fisheries, encompasses all elasmobranch fisheries (commercial and recreational), and calls on all member nations to implement, voluntarily, the IPOA through the development of a national plan of action.

The objective of the IPOA is to ensure the conservation and management of sharks and their long-term sustainable use. In the IPOA, member nations have agreed voluntarily to develop, implement, and monitor a national plan of action if their vessels conduct directed fisheries for sharks or if their vessels regularly catch sharks in non-directed fisheries. As stated in paragraph 22 of the IPOA, shark plans should aim to:

1. Ensure that shark catches from directed and non-directed fisheries are sustainable;
2. Assess threats to shark populations, determine and protect critical habitats, and implement harvesting strategies consistent with the principles of biological sustainability and rational long term economic use;
3. Identify and provide special attention in particular to vulnerable or threatened shark stocks;
4. Improve and develop frameworks for establishing and coordinating effective consultation involving stakeholders in research, management, and educational initiatives within and between member Nations;
5. Minimize unutilized incidental catches of sharks;
6. Contribute to the protection of biodiversity and ecosystem structure and function;
7. Minimize waste and discards from shark catches in accordance with article 7.2.2. (g) of the *Code of Conduct for Responsible Fisheries* (for example, requiring the retention of sharks from which fins are removed);
8. Encourage full use of dead sharks;
9. Facilitate improved species-specific catch and landings data and monitoring of shark catches;
10. Facilitate the identification and reporting of species-specific biological and trade data.

Additionally, national plans of action are to be implemented by United Nations Food and Agriculture Organization (FAO) members in a manner consistent with the FAO (1995) *Code of Conduct for Responsible Fisheries* and any applicable rules of international law, and in conjunction with relevant international organizations.

Consistent with the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) and the IPOA, the United States finalized its National Plan of Action (NOA) on February 15, 2001 (66 FR 10484). In addition to the objectives of the IPOA, the NPOA identifies the following management principles:

Adopt the Precautionary Approach: Management entities should initiate, continue, or improve research on elasmobranch catches in their fisheries, address the uniqueness of

each fishery, identify key habitats and their impacts on populations, and implement necessary elasmobranch management measures before stock declines are evident.

Protect Vulnerable Life History Stages: Management entities should consider protecting juvenile, subadult, and early adult life history stages and habitat in order to rebuild overfished shark stocks and to prevent overfishing on other shark stocks. Potential measures to increase protection of sensitive life history stages include minimum sizes for retention, enhanced conservation of essential fish habitat, and time/area closures of nursery areas.

Protect Vulnerable Species: Management entities should consider additional, separate measures to protect species particularly vulnerable to overfishing. Potential measures to increase protection of vulnerable species may include prohibiting possession of that species (e.g., white sharks in California, numerous species in Atlantic Federal waters), time/area closures or marine reserves to protect important habitats or essential fish habitat, gear modifications, and precautionary limits on harvest levels.

Minimize Waste: Management entities should consider measures to minimize waste, discards, and unutilized incidental catches in shark fisheries, consistent with the Shark Finning Act and the IPOA.

Prioritize Limited Resources: Management entities should determine whether a particular species is overfished, which fisheries should be regulated in regard to shark catches, and determine which shark species have higher conservation needs and act appropriately.

Implementation of the NPOA in Atlantic Highly Migratory Species (HMS) Fisheries

The authority for implementing the U.S. NPOA in Atlantic HMS Fisheries comes from the U.S. participation and endorsement of the IPOA as well as through the Magnuson-Stevens Act. The Magnuson-Stevens Act defines Atlantic HMS as Atlantic tunas (bluefin, bigeye, albacore, yellowfin, and skipjack), Atlantic swordfish, Atlantic billfish (blue and white marlin, longbill spearfish, and sailfish), and oceanic sharks. The Magnuson-Stevens Act further designates the Secretary of Commerce with the authority to manage these species directly. Thus, NOAA Fisheries, as the designee for the Secretary of Commerce, has jurisdiction of shark fisheries in the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea in Federal waters.

The NPOA calls for data collection, population assessments, evaluation of the need for management measures, research and development of mitigation measures and methods, limitations on fishing capacity, outreach and education, and reporting and monitoring. In addition to the existing programs summarized in the Fishery Management Plan for Atlantic Tunas, Swordfish and Sharks as well as the NPOA, NOAA Fisheries has taken several actions to implement the NPOA in Atlantic HMS fisheries.

1. *Data Collection:* Data collection programs should collect reliable data to determine the directed and incidental catch, bycatch, and disposition of elasmobranchs by the various fisheries; the effectiveness of existing management measures; the locations and characteristics of nursery and wintering grounds; information on EFH or key habitat for all life stages; and the status of the stocks.

Implementation in Atlantic HMS fisheries:

In January 2002, NOAA Fisheries converted the voluntary shark bottom longline observer program to a mandatory program. This observer program, started in 1994, attempts to observe four percent of the effort by the commercial shark fleet and is currently managed by the University of Florida. The program has observed, on average, just over two percent of the large coastal sharks landed by the commercial fleet, and in 2001, observed over four percent. The data collected by this program enhances the reliability of management strategies for the shark fishery and has been used in stock assessments. Observers provide baseline characterization information, by region, on the species composition, relative abundance, and size composition within species for the large coastal and small coastal bottom longline shark fisheries. During the 2002 sampling season, a total of 60 shark trips were observed, representing 133 sets yielding 648,103 observed hook hours. Catches, catch rates, and disposition were documented for total of 4057 LCS and 1560 SCS (A. Morgan, pers. communication).

NOAA Fisheries continues to conduct an observer program in the southeast shark drift gillnet fishery. During right whale calving season (November 15 through March 31), 100 percent observer coverage of all shark trips is required. Outside of right whale calving season, a statistically significant level of observer coverage is required (currently approximately 53 percent of all shark trips). During the 2002 right whale calving season, a total of 41 drift gillnet sets and 24 strikenet sets were observed (Carlson and Baremore, 2002a). Catches, catch rates, and disposition were documented for total of 10,162 sharks (ten species). Outside the right whale calving season (April 1 through November 14), a total of 28 drift gillnet sets and 14 strikenet sets were observed (Carlson and Baremore, 2002b). Catches, catch rates, and disposition were documented for total of 11,803 sharks (11 species). These data have also been used in stock assessments.

Effective August 1, 2001, selected Federal permit holders in the Gulf of Mexico reef fish, South Atlantic snapper-grouper, king and Spanish mackerel, and shark fisheries must report all species and quantities of discarded (alive and dead) sea turtles, marine mammals, birds, and finfish on a supplemental discard form. A randomly selected sample of 20 percent of the vessels with active permits in the above fisheries is selected each year. The selection process is stratified across geography (Gulf of Mexico and South Atlantic), gear (handline, longline, troll, gillnet, and trap), and number of fishing trips (ten or less trips and more than 11 trips). In 2001, of the 2,676 vessels with Federal permits in these fisheries, a total of 454 vessels were selected to report.

In order to continue to delineate shark distributions and migratory patterns, the Cooperative Shark Tagging Program (CSTP) and Mote Marine Laboratory (MML) Center for Shark Research (CSR) continue to tag sharks. In 2001, nearly 5,300 sharks were tagged by the CSTP and 547 were recaptured.. Between 1962 and 2001, more than 171,000 sharks of 40 species have been tagged and 10,032 sharks of 32 species have been recaptured, as a result of the CSTP. Eighty-seven percent of the tags are represented by eight species: blue shark, sandbar shark, tiger shark, dusky shark, shortfin mako, blacktip shark, Atlantic sharpnose shark, and scalloped hammerhead. Eighty-eight percent of the recaptures are made up of seven species: blue shark, sandbar shark, shortfin mako, tiger shark, lemon shark, blacktip shark, and dusky shark. By the end of 2001, the CSR has tagged 9,741 sharks of 16 species and has received data on 355 recaptures (Hueter, 12/29/02).

NOAA Fisheries occasionally conducts fishery independent bottom longline surveys along the Atlantic coast and in the Gulf of Mexico to monitor the distribution, abundance, and species composition of sharks, tag sharks for migration studies, collect biological samples for age and growth, feeding ecology, and reproductive studies, and collect morphometric data. The last such surveys were done in 2001. The next Atlantic coast survey is planned for spring 2003.

The Northeast Fisheries Science Center continued the Cooperative Atlantic States Shark Pupping and Nursery (COASTSPAN) Survey which is an ongoing investigation of known and putative shark nursery grounds along the East Coast of the United States. The following cooperative institutions participated by investigating shark nursery areas in their state waters in 2001: North Carolina Division of Marine Fisheries, South Carolina Department of Natural Resources, and University of Georgia's Marine Extension Service. Researchers from the NOAA Fisheries and the University of Rhode Island conducted the study in Delaware Bay. COASTSPAN cooperators sampled a total of 2706 sharks in 2001. Seven hundred and eight of the sharks sampled were tagged with fin tags and released. Juvenile sharks caught by these states in 2001 were: Atlantic sharpnose (*Rhizoprionodon terraenovae*), blacknose (*Carcharhinus acronotus*), blacktip (*C. limbatus*), bonnethead (*Sphyrna tiburo*), finetooth (*C. isodon*), lemon (*Negaprion brevirostris*), nurse (*Ginglymostoma cirratum*), sandbar (*C. plumbeus*), sandtiger (*Carcharias taurus*) scalloped hammerhead (*S. lewini*), smooth dogfish (*Mustelus canis*), spinner (*C. brevipinna*) and tiger (*Galeocerdo cuvier*) sharks.

The MML CSR has also conducted tagging studies with the cooperation of the Instituto Nacional de la Pesca in Mexico. In the six field trips to date (1995, 1996, 1997, 1998, 2000, 2001), a total of 390 gillnet sets have been made resulting in the capture and tagging of 1,160 juvenile blacktip sharks with Spanish/English dart tags (asked Hueter 12/29/02).

2. *Assessment: Assessments of elasmobranchs subject to directed, incidental, or bycatch fishing mortality to determine the sustainable level of fishing mortality should be conducted following the completion of this NPOA by NOAA Fisheries, the Councils, the Commissions, and appropriate States (management entities). The purpose of the*

assessment is to determine whether the level of total fishing mortality of shark, skate, and ray species is sustainable. To continue to improve upon existing elasmobranch assessments and help make future assessments more effective, the following items should be included for collection and analysis: Fishery-dependent data on catches, landings, bycatch, effort, and gears and areas fished; fishery-independent data on distribution and abundance; fishing fleet data; habitat data; market (utilization, price) and trade data (imports and exports); and monitoring of fisheries with directed and incidental catches and bycatch of elasmobranchs (e.g., observer programs).

Implementation in Atlantic HMS fisheries:

NOAA Fisheries conducted two new shark stock assessments, one on large coastal sharks and one on small coastal sharks, in 2002. Both assessments used a variety of models and catch data to estimate the status of these two complexes. The large coastal shark stock assessment was also peer reviewed, per a court-approved settlement agreement. This peer review was completed in mid-December and is currently being reviewed by NOAA Fisheries staff. Also in 2002, NOAA Fisheries received a small coastal shark stock assessment conducted by MML and the Florida Museum of Natural History. NOAA Fisheries has begun work on an amendment to the Fishery Management Plan for Atlantic Tunas, Swordfish and Sharks based on the results of these stock assessments (67 FR 69180, November 15, 2002).

The ICCAT's Standing Committee on Research and Statistics (SCRS) Subcommittee on Bycatch has recommended that ICCAT take the lead in conducting stock assessments for Atlantic blue, porbeagle and mako sharks. The subcommittee held a data preparatory meeting to review all available shark statistics in September, 2001. Numerous papers on catches and catch rates as well as two papers on assessment methodologies were presented. The Commission is considering adoption of a resolution that the SCRS should conduct assessments for Atlantic shortfin mako and blue sharks in 2004, and hold an interim meeting in 2003, as SCRS considers necessary, to determine improvements in data collection.

NOAA Fisheries solicited a status review for dusky sharks from the fishery-independent shark monitoring program at the Virginia Institute of Marine Science (VIMS) and Florida State Museum Commercial Shark Fishery Observer Program, which was completed in 2001. The dusky shark was listed on the Endangered Species Act Candidate Species List in 1997 due to its depleted stock status and concern for further stock declines. Observer program analyses indicate a distinct shift in catch composition from a widely scattered size distribution in 1994 to catches comprised primarily of sharks less than 110 cm FL (0-2 age classes) in 1999 (Romine et al. 2001). VIMS data show a decrease in relative abundance from 1980 to 1992, however recent years (1997-2000), have shown an increase in relative abundance. Observer catch rate data show an increase from 1974-1999, particularly for dusky sharks less than 110 cm FL, although catch rates of sharks greater than 170 cm FL declined over the period (Romine et al. 2001).

The NOAA Fisheries Southeast Fisheries Science Center (SEFSC) conducted a study on demographic modeling of sharks that included estimation of natural mortality rates of sharks through indirect life history methods, and incorporated uncertainty in vital rates on demographic analyses of sharks (Cortés, 2002). Monte Carlo simulation was used to reflect uncertainty in estimates of demographic traits and to calculate populations statistics and elasticities. Results indicate that research, conservation, and management efforts should focus on juvenile survival, age at maturity, and reproduction.

The SEFSC also studied the life history and population dynamics of the finetooth shark by determining age, growth, size-at-maturity, natural mortality, productivity, and elasticity of vital rates of the population (Carlson et al., in press). Results suggest the finetooth shark exhibits life-history traits and population parameters that fall between some large coastal sharks such as the blacktip shark and those of other small coastal species.

In January 2003, NOAA Fisheries began to collect mandatory cost-earning information from a random selection of 20 percent of fishermen with a directed shark limited access permit. Collection of this information will help NOAA Fisheries choose management measures that are sustainable and that minimize economic impacts on fishermen.

3. *Need for Management Measures: If the assessment concludes the stock is overfished, that overfishing is occurring, or that the stock is approaching an overfished state, appropriate management measures (e.g., reduce harvest levels or effort, use of alternative gears, reduce adverse effects on EFH or other habitats, implement minimum sizes, establish time-area closures) should be prescribed to end and/or prevent overfishing, to conserve necessary habitats, and to minimize waste, discards, and unutilized incidental catches of all elasmobranchs harvested.*

Implementation in Atlantic HMS fisheries:

NOAA Fisheries published an emergency rule on December 27, 2002 (67 FR 78990), that established new commercial large and small coastal shark quotas and suspended the regulation on ridgeback large coastal shark minimum size. Additionally, this emergency rule announced that several management measures implemented in 1999, such as counting dead discards against the quota, would go into effect. The measures in this emergency rule are based on the results of the 2002 large and small coastal shark stock assessments and should maintain shark status pending an amendment to the Fishery Management Plan for Atlantic Tunas, Swordfish and Sharks. The comment period on the emergency rule ends on February 14, 2003, and NOAA Fisheries will hold at least one public hearing on the regulations in this emergency rule. Comments on the rule and the results of the large coastal shark stock assessment peer review will be considered, as necessary, before any amendments or extension to the rule.

NOAA Fisheries has also announced its intent to conduct an environmental impact

statement and fishery management plan amendment regarding shark measures (67 FR 69180, November 15, 2002). NOAA Fisheries is asking for comments on a number of management options, including, but not limited to: commercial quota levels, regional and seasonal quotas, commercial and recreational trip limits, minimum sizes, authorized gear, prohibited species, and the issuance of exempted fishing permits. NOAA Fisheries is currently in the scoping phase of this amendment, will release an issues and options paper soon, and will accept comments until March 17, 2003.

NOAA Fisheries is continuing to work with Atlantic States Marine Fisheries Commission in the issuance of exempted fishing permits for collection of sharks for public display. Issuance of exempted fishing permits may be necessary because possession of certain shark species is prohibited and because the commercial fisheries for large coastal sharks may be closed for extended periods during which collection of live animals and/or biological samples would otherwise be prohibited. NOAA Fisheries is working with the Commission to improve tracking of sharks collected and enforcement of permit requirements.

4. *Research and Development of Mitigation Measures and Methods: Regardless of the determination of the assessment, management entities should invest in elasmobranch research, fishery monitoring, reduction of bycatch and bycatch mortality, minimization of waste, and enforcement.*

Implementation in Atlantic HMS fisheries:

For information on fishery monitoring, observer programs, and collection of bycatch information, see the discussion under data collection. For information on research on EFH and tagging programs, see the discussion under data collection.

To investigate post-release survivorship in support of bycatch mortality reduction, a two-phase study was undertaken on the relationship between exhaustive exercise and recovery rates in neonatal and juvenile sandbar sharks in 1999 utilizing sharks made available by the COASTSPAN Delaware Bay sampling program (Spargo et. al. 2001). Most metabolites returned to normal within 6-10 hours, indicating that sandbar sharks are able to physiologically recover after the exhaustive exercise associated with rod and reel angling. Therefore, catch and release fishing may not severely impact neonatal and juvenile sandbar sharks in important nursery areas (Spargo et. al. 2001).

In the past several years, NOAA Fisheries has taken steps in 2001 to reduce sea turtle bycatch and bycatch mortality in domestic HMS fisheries. Management measures include, but are not limited to, a closure of the northeast distant statistical reporting area (NED) to pelagic longline fishing, a modification on how pelagic longline gear may be deployed, a requirement that all longline vessels (pelagic and bottom) post safe handling guidelines for sea turtles in the wheelhouse, and a requirement on net checks every two hours in the gillnet fishery. Additionally,

NOAA Fisheries has been conducting an experiment in the NED using commercial fishing vessels to determine methods to reduce sea turtle bycatch.

5. *Limitation of Fishing Capacity: Limitation of capacity should be investigated as a method for increasing the sustainability of elasmobranch fisheries. The greater the number of fishing vessels participating, the more likely it is that individual fishing enterprises will become unprofitable or marginal. Combined with limited quotas, the resulting "race for the fish" or derby fishery produces market gluts, poor product quality, safety concerns, and high administrative costs.*

Implementation in Atlantic HMS fisheries:

Commercial fisheries for sharks are already regulated under a limited entry permit system implemented in 1999. NOAA Fisheries continues to review the limited entry permit system and may consider additional limitations on fishing capacity in the future. Possible future management measures could include attrition/use or lose that would reduce the number of permits based on lack of landings; two-for-one entry that would require entrants to the fishery to transfer two permits in order to obtain one limited access permit; non-transferable individual fishing quotas; individual transferable quota based on landings, auction, and/or lottery allocation; permit buybacks; and, changing the current species-based permits to a more gear-based permitting system.

6. *Outreach and Education: Each management entity should cooperatively or individually to develop and implement training tools and programs in elasmobranch identification, reduce bycatch mortality, and raise awareness about the ecological benefits from elasmobranch populations, detrimental effects of habitat destruction (e.g., coastal development, coastal pollution), and appropriate conservation measures to avoid, minimize or mitigate adverse effects on necessary habitats.*

Implementation in Atlantic HMS fisheries:

NOAA Fisheries is developing an identification guide for Atlantic HMS, including sharks, that is scheduled for production in 2003. The guide is intended to facilitate species identification of fish by commercial and recreational fishermen. NOAA Fisheries has also produced a brochure of regulations governing recreational shark fishing which is available on the internet at <http://www.nmfs.noaa.gov/sfa/hmspg.html>. NOAA Fisheries intends to produce a similar brochure for commercial shark fishing.

7. *Reporting and Monitoring: Each management entity should prepare a biennial report on the status of sharks and shark fisheries under its jurisdiction so that NOAA Fisheries can incorporate that information into biennial reports to COFI. For any fisheries that are under the authority of the Magnuson-Stevens Act and that are identified as*

overfished, the development of rebuilding programs must be consistent with Section 304(f) of the Magnuson-Stevens Act.

Implementation in Atlantic HMS fisheries:

For information on fishery monitoring, observer programs, and collection of bycatch information, see the discussion under data collection. NOAA Fisheries also produces an annual Stock Assessment and Fishery Evaluation report which discusses the status of sharks and shark fisheries.

Atlantic HMS Research and Management Needs

The NPOA identified several high priority research and management needs in commercial and recreational fisheries for Atlantic shark fisheries. The following table lists those research and management needs as well as the actions taken to address them.

Research and Management Need	
<i>Commercial</i>	
Improve species-specific identification of catches, landings, discards, and trade data	Production of HMS Identification Guide
Conduct stock assessments on small coastal and pelagic sharks and species-specific assessments on dusky and sand tiger sharks	Dusky shark status review, NOAA Fisheries and MML/University of FL small coastal shark assessments in 2002, ICCAT blue and shortfin mako assessments in 2004
Continue participation in international research and management initiatives, particularly for pelagic sharks	NEFSC Apex Predator Investigation cooperative studies with Canada, MML studies in Mexico, participation in ICCAT
Determine and minimize bycatch mortality rates of sharks, particularly prohibited species and juvenile sharks	Bottom longline, drift gillnet, and pelagic longline observer programs
Continue research to determine nursery areas and spatial and temporal use of nursery areas for sharks by size/stage and species	COASTSPAN, MML studies in Mexico
<i>Recreational</i>	
Improve species-specific identification of catches and landings data	Production of HMS Identification Guide, Recreational fishing brochure
Determine post-release mortality rates and ways to minimize that mortality	Post-release survivorship study on sandbar sharks

Research and Management Need	Action Taken or Planned
<i>Commercial Fisheries</i>	
Conduct stock assessment on small coastal sharks and species-specific assessments on dusky and sand tiger sharks	Dusky shark status review, NOAA Fisheries and MML/University of FL small coastal shark assessments in 2002
Continue participation in international research and management initiatives, particularly for pelagic sharks	NEFSC Apex Predator Investigation cooperative studies with Canada, MML studies in Mexico, participation in ICCAT

References

Carlson, J. and I. Baremore. 2002a. The directed shark gillnet fishery: right whale season, 2002. NOAA, NOAA Fisheries, Southeast Fisheries Science Center, Panama City, FL. SFD Contribution PCB-02/13. 8 pp.

Carlson, J. and I. Baremore. 2002b. The directed shark gillnet fishery: non-right whale season, 2002. NOAA, NOAA Fisheries, Southeast Fisheries Science Center, Panama City, FL. SFD Contribution PCB-02/12. 10 pp.

Carlson, J. K., E. Cortés, and D. Bethea. In press. Life history and population dynamics of the finetooth shark, *Carcharhinus isodon*, in the northeastern Gulf of Mexico. Fishery Bulletin.

Cortés, E. 1999. Standardized diet compositions and trophic levels of sharks. ICES Journal of Marine Science 56:707-717.

Cortés, E. 2002. Incorporating uncertainty into demographic modeling: Application to shark populations and their conservation. Conservation Biology 16(4): 1048-1062.

FAO. 1998. International Plan of Action for the conservation and management of sharks. Document FI:CSS/98/3, October 1998. Food and Agriculture Organization, Rome.

NOAA Fisheries. 2001. United States National Plan of Action for the Conservation and Management of Sharks. DOC/NOAA/NOAA Fisheries Silver Spring, MD. 90 pp.

Romine, J.G., J.A. Musick, and G.H. Burgess. 2001. An analysis of the status and ecology of the dusky shark, *Carcharhinus obscurus* in the western North Atlantic. 26 pp.

Spargo, A., N. Kohler, G. Skomal, and R. Goodwin. 2001. Draft Summary Report of the (COASTSPAN) Post-Release Shark Survivorship Study in Delaware Bay With Data From 1999-2000. Apex Predators Program. US DOC, NOAA, NOAA Fisheries, NEFSC, Narragansett

Laboratory, Narragansett, RI.

Walker, T.I. 1998. Can shark resources be harvested sustainably? A question revisited with a review of shark fisheries. *Mar. Freshwater Res.*, 49:553-572.

APPENDIX B: FINAL NATIONAL PLAN OF ACTION FOR REDUCING THE INCIDENTAL CATCH OF SEABIRDS IN ATLANTIC TUNA, SWORDFISH, AND SHARK LONGLINE FISHERIES

NPOA-Seabird Executive Summary

Increased concerns have arisen about the incidental capture of non-target species in various fisheries throughout the world. Incidental capture can be economically wasteful, it impacts living marine resources, and the accidental killing of non-harvested animals may be aesthetically aversive. Incidental catch of non-target marine species such as marine mammals, sea turtles, and seabirds has generated growing concern over the long-term ecological effects of such bycatch in longline and other fisheries conducted in many areas of the world's oceans.

The United States has voluntarily developed the U.S. *National Plan of Action for Reducing the Incidental Catch of Seabirds in Longline Fisheries* (NPOA-S) to fulfill a national responsibility to address seabird bycatch in longline fisheries, as requested in the *International Plan of Action for Reducing the Incidental Catch of Seabirds in Longline Fisheries* (IPOA-S). The IPOA-S applies to "States" (hereafter Countries) in whose waters longline fishing is being conducted by their own or foreign vessels, and to Countries that conduct longline fishing on the high seas and in the exclusive economic zones (EEZs) of other Countries. The IPOA-S is a voluntary measure that calls on Countries to: (1) assess the degree of seabird bycatch in their longline fisheries; (2) develop individual national plans of action to reduce seabird bycatch in longline fisheries that have a seabird bycatch problem; and (3) develop a course of future research and action to reduce seabird bycatch. The NPOA-S is to be implemented consistent with the FAO *Code of Conduct for Responsible Fisheries* and all applicable rules of international law, and in conjunction with relevant international organizations.

Development of the NPOA-S was a collaborative effort between the National Marine Fisheries Service (NMFS), the U.S. Fish and Wildlife Service (FWS) and the Department of State (DOS), carried out in large part by the Interagency Seabird Working Group (ISWG) consisting of representatives from those three agencies. This partnership approach recognizes the individual agency management authorities covering seabird interactions with longline fisheries. NMFS manages U.S. fisheries under the authority of the Magnuson-Stevens Fishery Conservation and Management Act and the High Seas Fishing Compliance Act. FWS manages birds predominately under the authority of the Endangered Species Act and the Migratory Bird Treaty Act. In addition, DOS has the lead role in international negotiations on fisheries conservation and

management issues that should help promote IPOA implementation by encouraging other nations to develop NPOAs. Given each agency's responsibilities, the NPOA-S was developed collaboratively by NMFS and FWS. This collaborative effort has increased communication between seabird specialists and fishery managers in FWS and NMFS. Maintaining this cooperation is a high priority for both agencies.

The NPOA-S contains the following themes:

1. Action Items: NMFS, with the assistance of the Regional Fishery Management Councils (Councils), the NMFS Regional Science Centers, and FWS, as appropriate, should conduct the following activities:

- Detailed assessments of its longline fisheries for seabird bycatch within 2 years of the adoption of the NPOA-S;
- If a problem is found to exist within a longline fishery, measures to reduce this seabird bycatch should be implemented within 2 years. These measures should include data collection, prescription of mitigation measures, research and development of mitigation measures and methods, and outreach, education, and training about seabird bycatch; and
- NMFS, in collaboration with the appropriate Councils and in consultation with FWS, will prepare an annual report on the status of seabird mortality for each longline fishery, including assessment information, mitigation measures, and research efforts. FWS will also provide regionally-based seabird population status information that will be included in the annual reports.

2.) Interagency Cooperation: The continuation, wherever possible, of the ongoing cooperative efforts between NMFS and FWS on seabird bycatch issues and research.

3.) International Cooperation: The United States' commitment, through the DOS, NMFS and FWS, to advocate the development of National Plans of Action within relevant international fora. The development of the NPOA-S has emphasized that all U.S. longline fisheries have unique characteristics, and that the solution to seabird bycatch issues will likely require a multi-faceted approach requiring different fishing techniques, the use of mitigating equipment, and education within the affected fisheries. Therefore, the NPOA-S does not prescribe specific mitigation measures for each longline fishery. Rather, this NPOA-S provides a framework of actions that NMFS, FWS, and the Councils, as appropriate, should undertake for each longline fishery. By working cooperatively, fishermen, managers, scientists, and the public may use this national framework to achieve a balanced solution to the seabird bycatch problem and thereby promote sustainable use of our nation's marine resources.

Detailed assessments should address the following:

- Criteria used to evaluate the need for seabird bycatch mitigation and management measures

- Longline fishing fleet data (numbers and characteristics of vessels)
- Fishing techniques data (demersal, pelagic, and other pertinent technical information)
- Fishing areas (by season and geographic location)
- Fishing effort data (seasons, species, catch, number of sets, and number of hooks/year/fishery)
- Status of seabird populations in the fishing areas, if known
- Estimated total annual seabird species-specific catch and catch-per-unit-effort (number/1,000 hooks set/species/fishery)
- Existing area and species-specific seabird bycatch mitigation measures and their effectiveness in reducing seabird bycatch
- Efforts to monitor seabird bycatch (e.g., observer program and logbooks), and
- Statement of conclusions and decision to develop and implement mitigation measures as needed.

Bycatch of Seabirds in Atlantic Tuna, Swordfish, and Shark Longline Fisheries

Introduction

The Secretary of Commerce manages Atlantic tunas, swordfish, and sharks - collectively known as highly migratory species or HMS - under the Fishery Management Plan for Atlantic Tunas, Swordfish, and Sharks. The HMS FMP includes five species of Atlantic tunas (bluefin, yellowfin, albacore, bigeye, skipjack), swordfish, and 39 species of sharks in the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea. Longline fisheries for these species include the pelagic longline fishery for Atlantic tunas and swordfish and the bottom longline fishery for sharks. The HMS Management Division assesses seabird bycatch annually in the Stock Assessment and Fishery Evaluation Report.

Seabird Bycatch Assessment.

Atlantic pelagic longline fishery

Observer data from 1992 through 2002 indicate that bycatch is relatively low (Table 1). Since 1992, a total of 113 seabird interactions have been observed, with 77 seabirds observed killed in the Atlantic pelagic longline fishery. No expanded estimates of seabird bycatch or catch rates are available for the pelagic longline fishery.

Observed bycatch has ranged from 1 to 18 seabirds observed dead per year and 0 to 15 seabirds observed released alive per year from 1992 through 2002. Approximately half of the seabirds observed have not been identified to species (n = 55). Of those seabirds identified, gulls represent the largest group (n = 29), followed by greater shearwaters (n = 19), and northern gannets (n = 8). Greater shearwaters experienced the highest mortality (100 percent), followed by unidentified seabirds (67 percent), and gulls (66 percent). Northern gannets had the lowest

mortality rate (12 percent).

The Mid Atlantic Bight experienced the highest number of seabirds observed caught and killed (n = 49, 80 percent). The Northeast Coastal area had the second highest number observed (n = 35) but third highest bycatch mortality (48 percent) compared to the South Atlantic Bight, which had a lower number of seabirds observed caught (n = 15) but higher mortality (80 percent).

Table 1. Seabird Bycatch in the Atlantic Pelagic Longline Fishery from 1992 to 2002. Source: NMFS Pelagic longline fishery observer program.

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

2002	10	MAB	GULL	3	alive
2002	10	MAB	GULL	1	dead
2002	11	MAB	GULL	3	alive

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

Atlantic bottom longline shark fishery

One pelican has been observed killed from 1994 through 2002. The pelican was caught in January 1995 off the Florida Gulf Coast (between 25 18.68 N, 81 35.47 W and 25 19.11 N, 81 23.83 W) (G. Burgess, University of Florida, Commercial Shark Fishery Observer Program, pers. comm., 2001). No expanded estimates of seabird bycatch or catch rates are available for the bottom longline fishery.

Description of Fisheries

Atlantic pelagic longline fishery

There are approximately 80 to 100 active pelagic longline vessels currently operating in the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea. Fishermen target either swordfish (at night) or yellowfin and bigeye tuna (during the day). The nighttime fishery utilizes frozen bait (mackerel or squid, predominantly) and lightsticks. The daytime fishery uses frozen bait predominantly along the east coast and live bait in the Gulf of Mexico. In 2000, NMFS prohibited the use of live bait on pelagic longline vessels in the Gulf of Mexico to minimize bycatch mortality of billfish. Additionally, NMFS prohibited pelagic longline fishing in the Florida East Coast, Charleston Bump, DeSoto Canyon, and Northeast Distant areas beginning in 2000 and 2001 to reduce bycatch of swordfish, billfish, and sea turtles. An experimental fishery has been conducted in the Northeast Distant area since 2001.

NMFS attempts to achieve five percent observer coverage (by number of sets) and has achieved approximately three to five percent annually between 1992 and 2001. Increased sampling in 2001, particularly in the Northeast Distant area, increased the sampling fraction to over six percent. Observers collect information about seabird bycatch by species and also take photographs of the birds. In addition, fishermen are required to submit logbooks for every trip made. Logbooks do not collect specific information about seabird bycatch at this time. Commercial pelagic longline fishing occurs throughout the North and South Atlantic, and the Gulf of Mexico. NMFS expects to estimate seabird bycatch from the pelagic longline observer program in the coming year (extrapolating reported effort with observed catch rates).

Atlantic bottom longline shark fishery

There are approximately 250 bottom longline shark vessels currently operating in the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea. The Atlantic bottom longline fishery targets large coastal sharks, with landings dominated by sandbar and blacktip sharks. Gear characteristics

vary by region, but in general, a ten-mile long monofilament bottom longline, containing about 750 hooks is fished overnight. Skates, sharks, or various finfishes are used as bait. This fishery operates subject to a limited large coastal shark quota, with a typical two to three-month long season starting in January and July. Commercial shark bottom longline fishing is concentrated in the southeastern United States and Gulf of Mexico. Vessel owners must submit logbooks for each shark fishing trip and are subject to observer coverage.

NMFS attempts to achieve five percent observer coverage and has achieved approximately three percent annually between 1995 and 2001 by weight of sharks landed. Increased sampling in 2001 increased the sampling fraction to a little more than four percent. Observers collect information about seabird bycatch. Starting in 2001, 20 percent of shark fishermen have been selected to submit a supplemental discard form, which includes information on seabird bycatch, as part of their standard logbook submissions.

Current Seabird Mitigation Efforts

No management measures are currently in place for seabird protection in either of these fisheries. Time/area closures for the pelagic longline fishery are in place in the Gulf of Mexico, along the east coast of Florida, in the Charleston Bump, in the Northeast Distant area, and in the Mid-Atlantic Bight (Figure 2). Such closures may positively affect seabirds. Evidence has been presented at international workshops that has indicated that, if necessary, streamer lines and line shooters are effective in reducing the bycatch of seabirds in longline fisheries.

Conclusion

Bycatch of seabirds in Atlantic HMS pelagic and bottom longline fisheries is minimal and there does not appear to be a problem with seabird bycatch in these fisheries. Accordingly, no mitigation measures are necessary at this time. NMFS intends to continue to collect data on seabird bycatch through observer programs and supplemental logbooks programs and to increase the species-specific identification of seabirds observed. NMFS will reassess seabird bycatch in these fisheries as expanded bycatch estimates are generated and/or new information becomes available.

Figure 1. Geographic areas used in the Atlantic pelagic longline fishery observer program.

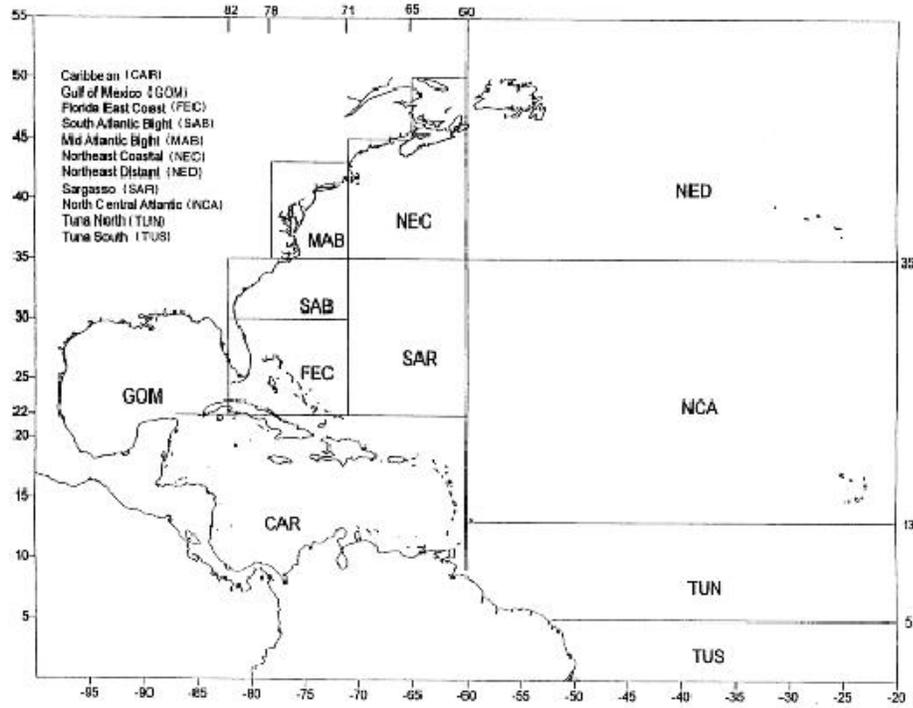


Figure 2. Map of closed areas for Atlantic pelagic longline fishermen.

