
8. BYCATCH

NMFS took several steps to reduce bycatch in 2001, in addition to the steps towards reducing bycatch in the pelagic longline fishery through closure of large areas and gear modifications in 2000 through Regulatory Amendment One to the HMS FMP. NMFS closed the Northeast Distant (NED) Area to pelagic longline fishing and conducted an experiment with commercial fishing vessels to test fishery-specific gear modifications to reduce sea turtle bycatch and mortality. In addition, NMFS required all longline fishing vessels (pelagic and bottom longline) to post sea turtle handling and release guidelines in the wheelhouse to educate fishermen on ways to reduce post-release mortality.

Bycatch information relevant to each HMS gear type has already been discussed in previous sections of this document. In addition to bycatch of HMS and other species by fishermen targeting HMS, there is the issue of HMS as bycatch in other fisheries as well as the “incidental catch” of marine mammals. The Magnuson-Stevens Act refers only to finfish and sea turtles as bycatch. As a result, other species such as seabirds and marine mammals are considered “incidental catch.” As bycatch tends to occur in fisheries that operate across jurisdictional boundaries, governing bodies, and legal statutes, bycatch reduction often becomes a complex issue.

8.1 Comprehensive Bycatch Reduction Strategy

The NMFS HMS bycatch reduction program includes an evaluation of current data collection programs, implementation of bycatch reduction measures such as gear modifications and time/area closures, and continued support of data collection and research relating to bycatch. Details on bycatch and bycatch reduction measures can be found in Section 3.5 of the HMS FMP, in Regulatory Amendment One to the HMS FMP (NMFS, 2000), and in the Environmental Assessment and Regulatory Impact Review for an Emergency Rule to Reduce Sea Turtle Bycatch and Bycatch Mortality in the Atlantic Pelagic Longline Fishery (NMFS, 2001a).

Bycatch Reporting Methodology

NMFS utilizes self-reported data (pelagic 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. These data are collected with respect to fishing gear type and have been presented by gear type in this report in prior sections. The number and location of discarded fish are recorded, as is the disposition of the fish, i.e., released alive vs. released dead. Post-release mortality of HMS is accounted for in stock assessments to the extent that the data allow.

Effective August 1, 2001, selected Federal permit holders in the Gulf of Mexico reef fish, South Atlantic snapper-grouper, king and Spanish mackerel, and shark fisheries must report all species and quantities of discarded (alive and dead) sea turtles, marine mammals, birds, and finfish on a supplemental discard form. A randomly selected sample of 20 percent of the vessels with active permits in the above fisheries during 2000 was selected in 2001; a different group of vessels will be selected in subsequent years. The selection process was 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). Of the 2,676 vessels with Federal permits in these fisheries, a total of 454 vessels were selected to report.

In addition to existing programs in the commercial and recreational HMS fisheries, NMFS implemented a final action in the HMS FMP to place observers on charter/headboat vessels whose owners volunteer for the program (Section 3.8.1). As with charter/headboats, NMFS has the authority to use observers to collect bycatch information from Harpoon, Purse Seine, Angling, and General category vessels fishing for tunas. Many of the vessels permitted in these categories already complete Federal and/or state logbooks (e.g., the NMFS Northeast Region Vessel Trip Report (VTR) Program), in which they are required to report all fishing information, including that for HMS. NMFS is currently evaluating various alternatives to increase logbook coverage of vessels fishing for HMS, such as selecting additional HMS vessels to participate in NMFS VTR Program, and is investigating alternatives for electronic reporting.

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

Marine Mammals

NMFS relies on both fishery-dependent and fishery-independent data to produce stock assessments for marine mammals in the Atlantic Ocean, Gulf of Mexico, and Caribbean sea. The draft stock assessment reports are typically published around January and final reports are typically published in the Fall. Final 2000 stock assessment reports and draft 2001 reports are available and can be obtained from Emily Hanson Menashes at (301) 713-2322 or on the web at: http://www.nmfs.noaa.gov/prot_res/PR2/Stock_Assessment_Program/sars.html#Overview.

The final 2001 MMPA List of Fisheries published on August 15, 2001 (66 FR 42780). On January 17, 2002 (67 FR 2410), NMFS published a notice that the 2001 List of Fisheries remains in effect for 2002. 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 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.

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

Sea Turtles

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

A new BiOp was completed on June 14, 2001, that found that the actions of the pelagic longline fishery jeopardized the continued existence of the loggerhead and leatherback sea turtles. This document reported that the pelagic longline fishery interacted with an estimated 991 loggerhead and 1012 leatherback sea turtles in 1999. The estimated take levels for 2000 are 1256 loggerhead and 769 leatherback sea turtles (Yeung 2001).

On July 13, 2001 (66 FR 36711), NMFS closed the NED to pelagic longline fishing (effective July 15, 2001), modified how pelagic longline gear may be deployed effective (August 1, 2001), and required that all longline vessels (pelagic and bottom) post safe handling guidelines for sea turtles in the wheelhouse (effective September 15, 2001). Specifically, while pelagic longline gear is deployed, gangions may not be attached to floatlines nor to the mainline except at a distance from the attachment point of the floatline to the mainline of at least twice the length of the average gangion length in the set. NMFS projects that this measure will reduce loggerhead

turtle interactions by 22 percent and leatherback turtle interactions by 24 percent. Additionally, for pelagic longline sets in which the combined depth of the floatline and the gangion is 100 meters or less, the length of the gangion must be at least 10 percent longer than the length of the floatline. The intent of this requirement is to ensure that hooked or entangled turtles have sufficient slack line to reach the surface and avoid drowning.

On December 13, 2001 (66 FR 64378), NMFS extended the emergency rule for 180 days (through July 8, 2002). NMFS is currently working on developing a proposed and final rule to implement these measures on a long-term basis.

In 2001, an experimental program was initiated in cooperation with the U.S. pelagic longline fleet with a history of fishing for swordfish on the Grand Banks fishing grounds, to develop gear modifications that might prove useful in reducing the rate of interaction and limit severity of injury to marine turtles incidentally captured by the gear while at the same time minimizing loss of targeted catch. The gear modifications tested in 2001 included the type of bait used as well as the positioning of gangions relative to surface floats. Other gear modifications will be tested in the future. These technologies may be of application in other longline fleets. In this experiment, there is 100% observer coverage of the vessels. The experiments undertaken are being coordinated and are, to some degree, based on provisional results obtained from experiments conducted on Azorean longline vessels operating in the northeastern Atlantic.

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

Seabirds

The National Plan of Action for Reducing the Incidental Catch of Seabirds in Longline Fisheries was released in February 2001. The NPOA for Seabirds calls for detailed assessments of longline fisheries, and, if a problem is found to exist within a longline fishery, for measures to reduce seabird bycatch within 2 years. NMFS, in collaboration with the appropriate Councils and in consultation with the U.S. Fish and Wildlife Service, will prepare an annual report on the status of seabird mortality for each longline fishery. The United States is committed to pursuing international cooperation, through the Department of State, NMFS, and U.S. Fish and Wildlife

Service, to advocate the development of National Plans of Action within relevant international fora. The HMS Division intends to meet with longline fishery participants and other members of the public in the future to discuss possibilities for complying with the intent of the plan of action. Because takes appear to be relatively low in Atlantic HMS longline fisheries, adoption of immediate measures is unlikely. For additional information on the NPOA for Seabirds as well as the assessment of Atlantic HMS longline fisheries, see Appendix B.

8.2 Bycatch of Highly Migratory Species in Other Fisheries

NMFS is concerned about bycatch mortality of Atlantic HMS in any federal or state-managed fishery which captures them. NMFS plans to address bycatch of these species in the appropriate FMPs. 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. NMFS continues to solicit bycatch data on HMS from all state, interjurisdictional, and federal data collection divisions. NMFS 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 14.43 mt ww of yellowfin tuna, skipjack tuna, albacore tuna, bigeye tuna, and swordfish in 2000 (Table 8.1) incidental to the squid, mackerel, and butterfish trawl fishery (NMFS, 2001b). Landings decreased from 1999 for yellowfin, skipjack, and albacore tunas but increased for bigeye tuna and swordfish. Landings of bigeye tuna and swordfish have increased each year since 1998. Landed fish are counted through the dealer report program and by using information collected from tally sheets. In addition, squid trawl fishermen are required to report landings in the Large Pelagic Logbook or in the Multi-species Logbook. Bycatch of HMS in this fishery is not well-documented and observer funding for this fishery to document bycatch rates of HMS was provided in 2001 and is scheduled to be provided in 2002. 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. NMFS continues to work with squid fishermen through the existing observer program to reduce bycatch.

Table 8.1 Atlantic HMS Landed (mt ww) Incidental to Squid Trawl Fishing Operations in 1998-2000.
Data based on tally sheets submitted to NMFS (NMFS, 2001b).

Species	1998	1999	2000
Yellowfin tuna	0.7	4.1	1.76
Skipjack Tuna	0.2	1.0	0.04
Bigeye Tuna	0.5	1.2	1.7
Albacore	2.4	0.4	0.03
Swordfish	5.9	7.5	10.9
Total	9.7	14.2	14.43

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 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. The odds of observing shark bycatch was highest in April and May. Stomach analyses of sharks suggest that their occurrence in the fishery is probably the result of sharks preying on gulf menhaden (deSilva et al., 2001).

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

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 may be considered in the next LCS assessment, as appropriate. Cortes (2001a) estimated bycatch in the south Atlantic shrimp trawl fishery (North Carolina, South Carolina, Georgia, and Florida) for Atlantic sharpnose, bonnethead, and finetooth sharks based on expansion by fishing effort. From 1992 to 1997, annual estimates of bycatch range from zero to almost six million sharks (Table 8.2) (Cortes, 2001a). The upcoming SCS assessment, to be completed in 2002, will include estimates of SCS bycatch because they are likely to exceed in importance the landings for those species (Cortes, 2001a). In general,

however, requirements for turtle excluder devices in this fishery have probably resulted in less bycatch because sharks are physically excluded from entering the gear.

Table 8.2. Expanded estimates of bycatch of bonnethead, Atlantic sharpnose, and finetooth sharks in the U.S. south Atlantic shrimp trawl fishery based on within-stratum expansion by effort as trips by fishing year. Source: Cortes, 2001a.

Year	Number of trips	Bonnethead	Atlantic sharpnose	Finetooth
1992-1993	20,181	53,674	1,753,829	0
1993-1994	20,445	0	5,873,333	447,495
1995-1996	23,333	34,378	0	0
1996-1997	19,320	38,517	358,457	0

Summary

Although bycatch of swordfish and tunas in the squid trawl fishery is substantial, Atlantic shark bycatch in non-HMS fisheries remains a greater concern. Approximately nine percent (approximately 25,100) of the LCS coastal sharks were bycatch in the menhaden fishery alone and bycatch of SCS in the shrimp trawl fishery alone is expected to exceed landings. NMFS will consider options for minimizing bycatch of LCS and SCS in other fisheries after the 2002 assessments are completed. Although the HMS FMP requires counting dead discards against Atlantic shark quotas, this management measure is currently not in force per an emergency rule implementing a settlement agreement.

8.3 Evaluation of Bycatch Reduction Measures

The following section provides a review of current management measures:

- Reduce length of longline to increase survival of marine mammals and turtles:
The effectiveness of this measure has not been analyzed. However, NMFS intends to conduct an analysis of this measure to increase the survival of marine mammals and sea turtles in 2002.
- Close area in June to decrease bluefin tuna bycatch in the pelagic longline fishery:
The number of bluefin tuna landed and discarded by month and year is reported in the pelagic logbook. The following tables (Table 8.3 and Table 8.4) provide an enumeration of logbook submissions of the disposition of bluefin tuna catches (kept, discarded dead, discarded alive). Caution should be exercised in utilizing

these data to determine the effectiveness of the June closure that went into effect during 1999 as a result of implementing the HMS consolidated regulations (May 28, 1999; 64 FR 29090). This information also does not consider the pooling method utilized to report catch to ICCAT.

In Table 8.3, the rows designated as “closed” represent the area in the Northeast/Mid-Atlantic Bight closed to pelagic longline fishing during the month of June. “Open” represents all other areas in the Atlantic Ocean. Table 8.3 demonstrates that the June closure was effective at reducing dead discards of bluefin tuna. These data do not indicate that the closed area outside of June is problematic because the higher estimates of dead discards in 1999 and 2000 seem to occur in the remaining open areas (i.e., expanding the closed area to include other months does not appear warranted at this time).

Table 8.3. Number of bluefin tuna (BFT) reported in the pelagic logbook program as kept, discarded dead, or discarded alive.

Month	Area	BFT kept				BFT discarded dead							
		1997	1998	1999	2000	1997	1998	1999	2000	1997	1998	1999	
Jan	Closed	0	0	0	0	0	0	0	0	0	0	0	0
	Open	18	9	19	23	5	15	3	2	5	35	8	1
Feb	Closed	0	0	0	0	0	0	0	0	0	0	0	0
	Open	10	10	24	27	1	11	7	30	12	14	9	18
Mar	Closed	0	0	0	0	0	0	0	0	0	0	0	0
	Open	23	17	31	37	4	14	13	106	9	51	27	37
Apr	Closed	0	0	0	0	0	0	0	0	0	0	0	0
	Open	4	14	39	41	2	6	50	90	6	17	39	21
May	Closed	1	1	1	0	2	1	2	0	4	1	20	0
	Open	21	23	25	39	18	21	42	19	26	33	94	17
June	Closed	14	10	0	0	144	156	0	0	159	278	0	
	Open	29	25	29	15	56	182	87	18	42	194	124	23
July	Closed	3	13	7	0	3	32	2	6	15	53	6	6
	Open	35	30	11	12	32	20	5	33	57	35	12	9
Aug	Closed	0	0	2	0	0	0	0	0	0	0	0	0
	Open	23	6	9	4	1	2	1	3	5	2	0	0
Sept	Closed	0	0	0	1	0	0	1	0	0	0	0	0

	Open	12	4	0	8	0	1	0	1	0	4	0	2
Oct	Closed	0	7	6	7	0	9	0	16	1	30	2	68
	Open	9	25	12	5	0	0	0	7	0	1	0	131
Nov	Closed	7	10	2	5	7	14	1	0	6	20	0	15
	Open	5	11	9	3	0	11	1	9	7	33	1	9
Dec	Closed	10	1	2	1	22	3	1	2	39	0	0	9
	Open	10	16	15	1	14	4	5	10	11	6	45	16
Total		234	232			311	502			404	807		

Catch patterns of other target species and bycatch by pelagic longline gear are also presented by pooling the number of fish landed and discarded by month as reported in the pelagic logbook. The portion of Table 8.4 designated as “Closed” represents the area in the Northeast/Mid-Atlantic bight that is closed in June but the number represents those fish caught in that area for the entire year; “Open” represents all other areas of the Atlantic Ocean fished by U.S.-flagged pelagic longline vessels. “Discarded” is both discarded dead and discarded alive.

Table 8.4. Number of bluefin tuna, swordfish, sharks, billfish, and turtles kept and discarded inside and outside of the June, Northeast/Mid-Atlantic Bight.

Species	Closed area				Open area			
	1997	1998	1999	2000	1997	1998	1999	2000
BFT kept	35	42	20	14	199	190	223	215
BFT discarded	402	597	35	122	313	712	573	612
Swordfish kept	2,075	3,315	1,329	3,730	67,000	66,000	63,000	56,138
Swordfish discarded	1,089	1,469	874	1,169	19,810	21,175	19,308	15,490
Pelagic sharks kept	401	368	271	373	4,834	3,388	2,543	2,552
Pelagic sharks discarded	16,672	12,486	4,858	4,749	66,108	32,126	24,082	21,492
LCS kept	1,734	816	1,030	610	25,500	11,492	12,024	7,108
LCS discarded	82	58	77	115	8,300	6,047	6,193	6,679
Billfish discarded	333	96	388	88	7,385	3,670	4,400	3,670
Turtle interactions	12	23	35	9	255	898	593	169

Based on reported data, Table 8.4 demonstrates that bluefin tuna discards in the closed area have been reduced considerably due to the June closure. Tables 8.3 and 8.4 also illustrate that, while annual landings of bluefin tuna from the closed area have been reduced, annual overall landings of bluefin tuna have not been reduced. These data indicate that the June closure is effective at reducing bluefin discards while not impacting bluefin tuna landings. These data also

indicate that discards of pelagic sharks, billfish, and turtles from the closed area have been reduced considerably, although discards of pelagic sharks from open areas have declined as well.

- Atlantic Large Whale Take Reduction Plan (ALWTRP) regulations:
Observers were placed on shark drift gillnet vessels during right whale calving season (November 15- March 31, 2001) off the East Coast of Florida between Fort Pierce and West Palm Beach and covered 12 strikenet and 70 drift gillnet sets (Carlson, 2001). Four Atlantic bottlenose dolphin and one Atlantic spotted dolphin were observed caught and discarded dead; two Atlantic spotted dolphin were released alive. No large whales were encountered by this gear during right whale calving season.
- Atlantic Bottlenose Dolphin Take Reduction Team:
Due to the observed takes of Atlantic bottlenose dolphin in the shark drift gillnet fishery, representatives of the fishery have been included in the newly formed Atlantic Bottlenose Dolphin Take Reduction Team. The second meeting of the team was held in January 2002.
- MMPA List of Fisheries Update/Stock Assessment:
NMFS continues to update the MMPA List of Fisheries and the 2002 final list is now available. Final 2000 stock assessment reports and draft 2001 reports are also available. See section 8.1 for information on obtaining these reports.
- Atlantic Offshore Cetacean Take Reduction Team (AOCTRT):
NMFS Office of Protected Resources has disbanded the AOCTRT due to the fact that two of the three fisheries addressed by the AOCTRT were closed by fishery management actions, leaving only the pelagic longline fishery, which has also been the subject of recent fishery management actions and increased observer coverage related to bycatch. NMFS intends to review the fishery and any marine mammal interactions in the future to determine if additional take reduction measures are necessary at that time.
- Observer coverage of shark drift gillnet fleet:
On March 30, 2001, NMFS reduced the level of observer coverage required in the shark drift gillnet fishery from 100 percent year-round to 100 percent during right whale calving season and a statistically significant level during the rest of the year. Recent scientific analyses indicate that a 53 percent level of coverage is statistically significant and adequate to provide reasonable estimates of sea turtle and marine mammal takes outside of the right whale calving season. The level of observer coverage necessary will be re-evaluated annually and adjusted accordingly. Reduced observer coverage will reduce industry and administrative costs. Due to

the high costs of these observer programs and limited funding, NMFS is considering requiring VMS in the shark drift gillnet fishery.

- Vessel monitoring systems in the pelagic longline fishery

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

On January 10, 2001 (66 FR 1907), pursuant to that order, NMFS published a request for comments on options for implementing VMS requirements in the Atlantic HMS pelagic longline fishery. The agency received and considered seven comments from vessel owners and their fishing organization, environmental advocacy groups, a fishery management council member, and a VMS distributor. NMFS also examined monitoring and enforcement in the fishery, the limits of conventional methods, and the applications of VMS. NMFS conducted an analysis of HMS pelagic longline vessels to determine whether the VMS requirement could be restricted to a subset of HMS pelagic longline vessels. This information has been submitted to the court, and NMFS is awaiting further direction regarding its ability to implement a VMS program.

- Live vs Dead Bait in the Gulf of Mexico

Analysis of the effectiveness of the live bait prohibition in the Gulf of Mexico pelagic longline fishery is not possible at this time because the data from 2001 (the first full year that the prohibition was effective) are not ready for analysis.

- Time and Area Closures in the Charleston Bump, Florida East Coast, and DeSoto Canyon

Analyses of the effectiveness of the time and area closures to pelagic longlining in the Charleston Bump, Florida East Coast, and DeSoto Canyon are not possible at this time because the data from 2001 (the first year that the closures were effective) are not ready for analysis.

- Time and Area Closure in Northeast Distant Area

Analysis of the effectiveness of the time and area closure to pelagic longlining in the Northeast Distant Area is not possible at this time because the data from 2001 (the first full year that the closure was effective) are not ready for analysis.

8.4 Recommendations to Reduce Bycatch

In 1998, NMFS published a National Bycatch Plan (NOAA, 1998). The plan recommended numerous actions to address bycatch mortality. Table 8.5 lists the recommendations and actions taken by NMFS thus far to address these issues.

Table 8.5. Recommendations for Addressing Bycatch Mortality in HMS Fisheries and Actions Planned or Taken to Address These Recommendations.

Recommendation	1999 Actions	2000 Actions	2001 Actions	
Reduce bycatch and bycatch mortality of undersized swordfish and tunas.	Proposed closure of critical swordfish nursery areas	Closed critical swordfish nursery areas to pelagic longline fishing (Am. 1 to HMS FMP)	Held educational workshop for recreational fishermen at Miami International Boat Show in Feb. 2001.	<p>Rulemaking on Atlantic bluefin tuna incidental catch limits.</p> <p>Promote use of circle hooks in swordfish recreational fisheries through an outreach program</p>
Improve data on the character and magnitude of bycatch to allow quantitative estimates of discards in the fisheries for use in stock assessments and making management decisions.	Pursued submission of bycatch data by ICCAT countries for analyses to develop measures to reduce small swordfish bycatch stock-wide.	Researched estimating discard rates and volumes based on direct observations by scientific fishery observers.	<p>Conducted independent review of methodology used to estimate bluefin tuna dead discards.</p> <p>Started collection of discard data in snapper-grouper/reef fish/shark logbook program.</p> <p>Conducted year one of Northeast Distant Area experiment.</p>	<p>Conduct year two of Northeast Distant Area experiment.</p> <p>Increase observer coverage in pelagic and bottom longline and shark drift gillnet fisheries.</p>

Recommendation	1999 Actions	2000 Actions	2001 Actions	
<p>Improve gear-handling techniques to reduce mortality.</p>	<p>Held educational workshops for recreational and commercial fishermen.</p>	<p>Distributed handling protocols for marine mammals and sea turtles</p>	<p>Held pelagic longline gear workshop in January.</p> <p>Required line clippers and dipnets on pelagic longline vessels.</p> <p>Required posting of turtle handling/release guidelines in wheelhouse of all longline vessels.</p>	<p>Conduct year two of Northeast Distant Area experiment.</p> <p>Investigate de-hooking devices.</p>
<p>Conduct research on gear-deployment methods that will reduce interactions between and mortality of protected species that encounter fishing gear.</p>	<p>Transferred funding for gear development to NSIL</p>	<p>Funded a circle hook study in the Azores</p> <p>Developed a dipnet and line cutter that would decrease injuries to turtles; these devices required as of Nov. 2000 on all pelagic longline vessels</p> <p>Development of revised design of lightsticks that do not attract turtles, other gear modifications (NSIL, 2000)</p>	<p>Held pelagic longline gear workshop in January.</p> <p>Conducted year one of Northeast Distant Area experiment.</p>	<p>Conduct year two of Northeast Distant Area experiment.</p>

Recommendation	1999 Actions	2000 Actions	2001 Actions	
<p>Work cooperatively with the fishing industry to transfer new knowledge and techniques between fishermen and researchers.</p>		<p>Held educational workshops include research results on the agenda.</p> <p>Conducted cooperative research with pelagic longline industry members to explore lightstick color and design effects on turtle hooking rates</p>	<p>Held pelagic longline gear workshop in January.</p> <p>Conducted year one of Northeast Distant Area experiment.</p>	<p>Conduct year two of Northeast Distant Area experiment.</p> <p>Pursue other cooperative research funds and programs.</p>
<p>Improve knowledge of (1) basic biology and stock status of shark species in the Northwest Atlantic and (2) the effects of bycatch mortality on shark populations.</p>	<p>Funded the following research:</p> <ul style="list-style-type: none"> - Center for shark research at Mote Marine Lab: shark biology - Univ of MI: shark nursery grounds - Gulf and South Atlantic Fishery Development Foundation/University of Florida: observer program and biology - COASTSPAN <p>Participated in pelagic shark assessment in February, 2000.</p>	<p>Developed draft National Plan of Action for Sharks.</p> <p>Continued shark research programs</p> <p>ICCAT Bycatch sub-committee recommended that SCRS conduct shark assessments in 2002.</p>	<p>Final Shark NPOA published commensurate with the FAO International Plan of Action for Sharks to assess direct and indirect shark fisheries, stock status, and promote more effective and sustainable shark management.</p> <p>Continued shark research programs</p> <p>ICCAT Bycatch sub-committee data preparatory meeting on pelagic sharks; ICCAT recommends blue and shortfin mako assessments be conducted in 2004.</p> <p>SCS data preparatory meeting for assessment</p>	<p>LCS Assessment</p> <p>SCS Assessment</p> <p>Continue shark research programs</p>

Recommendation	1999 Actions	2000 Actions	2001 Actions	
Increase research on the role of apex predators in structuring marine ecosystems, and assess the effects of bycatch of these stocks.	Funded COASTSPAN, a study to identify shark nursery areas.	Continued COASTSPAN program.	Continued COASTSPAN program Resource partitioning study underway. Post-release mortality study on sharks.	Continue COASTSPAN program. Continue resource partitioning study. Include bycatch data in SCS assessment
Reduce mortality and bycatch mortality of billfish captured in the directed fisheries for Atlantic HMS.		Time/area closures in the South Atlantic Bight and Gulf of Mexico; encouraged the voluntary use of circle hooks; live bait prohibition in Gulf of Mexico; funded circle hook research in longline fishery (Faltermann and Graves, 2000); conducted recreational circle hook research by NMFS scientists (Prince, Venizelos, and Ortiz, 2000)	Post-release mortality study on marlin.	
Determine the status of sailfish populations.			Preliminary assessment of sailfish conducted by ICCAT SCRS	

Recommendation	1999 Actions	2000 Actions	2001 Actions	Expected Actions in 2002
Conduct research on post-release mortality of recreationally-caught billfish, tunas, and sharks.	Funded research on: - MA Div. Marine Fisheries: Effects of Hook Design - Bluefin tuna tagging Sponsored Catch and Release Conference in Nov. 1999 to share data on this topic, identify further research needs	Continued NMFS-funded tagging programs.	Post-release mortality study on sharks and marlin. Continued NMFS-funded tagging programs.	Continue NMFS-funded tagging programs.
Improve data collection and monitoring of the recreational tuna, shark, and billfish fisheries.	New voluntary Charter/Headboat observer program and logbook program Increased tournament registration and reporting.	Increased enforcement of tournament reporting and registration requirements	Proposed rule for new monitoring system for recreational billfish and swordfish landings	Rulemaking on monitoring of recreational billfish and swordfish landings.

* Because stock assessments are conducted internationally by SCRS, NMFS does not produce domestic stock assessments for ICCAT species. However, NMFS has developed overfishing criteria based on the most recent assessment (1993) and has determined that West Atlantic sailfish are overfished and overfishing continues to occur.

8.5 Summary

It is difficult to compare fishing gears due to the differences in areas and seasons fished. Table 8.6 summarizes the total percentage of mortality attributed to bycatch for Atlantic HMS.

Table 8.6. Percent of Stock-Wide Mortality Attributed to U.S. Bycatch for HMS Stocks in 1998-2000 by weight (unless stated otherwise; Reported discards/total landings + discards).¹ Sources: SCRS, 2001.

Species/Stock	1998	1999	2000
North Atlantic Swordfish	4%	4.5%	10.1%
South Atlantic Swordfish	less than 0.1%	less than 0.1%	less than 0.1%
West Atlantic Bluefin Tuna ¹	4.5%	5.9%	4.7%
Large Coastal Sharks ²	10.5% (by number) ³	15% (by number) ³	13.7% (by number) ³
Pelagic Sharks ²	30.5% (by number) ⁴	16.2% (by number) ⁴	36.8% (by number) ⁵
Small Coastal Sharks ²	Unknown	Unknown	In preparation ⁶
North Atlantic Blue Marlin	3.5%	6.3%	7.2%
North Atlantic White Marlin	8.9%	14.8%	12.6%
West Atlantic Sailfish	4.6%	13.5%	8.9%
Spearfish	0%	0%	0%

¹ Based on the landings and discards reported to ICCAT for stocks fished on by U.S. fishermen. It should be noted that discards of BAYS tunas to ICCAT are generally not reported.

² There is no international estimate of total landings or discards of sharks, the percentages therefore reflect the U.S. mortality due to bycatch.

³ Cortes, 2000; E. Cortes, pers. comm. 2001

⁴ Recreational landings estimates from Cortes 2000; commercial estimates from Cortes 2000 and Cramer 1999 and 2000. For the commercial landings estimates, the commercial landings (in lbs dw) from Cortes 2000 were divided by the average sizes for pelagic and blue sharks for 1998 and 1999 from Cramer 1999 and 2000, respectively, to generate commercial landings by number. The number of dead discards for pelagic blue sharks for 1998 and 1999 were from Cramer 1999 and 2000, respectively.

⁵ Cortes, 2001b

⁶ Stock assessments for LCS and SCS will be conducted in 2002, which will include bycatch estimates.

In Table 3.47 of the HMS FMP, NMFS identified the significance of bycatch of certain species in various HMS fisheries. Table 8.7 below indicates action NMFS has taken to address those issues and reduce bycatch.

Table 8.7. Addressing Significant Bycatch Concerns in HMS Fisheries

Gear	Significant Bycatch Species	
Pelagic Longline	<ul style="list-style-type: none"> • bluefin tuna • undersized target species • mammals • sea turtles 	<ul style="list-style-type: none"> • Closed areas in Mid-Atlantic Bight in June; South Atlantic Bight area year-round, Charleston Bump Feb-April; DeSoto Canyon year-round; NED area • Gear modifications (gangion length and placement, line clippers and dipnets, handling and release guidelines for turtles) • Northeast Distant Area experiment • Educational workshops • Move after one entanglement • Modify target catch requirements for bluefin tuna retention in 2002
Bottom Longline	<ul style="list-style-type: none"> • undersized target species • prohibited shark species 	<ul style="list-style-type: none"> • Review prohibited shark species and minimum sizes at 2002 shark stock assessments <p>Note: Due to an emergency rule implementing the terms of a settlement agreement, minimum sizes are not in effect in the commercial fishery.</p>
Shark Gillnet	<ul style="list-style-type: none"> • undersized target species • protected species • prohibited shark species 	<ul style="list-style-type: none"> • Observer coverage to collect necessary data • Consider VMS requirement during right whale season • Closed area to drift gillnets (strikenets only) • Temporary closure (30 days) due to leatherback interactions

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