

Highly Migratory Species Current Bycatch Priorities and Implementation Plan

[NOTE: This is a public, working document that will be revised in the future as additional bycatch minimization opportunities occur.]

Monitoring

Priorities for FY04:

- Investigate baseline logbook and/or observer program in the Bluefin Tuna Purse Seine fishery
- Investigate pilot observer study in Harpoon fishery
- Evaluate (HMS) Headboat mandatory observer coverage and baseline program
- Investigate bycatch-related data collection through the Large Pelagics Survey
- Evaluate trip vs. set logbook reporting differences

Priorities for FY05:

- Increase observer coverage in pelagic longline, bottom longline, and shark gillnet fisheries
- Promote charterboat voluntary observer coverage & pilot program
- Pursue Tuna General and HMS Angling category bycatch data collection program
- Increase sample sizes for MRFSS For-Hire/LPS Headboat survey

Research

Priorities for FY04:

- Investigate fishing protocols/gear modifications (artificial bait, circle hooks, etc.) to reduce bycatch and bycatch mortality (non-sea turtle) in longline, gillnet and handgear fisheries
- Continue research on post-release mortality of HMS
- Increase research on role of apex predators in structuring marine ecosystems

Priorities for FY05:

- No specific activities have been identified at this time

Management

Priorities for FY04:

- Implement Amendment 1 (Shark Amendment) final measures
- Continue analyses of time/area closure effectiveness and investigate new or modified measures as appropriate
- Evaluate applicability of bycatch reduction measures from the Northeast Distant experimental fishery to other U.S. and international fleets

Priorities for FY05:

- Investigate methods to reduce overcapacity
- Implement new or modified bycatch management measures as appropriate

Education/Outreach

Priorities for FY04:

- Develop handling and release techniques brochure
- Update the NOAA Fisheries HMS bycatch website with bycatch related materials
- Prepare materials for trade shows and conferences for distribution
- Publicize the availability of HMS identification guide to fishermen, constituents, and interested parties

Priorities for FY05:

- Conduct workshops for high priority fisheries

- Attend trade shows & conferences where fishery participants attend

Atlantic Highly Migratory Species Bycatch Implementation Plan FY04-FY05

Introduction

Bycatch has become a central concern of fishing industries, resource managers, scientists, and the public, both nationally and globally. Bycatch can result in death or injury to discarded fish, sea turtles, sea birds, and marine mammals. It is essential that this component of total fishing-related mortality be incorporated into (fish) stock assessments and evaluation of management measures. The Magnuson-Stevens Fishery Conservation and Management Act defines bycatch as fish which are harvested in a fishery, but which are not sold or kept for personal use, and includes economic and regulatory discards. The Marine Mammal Protection Act and Endangered Species Act also require reduction of bycatch and bycatch mortality of marine mammals, listed species, and seabirds. As bycatch tends to occur in fisheries that operate across jurisdictional boundaries, governing bodies, and legal statutes, bycatch reduction often becomes a complex issue. Bycatch reduction in Highly Migratory Species (HMS) fisheries and bycatch reduction of HMS in other fisheries is no exception.

In 1999, NOAA Fisheries developed the Atlantic HMS bycatch reduction program which 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 those bycatch and bycatch reduction measures can be found in Section 3.5 of the Fishery Management Plan for Atlantic Tunas, Swordfish and Sharks (HMS FMP; NMFS, 1999). Additional information on bycatch reduction measures can be found in Regulatory Amendment 1 to the HMS FMP (NMFS, 2000), Regulatory Adjustment 2 to the HMS FMP (NMFS, 2002), as well as Amendment 1 to the HMS FMP (NOAA Fisheries, 2003) and annual Stock Assessment and Fishery Evaluation Reports. All documents can be located on the internet at www.nmfs.noaa.gov/sfa/hmspg.html.

Data collection and management measures related to bycatch vary by gear type as well as type and magnitude of bycatch and is summarized in the table below. Generally, gear types with documented bycatch issues have been subject to more detailed data collection programs and regulatory measures to reduce bycatch and/or bycatch mortality. Gear types for which documentation indicates relatively low levels of bycatch or for which little documentation has been gathered are subject to fewer bycatch-related controls. For example, pelagic longline gear is known to interact with numerous bycatch species including sea turtles, marine mammals, bluefin tuna, billfish, and several non-target finfish and NOAA Fisheries has required logbook and observer reporting and implemented several time-area closures and gear modifications to monitor and reduce bycatch in this fishery. In contrast, two years of observer coverage on the bluefin tuna purse seine fleet documented relatively low levels of non-target finfish bycatch, no bycatch of sea turtles and only one marine mammal which was released alive. NOAA Fisheries currently does not collect bycatch-related data on this gear type due to its low bycatch rates.

Table 1. Summary of bycatch species in HMS fisheries, Marine Mammal Protection Act (MMPA) category, Endangered Species Act (ESA) requirements, data collection, and management measures by fishery/gear type.

Fishery/Gear Type	Bycatch Species	MMPA Category	ESA Requirements	Bycatch Data Collection	Management Measures
Pelagic Longline	Bluefin tuna Billfish Undersize target species Marine mammals Sea turtles Seabirds Non-target finfish Prohibited shark species Large Coastal Shark species after closure	Category I	Jeopardy finding in 2000, Reasonable and Prudent Alternative implemented 2001	Permit requirement (1985); logbook requirement (SWO- 1985; SHK - 1993); observer requirement (1992), EFPs (2001, 2002, 2003)	BFT target catch requirements (1981); quotas (SWO - 1985; SHK - 1993); prohibit possession of billfish (1988); minimum size (1995); gear marking (1999); line clippers, dipnets (2000); MAB closure (1999); limited access (1999); limit the length of mainline (1996-1997 only); move 1 nm after an interaction (1999); voluntary vessel operator workshops (1999); GOM closure (2000); FL, Charleston Bump, NED closures (2001); gangion length, corrodible hooks, de-hooking devices, handling & release guidelines (2001); NED experiment (2001); VMS (2003)
Shark Bottom Longline	Prohibited shark species Target species after closure Sea turtles Smalltooth sawfish Non-target finfish	Category III	ITS, Terms & Conditions, RPMs	Permit requirement (1993); logbook requirement (1993); observer coverage (1994)	Quotas (1993); trip limit (1994); gear marking (1999); handling & release guidelines (2001); <i>line clippers, dipnets, corrodible hooks, de-hooking devices, move 1 nm after an interaction (2004); South Atlantic closure, VMS (2005)</i>
Shark Gillnet	Prohibited shark species Sea turtles Marine mammals Non-target finfish Smalltooth sawfish	Category II	ITS, Terms & Conditions, RPMs	Permit requirement (1993); logbook requirement (1993); observer coverage (1994)	Quotas (1993); trip limit (1994); gear marking (1999); deployment restrictions (1999); 30-day closure for leatherbacks (2001); handling & release guidelines (2001); net checks (2002); whale sighting (2002); <i>VMS (2004)</i>
BFT Purse Seine	Undersize target species Non-target finfish	Category III	ITS, Terms & Conditions	Permit requirement (1982); observer requirement (1996, 2001 only); EFPs (2002, 2003 only)	Quotas (1975); limited access, individual vessel quotas (1982); minimum size (1982)

BFT & SWO Harpoon	Undersize target species	Category III	ITS, Terms & Conditions	Permit requirement (BFT - 1982; SWO - 1987); SWO logbook requirement (1987)	Quotas (BFT - 1982; SWO - 1985); minimum size (BFT - 1982; SWO - 1985)
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Table 1. Continued.

Fishery/Gear Type	Bycatch Species	MMPA Category	ESA Requirements	Bycatch Data Collection	Management Measures
Handgear - Commercial	Undersize target species Non-target finfish	Category III	ITS, Terms & Conditions	Permit requirement (BFT - 1982; SWO 1987; SHK - 1993); logbook requirement (SWO - 1985; SHK - 1993)	Regulations vary by species, including quotas, minimum sizes, retention limits, landing form
Handgear - Recreational	Undersize target species Non-target finfish	Category III	ITS, Terms & Conditions	Large Pelagic Survey (1992); MRFSS (1981)	Regulations vary by species, including minimum sizes, retention limits, landing form; BFT quotas

BFT - Bluefin Tuna, SWO - Swordfish, ITS - Incidental Take Statement, RPM - Reasonable and Prudent Measure, SHK - Shark, EFP - Exempted Fishing Permit, MAB - Mid-Atlantic Bight, GOM - Gulf of Mexico, FL - Florida, NED - Northeast Distant Water, VMS - Vessel Monitoring System

The incidental catch of seabirds is a concern in longline fisheries, including those fisheries using either pelagic or demersal gear and fisheries occurring in the U.S. EEZ and elsewhere around the world. This issue is addressed in the U.S. Plan of Action for Reducing the Incidental Catch of Seabirds in Longline Fisheries (NPOA), which was jointly developed by NOAA Fisheries, U.S. Fish & Wildlife Service (USFWS) and the Department of State and published by NOAA Fisheries in February 2001. The U.S. NPOA was developed in response to the United Nations' Food & Agriculture Organization's International Plan of Action for Reducing the Incidental Catch of Seabirds in Longline Fisheries (IPOA) that was adopted in 1999. The IPOA calls on FAO member states to conduct assessments of its longline fisheries to determine if a seabird bycatch problem exists.

The NPOA is carried out in large part by the Interagency Seabird Working Group consisting of representatives from those three agencies. The purpose of the plan is to provide an action plan that reduces incidental catch of seabirds in U.S. longline fisheries, to provide national-level policy guidance on reducing impacts on seabirds, and to call on NOAA Fisheries, in cooperation with USFWS, to conduct assessments of all U.S. longline fisheries to determine whether a seabird bycatch problem exists. The plan further calls on NOAA Fisheries, cooperating with USFWS, to work through the regional fishery management council process in partnership with longline fishery representatives to develop and implement seabird mitigation measures in those fisheries that have a seabird bycatch problem. Such measures should attempt to reduce impacts on seabirds to the maximum extent practicable. Other action elements of the NPOA include: data collection on seabird bycatch; research and development of mitigation measures and methods; outreach, education, and training about seabird bycatch; annual reports included in SAFE documents; and collaboration with USFWS on seabird

issues. At this time, the bycatch of seabirds in the U.S. Atlantic pelagic and bottom longline fisheries has not been identified as an issue of concern (2002 SAFE Report, NOAA Fisheries).

The NPOA and additional information about this issue can be found at <http://www.fakr.noaa.gov/protectedresources/seabirds/national.htm>.

Standardization and enhancement of bycatch reporting methodologies, including data collection and monitoring

Standardization of bycatch reporting methodologies is essential in order to calculate accurate estimates of bycatch across fisheries. In addition, bycatch estimates from some fisheries may be lacking or based on out of date information. In order to provide accurate estimates of bycatch from these fisheries, new data collection programs or those sporadically conducted in the past would need to be initiated or restarted.

NOAA Fisheries may conduct the following activities in FY04.

Investigate baseline logbook and/or observer program in the Bluefin Tuna Purse Seine fishery

The bluefin tuna purse seine fishery has had sporadic observer coverage in the past. In order to evaluate the extent of bycatch in this fishery currently, new data would need to be collected by onboard observers to characterize any changes in the fishery. Due to the small number of participants, five vessels, such a program might be easy to implement depending on availability of funds. In addition, vessels in this fishery are required to submit logbooks detailing their fishing trips only if they participate in other fisheries that have reporting requirements. Requiring logbooks that include information on bycatch would increase data on the amount and type of bycatch occurring in this fishery.

Investigate pilot observer study in Harpoon fishery

The bluefin tuna harpoon fishery is very selective and it is believed that there is relatively no bycatch due to the nature of the gear. However, in order to verify this a pilot observer program could be designed to collect bycatch data. Due to the small number of participants, such a program might be easy to implement depending on availability of funds. In addition, vessels in this fishery are required to submit logbooks detailing their fishing trips only if they participate in other fisheries that have reporting requirements. Requiring logbooks that include information on bycatch would increase data on the amount and type of bycatch, particularly of undersized target species, occurring in this fishery.

Evaluate (HMS) headboat mandatory observer coverage & baseline program

Observer coverage of the headboat fishery targeting HMS has been limited both temporally and spatially. An option under the Large Pelagics Survey (LPS) has provided for the dockside survey contractor to gather at-sea observations from selected headboats targeting HMS from Virginia to Maine. However, this option has not been exercised on a consistent basis and the data that have been gathered are sparse. Additional observations would be necessary to fully evaluate the extent of bycatch in this fishery. Comparisons with previously collected data should also be considered. In order to evaluate the full extent of bycatch in this fishery, the geographic scope would need to be expanded to include the South Atlantic, Gulf of Mexico and Caribbean.

Investigate bycatch-related data collection through the Large Pelagics Survey

The Large Pelagics Survey (LPS) is a two stage sampling design consisting of dockside intercepts to gather catch and biological data, and a telephone survey to gather effort information. In theory, the intercept survey will capture data regarding released catch of finfish but no data are collected on protected species bycatch. It might be possible to alter the survey design to gather data on these types of interactions. Statisticians familiar with the survey design would need to evaluate specific changes based on the type of data and precision required. Their input would also be needed to determine whether the LPS should be expanded and how.

Evaluate trip vs set logbook reporting differences (e.g., snapper/grouper trip forms vs pelagic logbook set forms)

Difficulties have been encountered in comparing data from various fisheries that utilize different reporting methodologies, in particular, comparing trip vs. set data. Evaluation of the differences in reporting methods could be undertaken to investigate the effects on bycatch estimates. For instance, bycatch estimates may be different when pooled over the course of a trip as opposed to those reported on a set by set basis.

NOAA Fisheries may conduct the following activities in FY05.

Increase observer coverage in pelagic longline (PLL), bottom longline (BLL), and shark gillnet fisheries

Vessels in both the pelagic and bottom longline fisheries are required to submit logbooks and approximately eight percent of PLL fishing vessels are selected for mandatory observer coverage. Observer coverage in the BLL shark fishery ranges from two to five percent. Shark gillnet vessels operating in the right whale calving season are required to have 100 percent observer coverage, while PLL vessels operating in the Northeast Distant Water experimental fishery were also required to carry observers at all times. Increased observer coverage and modifications to current logbook design to allow reporting of more bycatch species could

enhance bycatch estimates from these fisheries.

Promote charterboat voluntary observer coverage & pilot program

Voluntary observer coverage on charterboats targeting HMS was implemented in the HMS FMP. Follow-up efforts to strengthen such a program could be evaluated for cost-effectiveness. A pilot program focused on a limited geographic basis could be evaluated with industry input and cooperation.

Increase sample sizes for MRFSS For-Hire/LPS Headboat survey

Starting in 2003, the MRFSS implemented a new survey design for the for-hire fisheries (charter and headboat) on the Atlantic coast which complements the survey conducted in the Gulf of Mexico since 2000. Random digit dialing was replaced with a vessel directory in order to define the sampling frame and make sampling more efficient. In addition, for-hire vessels possessing an HMS permit are identified in the vessel directory and a minimum of ten percent by state are included in the sample. Increased sample sizes for this survey would allow for the collection of more data and in turn, better estimates of catch and bycatch. At-sea sampling is also a part of this new methodology which would allow for the direct observation of catch and bycatch.

Pursue Tuna General and HMS Angling category bycatch data collection program

Bycatch data from the general category tuna and HMS Angling category fisheries is currently collected through the Large Pelagics Survey (LPS). However, bycatch data on interactions is limited to various finfish species and does not include protected species interactions. A requirement that permit holders in these fisheries submit logbooks detailing their fishing trips could be evaluated. As of September 30, 2003, there were 18,249 HMS Angling and 5,300 General Category permits issued. The scope of such a logbook program would be enormous and time consuming to administer and analyze the data, especially if negative reports were required, i.e. requiring a report when no trips were taken. A separate call-in system for protected species interactions could be investigated as a possible means of gathering data from these fisheries. However, the LPS (angling and general category) currently suffers from high non-response rates, and implementing additional reporting requirements may increase non-response in the LPS due to increased reporting burden. An alternative approach would be to modify the existing LPS to collect information on protected species interactions.

Research needs

Collection of bycatch-related data offers insights into the types and magnitudes of bycatch by fishery or gear type. However, dedicated research into fishing techniques or gear modifications is often necessary to elucidate “cleaner” fishing practices. For example, the Northeast Distant experimental fishery has tested bait types, time of set, and hook types over three years to determine whether pelagic

longline gear can be fished in a manner that does not have significant bycatch or bycatch mortality of sea turtles. This experiment uses commercial fishing vessels as research platforms following highly controlled fishing protocols scientifically designed to test the efficacy of different fishing methods in reducing sea turtle bycatch.

NOAA Fisheries may conduct the following activities in FY04.

Investigate fishing protocols/gear modifications (artificial bait, circle hooks, etc) to reduce bycatch and bycatch mortality (non-sea turtle) in bottom longline, handgear, and pelagic longline fisheries

Bottom longline and pelagic longline gear have documented bycatch of several species that are overfished, listed under ESA, or which are subject to the MMPA. Bottom longline gear has bycatch of sea turtles, smalltooth sawfish, and prohibited shark species. As noted above, pelagic longline gear is the subject of an experimental fishery to reduce sea turtle bycatch, however, research on fishing protocols or gear modifications to reduce bycatch of bluefin tuna, swordfish, billfish, other non-target finfish and marine mammals would reduce mortality on overfished and protected stocks, and potentially allow for modified, possibly less restrictive, management measures. Handgear (commercial and recreational) is less well studied than bottom or pelagic longline gear but limited information indicates that bycatch of non-target finfish as well as sea turtles occurs. Research on fishing methods to reduce non-target catches may reduce mortality on vulnerable species and promote sustainable fisheries. All fishing protocol/gear modification research should be designed with a goal of technology transfer to other domestic fisheries as well as international fisheries. While mechanisms exist to conduct fishing protocol/gear modification research (e.g., Saltonstall-Kennedy and Marine Fisheries Initiative grant programs, Cooperative Research Program), such research can often be expensive depending on the types of vessels used and the scale of the experiment (10Ks - 100Ks). Nevertheless, fishing protocol/gear modification research remains a high priority to reduce bycatch while developing sustainable fisheries.

Continue research on post-release mortality of HMS

Several studies on post-release mortality have been conducted or are underway (e.g., Falterman and Graves (2000) circle hook research in the longline fishery; Prince, Venizelos, and Ortiz (2000) recreational circle hook research; recreational satellite billfish tagging program; Berkeley and Edwards (1998) undersize swordfish and tuna research in the Gulf of Mexico longline fishery), however, more research on the effects of capture and fishing methods that reduce mortality of a broader range of species and fisheries is needed. This type of research can often be conducted in conjunction with other fishing operations, thereby keeping costs down, and grant programs exist that support this activity. Additionally, cooperative efforts with private institutions on tagging programs could also be pursued.

Increase research on role of apex predators in structuring marine ecosystems

This type of research often involves modeling and drawing on results from research conducted for other purposes as well as other data collection programs. For example, inputs on catches from logbook and observer programs as well as life history studies could be used to develop an ecosystem model. Models developed for other ecosystems could provide templates or guidance on methods to gain insight into the role of apex predators in structuring marine ecosystems. Additionally, funds dedicated to ecosystem research could be used to support large-scale projects on marine ecosystem structure.

NOAA Fisheries may conduct the following activities in FY05.

No specific activities have been identified at this time. Activities will be identified and developed as appropriate.

Possible new bycatch management measures on a fishery-by-fishery basis

The applicability and success of various management measures to reduce bycatch may be dependent on the type of fishery in question. Certain measures may be more successful than others in one fishery while having no effect in another. Evaluation of management measures individually and in combination with others should be undertaken to estimate their effectiveness in reducing bycatch.

NOAA Fisheries may conduct the following activities in FY04.

Implement Amendment 1 (Shark Amendment) final measures (bottom longline time-area closure, VMS, line clippers, dipnets, de-hooking devices)

The final Amendment 1 to the HMS FMP (Shark Amendment) contains a number of measures designed to address bycatch concerns in shark fisheries. Assuming that some or all of the measures are adopted, implementation would occur in 2004 and 2005. Data could then be collected and analyzed to evaluate the impacts of these measures on bycatch in the shark fisheries.

Continue analyses of time-area closure effectiveness and investigate new or modified measures as appropriate

NOAA Fisheries is currently analyzing the effectiveness of a number of time-area closures implemented in the pelagic longline fishery throughout the Atlantic and Gulf of Mexico. In addition, a time-area closure has been selected in the Final Amendment 1 for the bottom longline fishery off the coasts of Virginia, North Carolina, and South Carolina. These measures will be monitored to determine their adequacy in reducing bycatch. In addition to time/area

closures implemented for HMS fisheries, other closures implemented in other fisheries, i.e. Madison-Swanson closure off west Florida, Oculina Bank closure off of east Florida, may have indirect effects on HMS fisheries. Evaluation of these closures could be examined to determine what if any, impacts have occurred on HMS fisheries.

Evaluate applicability of bycatch reduction measures from Northeast Distant experimental fishery to the rest of the U.S. Atlantic pelagic longline fleet, other U.S. longline fleets, and on an international basis

The results of a three year experimental fishery in the Northeast Distant Water fishery may be applicable to pelagic longline fisheries elsewhere in reducing bycatch and/or minimizing bycatch mortality. The applicability of these measures could also be evaluated for other fisheries such as the bottom longline fishery, as appropriate. Efforts could be made to pursue the voluntary adoption of changes in fishing practices on an international basis as well.

NOAA Fisheries may conduct the following activities in FY05.

Investigate methods to reduce overcapacity

One method to reduce the impact of fishing on target species or bycatch in a fishery is to reduce the overall effort in the fishery, especially latent effort. A reduction of latent effort removes the possibility of large increases in effort once a fishery rebuilds or recovers. This would also result in a decrease in the bycatch associated with a potential increase in effort. An evaluation of both active and latent effort in the various HMS fisheries could be investigated along with its potential impact on bycatch. Vessel buyback programs have been implemented in various fisheries as a means of reducing effort. These programs must be authorized by Congress. If a vessel buyback program were to be authorized for HMS fisheries, the HMS Division would evaluate the effectiveness and possible implementation of such a program.

Implement new or modified bycatch management measures as appropriate

Bycatch in HMS fisheries should be monitored on an annual basis. Problem areas may be identified and addressed by designing new or modified management measures on a fishery by fishery basis as necessary. These measures could be implemented through rulemaking or amendment to the HMS FMP.

Education and outreach efforts

Increasing public awareness of the impacts of bycatch as well as research and management measures to reduce bycatch is a key component of a successful bycatch reduction program. While many fishermen directly affected by regulations to reduce bycatch are aware that bycatch is an issue,

increasing the understanding of why bycatch is an issue among the fishing community and general public would facilitate compliance with regulations as well as development of cooperative solutions to bycatch problems. The availability of bycatch related materials in different languages could also be explored as this would provide these types of materials to non-English speaking fishermen and other stakeholders.

NOAA Fisheries may conduct the following activities in FY04.

Develop handling & release techniques brochure

Laminated placards currently exist on handling and release techniques for marine mammals and sea turtles captured or entangled in pelagic longline gear. Additionally, NOAA Fisheries has developed a question and answer guide to Atlantic HMS regulations that includes all handling and release regulations (possession requirements and specifications for line clippers and dipnets, moving one nautical mile after an interaction with a sea turtle or marine mammal). A brochure that combines practical guidelines on how to handle and release sea turtles and marine mammals with regulatory requirements would provide a single reference for pelagic longline fishermen on the best way to reduce bycatch and bycatch mortality of these species. Brochures that provide regulatory requirements for handling and release of all species for other gear types could also be developed.

Put all bycatch-related regulations, technology information, and related information on the NOAA Fisheries HMS bycatch website

Currently, NOAA Fisheries maintains a dedicated webpage on bycatch issues that links to HMS-specific bycatch measures. The HMS webpage links to this page as well. This webpage needs to be updated, streamlined, and reviewed for completeness of all relevant information. Once completed, this webpage could become a focal point for distribution of all HMS-related bycatch information.

Prepare materials for trade shows and conferences for distribution

NOAA Fisheries currently does not have HMS-specific bycatch materials that are designed for the general public. Available materials are designed for use by fishermen at sea (laminated placards) or by parties affected by bycatch-related regulations (fishermen, dealers, coastal state fisheries agencies, etc). Development of high quality color brochures, magnets, posters, or other outreach materials that are designed for the general public could be widely distributed at trade shows, boat shows, conferences, association meetings, etc as well as HMS permit holders. Broad distribution of such materials would increase public understanding of bycatch issues and potentially the development and support for cooperative solutions to bycatch problems.

Publicize the availability of HMS identification guide to fishermen, constituents, and interested parties

NOAA Fisheries has collaborated with Rhode Island Sea Grant to produce a *Guide to Sharks, Tunas, & Billfishes of the U.S. Atlantic & Gulf of Mexico*. The guide will provide an easy to use resource for the identification of HMS. The guide includes color photos of many HMS, as well as species descriptions and comparisons. The guide will be printed on water-resistant paper for durability. NOAA Fisheries will advertise the availability of the guide when it has been printed.

NOAA Fisheries may conduct the following activities in FY05.

Conduct workshops for high priority fisheries

Workshops conducted in fishing communities have been used to communicate issues and foster cooperative solutions. NOAA Fisheries could hold workshops in fishing communities of high priority fisheries to share technology information on fishing protocols/gear modifications that reduce bycatch and/or bycatch mortality, answer questions on regulations and requirements, discuss alternative approaches to bycatch reduction, and build communication bridges with affected parties. Holding workshops on a large scale could be expensive and logistically difficult, however, the benefits may be substantial.

Attend trade shows & conferences where fishery participants attend

Using the outreach distribution materials mentioned above, NOAA Fisheries could support manned booths at trade shows, boat shows, and conferences, as well as attending association meetings to educate the public on bycatch issues. Having NOAA Fisheries personnel attend such events would increase communication with constituents and further NOAA Fisheries' goals of reducing bycatch while developing sustainable fisheries.