DRAFT

ENVIRONMENTAL ASSESSMENT,

REGULATORY IMPACT REVIEW, AND

INITIAL REGULATORY FLEXIBILITY ANALYSIS

FOR A

PROPOSED RULE

TO IMPLEMENT COMPLEMENTARY MANAGEMENT MEASURES FOR CARIBBEAN CLOSURES AND DEHOOKING REQUIREMENTS FOR THE ATLANTIC SHARK FISHERY

United States Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Highly Migratory Species Management Division

March 2006

Proposed Rule to Implement Complementary Caribbean Closures and Dehooking Requirements for the Atlantic Shark Fishery

Actions: Implement complementary measures from the Comprehensive Amendment to the Fishery Management Plans of the U.S. Caribbean and additional handling and release equipment requirements for the Atlantic shark fishery.

Type of Statement:	Draft Environmental Assessment, Regulatory Impact Review, and Initial Regulatory Flexibility Analysis
Lead Agency:	National Marine Fisheries Service
For Further Information:	Michael Clark Highly Migratory Species Management Division (F/SF1) 1315 East-West Highway: Silver Spring, MD 20910 (301) 713-2347

Abstract:

The National Marine Fisheries Service (NMFS) is proposing regulations to reduce post-release mortality of sea turtles and other non-target species caught by participants in the Atlantic bottom longline (BLL) shark fishery. An objective of the final rule implementing Amendment 1 to the Fishery Management Plan (FMP) for Atlantic Tunas, Swordfish, and Sharks (December 24, 2003, 68 FR 74746) was to minimize, to the extent practicable, bycatch of living marine resources and the mortality of such bycatch that cannot be avoided in the fisheries for Atlantic sharks. That rule finalized measures that required the use of dehooking devices for sea turtles pending their approval.

The purpose of this rulemaking is to approve and update the necessary equipment and protocols that Atlantic shark fishermen with BLL gear onboard must possess, maintain, and utilize for the safe handling, release, and disentanglement of sea turtles and other non-target species consistent with the Fishery Management Plan (FMP) and the October 29, 2003, Biological Opinions (BiOp) for the shark fishery. Significant new information, techniques, and equipment have been approved and implemented for the pelagic longline (PLL) fishery since Amendment 1 to the FMP for Atlantic Tunas, Swordfish, and Sharks implemented requirements for the BLL fishery. Research conducted in the Northeast Distant statistical reporting area indicated that maximizing the amount of gear removed from sea turtles significantly increases post-release survival. Dehooking devices that meet NMFS design standards are now available. Because of similarities between the fisheries, NMFS is reassessing the BLL requirements in light of the July 6, 2004, rule for the PLL fishery.

This rulemaking would also implement complementary measures that were enacted by the Caribbean Fishery Management Council that would prohibit all vessels that have been issued Highly Migratory Species (HMS) permits with BLL gear onboard from fishing with, or deploying, any fishing gear in six distinct areas off the U.S. Virgin Islands and Puerto Rico, year-round, to protect Essential Fish Habitat (EFH) of reef-dwelling fish species. The final rule that implemented this measure for fisheries managed by the CFMC published on October 28, 2003 (70 FR 62073).

The impacts of this proposed rulemaking were analyzed in two separate documents to comply with the National Environmental Policy Act (NEPA). Updating the requirements for safe handling, release, and dehooking of sea turtles and other non-target species are addressed directly in this Environmental Assessment (EA). Impacts of complementing the regulations imposed by the Caribbean Fishery Management Council to protect EFH were addressed in an Environmental Impact Statement (EIS) published by the Caribbean Fishery Management Council that published in the Federal Register on June 16, 2005 (70 FR 35053). The EIS is available online at: www.caribbeanfmc.com/fishery_management_plans.htm.
References to various sections of the EIS are incorporated into this EA for the benefit of the reader.

Finding Of No Significant Environmental Impact for a Proposed Rule to Implement Additional Requirements for the Handling and Release of Sea Turtles and Other Non-Target Species and Measures from the Comprehensive Amendment to the Fishery Management Plans of the U.S. Caribbean for the Atlantic Shark Bottom Longline Fishery

National Marine Fisheries Service
March 2006

The Highly Migratory Species Management Division of the Office of Sustainable Fisheries submits the attached Environmental Assessment (EA) for the Atlantic shark fisheries for Secretarial review under the procedures of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). This EA was developed as an integrated document that includes a Regulatory Impact Review. Copies of the EA, Regulatory Impact Review (RIR), and Initial Regulatory Flexibility Analysis (IRFA) are available at the following address:

Highly Migratory Species Management Division, F/SF1
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910
(301) 713-2347

or

http://www.nmfs.noaa.gov/sfa/hms

The EA considers information contained in the Environmental Impact Statement (EIS) associated with the 1999 Final Fishery Management Plan for Atlantic Tunas, Swordfish and Sharks (1999 FMP), the 2005 Stock Assessment and Fishery Evaluation (SAFE) report for HMS, and the 2003 Amendment 1 to the FMP for Atlantic Tunas, Swordfish, and Sharks. Furthermore, this EA considers information contained in an FSEIS produced by the CFMC to implement a comprehensive amendment to amend its Reef Fish, Spiny Lobster, Queen Conch, and Coral FMPs (2005). The implementation of complementary Atlantic HMS measures and the impacts on HMS fisheries were analyzed in the FSEIS associated with the Comprehensive Amendment prepared by the CFMC, which filed with the Environmental Protection Agency on June 17, 2005. The Notice of Availability (NOA) for this FSEIS was published in the Federal Register by the Environmental Protection Agency on June 24, 2005 (70 FR 36582). The Finding of No Significant Impact for this document pertains solely to the analysis of the impacts of implementation additional handling, release, and disentanglement equipment for vessels participating in the Atlantic shark bottom longline fishery. Impacts to the human environment resulting from the Comprehensive Amendment prepared by the CFMC are analyzed in this EIS completed for that action.

National Oceanic and Atmospheric Administration Administrative Order 216-6 (NAO 216-6) (May 20, 1999) contains criteria for determining the significance of the impacts of a proposed action. In addition, the Council on Environmental Quality regulations at 40 C.F.R. 1508.27 state that the significance of an action should be analyzed both in terms of "context" and "intensity." Each criterion listed below is relevant to making a finding of no significant impact and has been considered individually, as well as in combination with the others. The significance of this action is analyzed based on the NAO 216-6 criteria and CEQs "context" and "intensity" criteria.

These include:

1. Can the action be reasonably expected to jeopardize the sustainability of any target species that may be affected by the action?

No. This proposed action would require participants in the Atlantic shark fishermen with BLL gear onboard to possess, maintain, and utilize additional equipment for the safe handling, release, and disentanglement of sea turtles, smalltooth sawfish, and other non-target species. This required equipment could also be used to remove gear from target species.

2. Can the action be reasonably expected to jeopardize the sustainability of any non-target species?

No. The additional equipment that Atlantic shark fishermen with BLL gear onboard would be required to possess, maintain, and utilize would increase the post-release survival of protected resources caught on BLL gear. This equipment is necessary to maximize the amount of gear that can be removed from protected species, thereby lowering post-release mortality rates.

3. Can the action be reasonably expected to allow substantial damage to the ocean and coastal habitats and/or essential fish habitat (EFH) as defined under the Magnuson-Stevens Act and identified in FMPs?

No. The provisions in this proposed action that would require additional dehooking equipment would not have any impact on fishing effort, authorized gears employed, or how gear is deployed or retrieved.

4. Can the action be reasonably expected to have a substantial adverse impact on public health and safety?

No. The proposed action would facilitate safe handling, release, and disentanglement of protected resources. This equipment would allow fishermen to safely release sea turtles and facilitate the expedient removal of fishing gear from the animals. Protected resources that cannot, or should not, be boated could be released, disentangled, or dehooked safely with the equipment that would be required by this action.

5. Can the action be reasonably expected to have an adverse impact on endangered or threatened species, marine mammals, or critical habitat of these species?

No. The proposed action would have positive impacts on these species because the dehooking equipment would allow Atlantic shark fishermen with BLL gear onboard to remove as much fishing gear as possible from protected species that interact with their gear.

6. Can the action be expected to have a substantial impact on biodiversity and ecosystem function within the affected area (e.g. benthic productivity, predator-prey relationships, etc.)?

No. The proposed action would facilitate gear removal from protected resources. Removing gear could result in increased post-release survival and complementary closures to bottom-tending gear may improve benthic productivity and EFH.

7. Are significant social or economic impacts interrelated with significant natural or physical environmental effects?

Atlantic shark fishermen with BLL gear onboard would be expected to procure, purchase, and/or construct additional equipment that meets the NMFS-approved design standards described in Appendix A of this document. These design standards allow Atlantic shark fishermen with BLL gear onboard to construct some of the equipment from materials that are readily available using skills that most vessel operators likely possess, thus potentially reducing some of the costs. These costs are not expected to be significant. Furthermore, some vessel operators that also fish with PLL gear already possess the equipment that would be required by this proposed action.

8. To what degree are the effects on the quality of the human environment expected to be highly controversial?

The effects on the quality of the human environment are not expected to be highly controversial.

9. Can the proposed action be reasonably expected to result in substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas?

No. This proposed action does not apply to any of the unique areas listed.

10. To what degree are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

The proposed action is not likely to be highly uncertain or involve unique or unknown risks.

11. Is the action related to other actions with individually insignificant, but cumulatively significant impacts?

This proposed action is related to another action that is proposed in the draft Consolidated HMS FMP (August 19, 2005, 70 FR 48804) that requires vessel owners and operators fishing with BLL gear to attend mandatory workshops on safe handling, release, and disentanglement of

protected species. The social, economic, and ecological impacts are analyzed in the draft environmental impact statement prepared for that proposed action. Cumulative impacts are not expected to be significant. In addition, this proposed action is related to the rule (July 6, 2004, 69 FR 40734) affecting PLL fishermen, which requires PLL fishermen to safely handle, disentangle and remove as much gear as possible from sea turtles and other non-target species.

12. Is the proposed action likely to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.

This proposed action would not adversely affect any of the locations listed.

13. Can the proposed action be reasonably expected to result in the introduction or spread of a non-indigenous species?

No. The proposed action would not result in the introduction or spread of any non-indigenous species.

14. Is the proposed action likely to establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration?

No. A similar action for the PLL fishery became effective on August 2, 2004 (July 6, 2004, 69 FR 40734). That action resulted in a suite of NMFS-approved equipment for that fishery that would increase gear removal efficiency, and as a result, increase post-hooking survival of protected resources. Because of similarities between the PLL and BLL fisheries, NMFS is proposing to require Atlantic shark fishermen with BLL gear onboard to possess additional NMFS-approved equipment; the same as their pelagic longline counterparts. Amendment 1 to the FMP for Atlantic Tunas, Swordfish, and Sharks for Atlantic Tunas, Swordfish, and Sharks (December 24, 2003, 68 FR 74746) required the use of dehooking equipment onboard vessels with bottom longline gear onboard; however, at that time NMFS-approved dehooking equipment was not available.

15. Can the proposed action be reasonably expected to threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment?

No. NMFS has determined preliminarily that these regulations would be implemented in a manner consistent to the maximum extent practicable with the enforceable policies of those coastal states on the Atlantic including the Gulf of Mexico and Caribbean that have approved coastal zone management programs. Letters will be sent to the relevant states asking for their concurrence when the proposed rule is filed with the Federal Register

16. Can the proposed action be reasonably expected to result in beneficial impacts not otherwise identified and described above?

Yes. The requirement to possess, maintain, and utilize additional equipment could increase the number of hooks that could be salvaged decreasing the need for fishermen to expend resources replacing hooks.

In view of the information presented in this document and the analysis contained in the attached Environmental Assessment for a proposed rule to implement additional requirements for the handling and release of sea turtles and other non-target species for the Atlantic shark fishery, it is hereby determined that this action would not significantly impact the quality of the human environment as described above and in the Environmental Assessment. In addition, all impacts to potentially affected areas, including national, regional and local, have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an EIS for this action is not necessary.

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William T. Hogarth, Ph.D. Date
Assistant Administrator for Fisheries

TABLE OF CONTENTS

1.0 PURPOSE AND NEED FOR ACTION

1.1. Management History

In 1993, the National Marine Fisheries Service (NMFS) implemented the Fishery Management Plan (FMP) for Sharks of the Atlantic Ocean, which established three management units: large coastal sharks (LCS), small coastal sharks (SCS), and pelagic sharks (PS). Under that FMP, species groups were not managed on a regional basis. NMFS identified LCS as overfished, and therefore, implemented commercial quotas for LCS and also established recreational harvest limits for all sharks.

In April 1999, NMFS published the FMP for Atlantic Tunas, Swordfish and Sharks (1999 FMP), which included numerous measures to rebuild or prevent overfishing of Atlantic sharks in commercial and recreational fisheries. The 1999 FMP replaced the 1993 FMP, and the implementing regulations were published on May 28, 1999 (64 FR 29090). The 1999 FMP addressed numerous shark management measures, including: reducing commercial LCS and SCS quotas, establishing a commercial quota for blue sharks and a species-specific quota for porbeagle sharks, expanding the list of prohibited shark species, implementing a limited access permitting system in commercial fisheries, and establishing season-specific over- and under-harvest adjustment procedures. The 1999 FMP also partitioned the LCS complex into ridgeback and non-ridgeback categories but did not include regional quota measures.

In 2003, NMFS found it necessary to re-examine and amend the measures enacted in the 1999 FMP based on the 2002 stock assessments, litigation, and public comments. Implementing regulations for Amendment 1 to the FMP for Atlantic Tunas, Swordfish, and Sharks (Amendment 1) were published on December 24, 2003 (68 FR 74746). Management measures enacted in the amendment included: re-aggregating the large coastal shark complex, using maximum sustainable yield (MSY) as a basis for setting commercial quotas, eliminating the commercial minimum size restrictions, establishing three regional commercial quotas (Gulf of Mexico, South Atlantic, and North Atlantic) for LCS and SCS management units, implementing trimester commercial fishing seasons effective January 1, 2005, imposing gear restrictions to reduce bycatch, and establishing a time/area closure off the coast of North Carolina effective January 1, 2005.

One objective of the final rule implementing Amendment 1 was to minimize, to the extent practicable, bycatch of living marine resources and the mortality of such bycatch that cannot be avoided in the fisheries for Atlantic sharks. That rule finalized measures that required the use of non-stainless steel corrodible hooks aboard shark bottom longline (BLL) fishing vessels, the possession of release equipment (long-handled line cutters and dipnets) on vessels with shark BLL gear, and required Atlantic shark fishermen with BLL onboard to move one nautical mile after an interaction with a protected species to reduce the likelihood of further interactions. At that time, dehooking devices for sea turtles had not yet been approved by NMFS. Therefore, while their use is required by Amendment 1, the implementation of the use of release equipment was delayed pending approval of dehooking devices. However, the other

measures listed above were implemented to reduce interactions with, and post-release mortality of, sea turtles in compliance with the October 2003 Biological Opinion (BiOp).

1.2. Need for Action and Objectives

The purpose of this rulemaking is to approve and update the necessary equipment and protocols so that Atlantic shark fishermen with BLL gear onboard must possess, maintain, and utilize for the safe handling, release, and disentanglement of sea turtles and other non-target species. Significant new information, techniques, and additional equipment have been approved and implemented for the pelagic longline (PLL) fishery since Amendment 1 implemented requirements for the BLL fishery. Research conducted in the Northeast Distant statistical reporting area indicated that maximizing the amount of gear removed from sea turtles significantly increases post release survival. Dehooking devices that meet NMFS design standards are now available. Because of similarities between the fisheries, it is prudent to reassess the BLL requirements in light of the July 6, 2004, rule for the PLL fishery. Additional requirements for the BLL fishery would further reduce post-hooking mortality of sea turtles and other non-target species and maintain compliance with the October 29, 2003, Biological Opinion (BiOp) for the shark BLL fishery.

In June 2005, NMFS held nine voluntary workshops on safe handling and disentanglement techniques for sea turtles and other protected resources for participants in the Atlantic shark BLL fishery (May 20, 2005, 70 FR 29285). These workshops allowed approximately 60 participants to gain proficiency in the techniques for safe handling and release of protected resources. These workshops were held to comply with reasonable and prudent measures (RPM) one and three, identified in the October 2003 BiOp. The draft Consolidated FMP for HMS, which published on August 19, 2005 (70 FR 48804), included a range of alternatives for future certification workshops on the techniques for handling and disentanglement to further increase BLL fishermen's proficiency at using the equipment to handle, release, and disentangle sea turtles and other non-target species.

This rulemaking would also implement complementary measures for Atlantic HMS fisheries that were implemented by the Caribbean Fishery Management Council (CFMC) for Council-managed fisheries on October 28, 2005 (70 FR 62073). The purpose of this action is to implement consistent measures between council-managed and Atlantic HMS fisheries, with the intent of minimizing adverse impacts to Essential Fish Habitat (EFH) and reducing fishing mortality on mutton snapper, red hind, and other reef-dwelling species. The proposed rule would prohibit all vessels issued HMS permits with BLL gear onboard from fishing with, or deploying, any fishing gear in six distinct areas off the U.S. Virgin Islands and Puerto Rico, year-round. Fishing with other bottom-tending gear (pots, traps, gillnets, and trammel nets) is already prohibited in these areas to minimize adverse impacts to coral or hard bottom habitats. These areas are defined in § 50 Part 622.33 (a) of the Code of Federal Regulations.

2.0 SUMMARY OF THE ALTERNATIVES

This section provides a summary of the alternatives considered in this rulemaking. The following alternatives explore the range of management options available to implement additional requirements and equipment in the Atlantic shark BLL fishery for safe handling, release, and gear removal from sea turtles and other non-target species to decrease post-hooking release mortality. These alternatives range from a no action/status quo alternative to enacting the same requirements and equipment for the BLL fishery as those currently in effect for the PLL fishery. Unless explicitly stated, none of the alternatives would change existing requirements for Atlantic shark fishermen with BLL gear onboard including:

- the requirement to use corrodible, non-stainless steel hooks;
- the requirement to immediately release the animal, retrieve the BLL gear, and move at least 1 nmi (2 km) if a marine mammal, sea turtle, or smalltooth sawfish is hooked or entangled by BLL gear. Reports of marine mammal entanglements must be submitted to NMFS consistent with regulations in 50 CFR Part 229.6;
- the requirement to follow guidelines for safe handling, disentanglement, and release of smalltooth sawfish and sea turtles outlined at 50 CFR Part 635.21 and 223.206 (d) (1);
- and the requirement to post inside the wheelhouse the sea turtle handling and release guidelines provided by NMFS.

The alternatives listed below refer to numbers and letters that correspond to equipment and protocols that can be found in NOAA Technical Memorandum NMFS-SEFSC-524, entitled "Careful Release Protocols for Sea Turtle Release with Minimal Injury," which was published by the Southeast Fisheries Science Center in June 2004. This document is available in English, Spanish, and Vietnamese from the Highly Migratory Species Management Division and on the website: http://www.nmfs.noaa.gov/sfa/hms/Protected%20Resources/TM_524.pdf. This document was also mailed to all commercial shark permit holders in 2004. Appendix A provides the design specifications, diagrams, and possible sources for obtaining the equipment listed. Table 2.1 outlines what would be required for the different alternatives. NMFS recommends reading Table 2.1 and the alternatives below at the same time.

There were also two alternatives considered (preferred and no action/status quo) for prohibiting the use of BLL (and other bottom tending) gear by HMS permit holders in six distinct areas off the U.S. Virgin Islands and Puerto Rico. These alternatives are described in Chapter 4 of the FSEIS accompanying the Comprehensive Amendment to the Fishery Management Plans of the U.S. Caribbean. The locations of the proposed closed areas are shown in Figure 2.1. Specific coordinates are listed in the Code of Federal Regulations 50 Part 622.33 (a).

Alternative 1 Maintain current requirements in the BLL fishery. (No Action)

As stated above, this alternative would maintain the current requirements in the Atlantic shark BLL fishery for safe handling, release, and disentanglement of protected resources. This includes: (A) 1 – line cutter (2.1.2a) and (E) 1- dipnet (3.1.1), both with extended reach handles

that are at least 6' (1.82 m) in length. The dipnet must be capable of supporting at least 100 lb (39.3 kg).

Alternative 2 — Require Atlantic shark fishermen with BLL gear onboard to possess, maintain, and utilize additional equipment for the safe handling, release, and disentanglement of sea turtles, marine mammals, smalltooth sawfish, and other bycatch dependent on the vessels' freeboard height.

All Atlantic shark fishermen with BLL gear onboard would be required to maintain the current requirements in the Atlantic shark BLL fishery for safe handling, release, and disentanglement of protected resources. This includes: (A) 1 – line cutter (2.1.2a) and (E) 1-dipnet (3.1.1), both with extended reach handles that are at least 6' (1.82 m) in length. The dipnet must be capable of supporting at least 100 lb (39.3 kg). In addition, all Atlantic shark fishermen with BLL gear onboard would be required to possess, maintain, and utilize the following items (F-L), regardless of vessel freeboard height, including:

- (F) 1 – standard automobile tire or other comparable cushioned, elevated surface that allows boated turtles to be isolated and immobilized (3.2.1);
- (G) 1 – NMFS-approved short-handled dehooker for internal hooks (3.4.3);
- (H) 1 – NMFS-approved short-handled dehooker for external hooks (3.4.4) (Item (G) would also satisfy this requirement);
- (I) 1 – needle nose pliers (3.4.1);
- (J) 1 – boltcutters (3.4.2);
- (K) 1 – monofilament line cutter (2.1.2 b);
- (L) 2 - mouth openers/gags (3.3.1-3.3.7) from the NMFS-approved list for removing internal or ingested hooks (must be two different items).
- a copy of "Careful Release Protocols for Sea Turtle Release with Minimal Injury" onboard

The following additional equipment would be required under this alternative for Atlantic shark fishermen with BLL gear onboard with a vessel with a freeboard height greater than 4' (1.22 m):

- (B) 1 - long-handled dehooker for ingested (internal) hooks (2.1.3 a),
- (C) 1 – long-handled dehooker for external hooks (2.1.3 b) (the long-handled dehooker for ingested hooks (C) would also satisfy this requirement); and
- (D) 1- long-handled device to pull an "inverted V" (*i.e.*, gaff, boat hook, or long-handled "J" style dehooker) (2.1.4 or 2.1.3 b.1).

Handle lengths for items B-D must be at least 6' (1.82 m) in length or 150% of the freeboard height, whichever is greater.

Items A – E would be required for sea turtles not boated. Items F - L would be required for sea turtles boated. This equipment must be used in accordance with the handling and release guidelines specified by NMFS. NMFS also recommends, but is not requiring at this time, possession and utilization of a turtle tether (2.1.1) and/or "ninja sticks," which are devices that

have been proven effective at controlling large turtles that cannot be boated, as well as a long-handled "pigtail" dehooker (~34 inches) that could be used on internal and external hooks on non-boated turtles.

Alternative 3 *Require Atlantic shark fishermen with BLL gear onboard to possess, maintain, and utilize additional safe handling and release equipment consistent with the requirements for the PLL fishery and comply with handling and release guidelines, as specified by NMFS regardless of the vessels' freeboard height – Preferred Alternative*

This alternative would require Atlantic shark fishermen with BLL gear onboard to possess, maintain, and utilize all the equipment that is currently required for the HMS PLL fishery, including:

- (A) 1 – long-handled line cutter (6' or 150 percent freeboard height, whichever is greater) (2.1.2a); replacement set of cutting blades;
- (B) 1 - long-handled dehooker (6' or 150 percent of freeboard height, whichever is greater) for ingested hooks (2.1.3.a) or
- (C) 1 - long-handled dehooker (6' or 150 percent of freeboard height, whichever is greater) for external hooks (2.1.3b);
- (D) 1 - long-handled device to pull an "inverted V" (if J-style dehooker is used for item B, it would also satisfy this requirement) (2.1.4 or 2.1.3b.1);
- (E) 1- long-handled dipnet (6' or 150 percent freeboard height, whichever is greater) (3.1.1);
- (F) 1 - standard automobile tire (3.2.1);
- (G) 1 - short-handled dehooker for ingested hooks (3.4.3);
- (H) 1 - short-handled dehooker for removing external hooks (3.4.4) (the short- handled dehooker for ingested hooks used for item G would also satisfy this requirement);
- (I) 1 - long-nose or needle-nose pliers (3.4.1);
- (J) 1 – bolt cutters(3.4.2);
- (K) 1 – monofilament line cutters (2.1.2 b); and,
- (L) 2 - types of mouth openers/mouth gags for removal of ingested or internal hooks (3.3.1-3.3.7) (must be at least two different items).
- a copy of "Careful Release Protocols for Sea Turtle Release with Minimal Injury" onboard

Items A – E would be required for sea turtles not boated. Items F - L would be required for sea turtles boated. This equipment must be used in accordance with the handling and release guidelines specified by NMFS. NMFS also recommends, but is not requiring at this time, possession and utilization of a turtle tether (2.1.1) and/or "ninja sticks," which are devices that have been proven effective at controlling large turtles that cannot be boated.

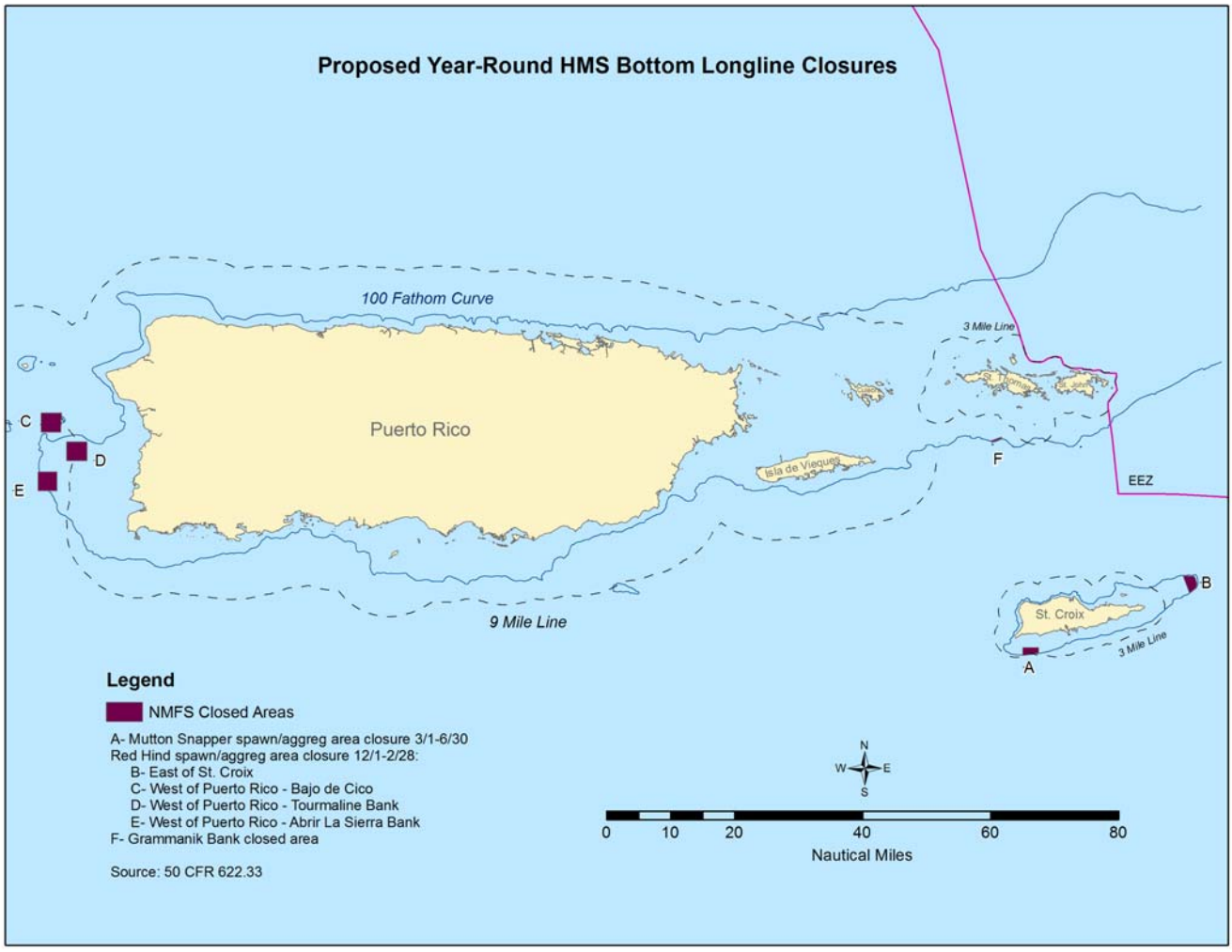
Under Alternative 2, vessels with a freeboard height of 4' or less would not be required to possess, maintain, and utilize the full suite of long-handled equipment that are required for vessels with a freeboard height greater than 4' under Alternative 2 and for all vessels (regardless of freeboard height) under Alternative 3 (preferred alternative).

Table 2.1. **Summary of the required equipment and other regulations that would be implemented with Alternatives 1-3. The numbers in parentheses after each requirement correspond to equipment and protocols that can be found in NOAA Technical Memorandum NMFS-SEFSC-524, entitled "Careful Release Protocols for Sea Turtle Release with Minimal Injury," which was published by the Southeast Fisheries Science Center in June 2004. "-" indicates that equipment is not required.**

Equipment	Alternative 1	Alternative 2		Alternative 3
		Freeboard Height		*Same Equipment as PLL*
		≤ 4'	>4'	Preferred Alternative
(A) 1- Long-handled linecutter (2.1.2a)	Required - Handle at least 6'	Required - Handle at least 6'	Required - Handle at least 6'	Required - Handle at least 6'
(B) 1- Long-handled dehooker for internal hooks (2.1.3.a)	-	-	Required - Handle at least 6' or 150% freeboard height, whichever greater	Required - Handle at least 6' or 150% freeboard height, whichever greater
(C) 1- Long-handled dehooker for external hooks (2.1.3.b) (Item B would substitute for item C)-	-	-	Required - Handle at least 6' or 150% freeboard height, whichever greater	Required - Handle at least 6' or 150% freeboard height, whichever greater
(D) 1 – Long-handled device to pull inverted "V"(2.1.4)-	-	-	Required - Handle at least 6' or 150% freeboard height, whichever greater	Required - Handle at least 6' or 150% freeboard height, whichever greater
(E) 1- Long-handled dipnet (3.1.1)	Handle at least 6'	Handle at least 6'	Handle at least 6'	Handle at least 6'
(F) 1- Standard Automobile Tire (3.2.1)	-	Required	Required	Required
(G) 1- Short handled dehooker for internal hooks (3.4.3)	-	Required	Required	Required
(H) 1- Short handled dehooker for external hooks (3.4.4)	-	Required	Required	Required
(I) 1 – Needle nose pliers (3.4.1)	-	Required	Required	Required
(J) 1 – Monofilament line cutter (2.1.2.b)	-	Required	Required	Required
(K) 1 – Bolt cutters (3.4.2)	-	Required	Required	Required
(L) 1 – 2 sets of mouth openers/gags (3.3.1-3.3.7)	-	Required	Required	Required

Equipment	Alternative 1	Alternative 2		Alternative 3
		Freeboard Height		*Same Equipment as PLL*
		≤ 4’	>4’	Preferred Alternative
Move 1 nmi (2 km) upon interaction with protected resources	Required	Required	Required	Required
Non-stainless steel corrodible hooks	Required	Required	Required	Required
Follow guidelines at 50 CFR 635.21 and 223.206 (d) (1)	Required	Required	Required	Required
Post inside the wheelhouse the sea turtle handling and release guidelines provided by NMFS	Required	Required	Required	Required
Possess a copy of Careful Release Protocols for Sea Turtle Release with Minimal Injury (NMFS-SEFSC-524) or other guidelines specified by NMFS on board at all times	-	Required	Required	Required

Figure 2.1 **Map of the existing closure areas implemented by the Caribbean Fishery Management Council on Oct. 28, 2005 (70 FR 62073) to protect EFH of reef-dwelling species. Fishermen with BLL gear on-board would be prohibited from deploying any type of fishing gear, year-round. The exact coordinates of the closed areas are listed at 50 Part 622.33 (a) of the Code of Federal Regulations.**



3.0 DESCRIPTION OF AFFECTED ENVIRONMENT

HMS fishermen in the United States encounter many species of fishes, some of which are marketable, others are discarded for economic or regulatory reasons. Species frequently encountered are swordfish, tunas, and sharks, as well as billfish and other finfish species. On occasion, HMS fishermen also interact with sea turtles, marine mammals, and seabirds, known collectively as "protected" species. All of these species are Federally managed, and NMFS seeks to control anthropogenic sources of mortality. Detailed descriptions of those species are given in the Fishery Management Plan for Atlantic Tunas, Swordfish, and Sharks (NMFS, 1999a), and the 2003, 2004, and 2005 SAFE Reports (NMFS, 2003a, 2004a, 2005a). Updates to this information are provided in the draft Consolidated HMS FMP (NMFS, 2005b) and are briefly summarized here. A description of the management history, status of the stocks, a description of the shark BLL fishery, bycatch species, and the number of permit holders are summarized below.

Further description of the affected environment for the measures being implemented to complement regulations enacted by the CFMC can be found in Chapter 5 of the FSEIS accompanying the Comprehensive Amendment to the Fishery Management Plans of the U.S. Caribbean.

3.1. Management History

In 1993, NMFS implemented the FMP for Sharks of the Atlantic Ocean, which established three management units: large coastal sharks (LCS), small coastal sharks (SCS), and pelagic sharks. At that time NMFS identified LCS as overfished, and therefore implemented commercial quotas for LCS and established recreational harvest limits for all sharks. In 2003, NMFS amended the measures enacted in the 1999 FMP based on the 2002 LCS and SCS stock assessments, litigation, and public comments. Implementing regulations for Amendment 1 were published on December 24, 2003 (68 FR 74746). Management measures enacted in the amendment included: re-aggregating the large coastal shark complex, using maximum sustainable yield (MSY) as a basis for setting commercial quotas, eliminating the commercial minimum size restrictions, establishing three regional commercial quotas (Gulf of Mexico, South Atlantic, and North Atlantic) for LCS and SCS management units, implementing trimester commercial fishing seasons effective January 1, 2005, imposing gear restrictions to reduce bycatch, and a time/area closure off the coast of North Carolina effective January 1, 2005. On August 19, 2005 (70 FR 48804), NMFS published a proposed rule that would require, among other things, mandatory handling and release of protected species workshops for PLL and BLL owners and operators, mandatory species identification workshops for shark dealers, define pelagic and bottom longline gears based on a maximum and minimum number of floats and indicator species, and require the second dorsal fin and anal fin be maintained on sharks through landing. The comment period on that proposed rule will close on March 1, 2006.

3.2. Status of the Stocks

As established in the 1999 FMP, a stock is considered overfished when the biomass level (B) falls below the minimum stock size threshold (MSST), and overfishing occurs when the

fishing mortality rate (F) exceeds the maximum fishing mortality threshold (MFMT). An overview description of the 39 Atlantic shark species that are actively managed by the HMS Management Division can be found in the draft Consolidated HMS FMP (NMFS, 2005b).

Species in the LCS complex are the primary commercial species targeted with BLL gear. The LCS complex includes 11 species of sharks, including sandbar, silky, tiger, blacktip, bull, spinner, lemon, nurse, and smooth, scalloped and great hammerhead sharks. A stock assessment for LCS was conducted in 2002; based on the stock assessment, NMFS determined that the LCS complex as a whole was overfished with overfishing occurring. In addition, NMFS determined that sandbar sharks are not overfished, but overfishing is occurring, and blacktip sharks are fully rebuilt.

The SCS complex is comprised of Atlantic sharpnose, blacknose, finetooth and bonnethead sharks, and these species can also be caught with BLL gear. Observer program information indicates that SCS can comprise up to 28 percent of the total observed catch. A stock assessment for SCS was also conducted in 2002. The 2002 stocks assessment showed that the SCS complex as well as bonnethead, Atlantic sharpnose and blacknose sharks are not overfished with no overfishing occurring. However, for finetooth sharks, NMFS determined that overfishing is occurring but they are not overfished.

Pelagic sharks including shortfin mako, porbeagle, common thresher, and blue sharks are more commonly taken in the PLL fishery than in the BLL fishery. At the 2004 Inter-Sessional Meeting of the ICCAT Sub-Committee on bycatch, stock assessments for Atlantic blue shark (*Prionace glauca*) and shortfin mako (*Isurus oxyrinchus*) were conducted. The assessment indicated that the current biomass of North and South Atlantic blue shark seems to be above MSY ($B>B_{MSY}$), however, these results are conditional and based on assumptions that were made by the committee. The North Atlantic shortfin mako population has experienced some level of stock depletion as suggested by the historical CPUE trend and model outputs. The current stock may be below MSY ($B<B_{MSY}$), suggesting that the species may be overfished. South Atlantic stocks of shortfin mako shark are likely fully exploited as well, but depletion rates are less severe than in the North Atlantic. The results of both of these assessments should be considered preliminary in nature due to limitations on quality and quantity of catch data available (SCRS, 2004). Finally, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) conducted an assessment of the porbeagle shark in 2004. COSEWIC found that significant declines in porbeagle abundance have occurred as a result of overexploitation in fisheries.

Prohibited shark species are identified as highly susceptible to overexploitation and the prohibition on possession was a precautionary measure to ensure that directed fisheries did not develop. Currently, NMFS has prohibited the possession of 19 species of sharks. Three species on the prohibited list (i.e., dusky, night, and sand tiger sharks) are also on the Candidate Species List under the ESA (April 15, 2005, 69 FR 19975). For more information, please see the draft Consolidated HMS FMP (NMFS, 2005b).

3.3. Fishery Participants

Amendment 1 (NMFS, 2003b) provides a thorough description of the U.S. fisheries for Atlantic sharks, including sectors of the BLL fishery. Below is specific information regarding

the U.S. BLL fishery. For more detailed information on the history and management of the fishery, please refer to the NMFS (2003b) and (2005b).

There are a currently 235 directed shark and 320 incidental shark permit holders as of October 2005. Of those, approximately 94 directed and 16 incidental permits holders recorded using BLL gear and reported shark landings in 2004. Of the 555 total directed and incidental shark permit holders, 284 vessels do not also have a directed or incidental swordfish permit. Therefore, NMFS assumes that the majority of the 284 vessels could use BLL and probably do not use PLL and do not already have the gear required for disentanglement of protected resources for the PLL fishery. As such, NMFS assumes that 284 permit holders would be affected by the proposed action.

BLL is the primary commercial gear employed in the LCS fisheries in all regions. Gear characteristics vary by region, but in general, BLL fishermen use a mainline that is approximately ten miles long and contains about 600 hooks. The gear typically consists of a heavy monofilament mainline with lighter weight monofilament gangions. Some fishermen may occasionally use a flexible 1/16 inch wire rope as gangion material or as a short leader above the hook. This gear is typically fished overnight, and skates, sharks, or various finfishes are used as bait.

3.4. Most Recent Catch and Landings Data in the Shark Bottom Longline Fishery

As has been reported previously, the U.S. commercial shark fishery is primarily a southern coastal fishery extending from North Carolina to Texas. During 1997-2004, 92-99% of LCS and the vast majority of SCS (80-100%) came from the southeastern (Gulf of Mexico and South Atlantic) region, whereas 37-49% of pelagic sharks were landed in the northeastern (mid-Atlantic and North Atlantic) region during that same period. Among LCS the most sought-after species in this fishery continue to be blacktip and sandbar sharks, although others are also taken (NMFS 1998, Cortés et al. 2002). Hammerhead sharks (all species combined) were the third most abundant species landed, ranging from 2-3 %of total LCS landings in 2001 and 2003. Shortfin mako and thresher sharks are the two pelagic species more frequently landed, and among small coastal sharks, four species (Atlantic sharpnose, blacknose, finetooth, and bonnethead) are regularly harvested (Cortés and Neer, 2005).

There are a number of other sources of mortality on LCS including discards, recreational catches, catches by other countries, and bycatch of sharks in other fisheries. All of these sources of mortality are taken into account when developing stock assessments for the Atlantic commercial shark fishery. U.S. commercial landings of Atlantic sharks in 1996-2004 were compiled based on Northeast Regional and Southeast Regional general canvass landings data, and the SEFSC quota monitoring data based on southeastern region permitted shark dealer reports. Landings prior to 1996 were taken as reported in NMFS (1998) and Cortés et al. (2002). Landings in southeastern states reported in the general canvass and quota monitoring data files were combined to define the species composition and volume of landings.

Updated data from the quota monitoring system reveal that the Gulf of Mexico region accounted for between 44 to 72 % of total LCS landings, whereas the South Atlantic region accounted for between 28 and 56 %, respectively, from 1997 to 2004. By state, Louisiana made

up the majority of the landings in 1997 and 1998 (33-53%), whereas the west and east coasts of Florida predominated from 1999 to 2004, together accounting for 46-67% of total landings. North Carolina also had significant contributions, accounting for 11-21% of total landings during 1997-2004 (Cortés and Neer 2005).

Also according to updated quota monitoring data, the South Atlantic region accounted for the vast majority of pelagic shark landings during 1997-2004 (59-93%). By state, pelagic sharks were mostly landed in North Carolina during 1997-2004 (52-83%), with Florida (12-35%) and Louisiana (3-19%) accounting for a smaller portion of the landings. Most small coastal sharks were also landed in the South Atlantic region (81-96%) during 1997-2004. By state, Florida's eas.t coast accounted for the vast majority of the landings (73-95%) during 1997-2004, with the west coast of Florida contributing 11% and 10% in 1997 and 2000, respectively. Alabama contributed 12% of the total landings in 2003 (Cortés and Neer, 2005).

Total commercial landings of large coastal sharks in 1998-2004 exceeded the allowed quotas. This can be attributed to state landings occurring after each of the two federal semi-annual season closures. For example, according to southeast general canvass data, 1998 Louisiana landings (mostly of unclassified sharks likely to belong to the LCS complex) after the first semi-annual season closure amounted to about 679,000 lb dw (308 mt dw). Total landings of LCS and SCS in 2003 were more than in 2004 (1,935 mt dw in 2003 versus 1,454 mt dw in 2004 for LCS; 242 mt dw in 2003 versus 204 mt dw in 2004 for SCS). However, total landings of pelagic sharks were less in 2003 than in 2004 (388 mt dw in 2003 versus 307 mt dw in 2004) (Cortés and Neer 2005).

General canvass data revealed that longlines were the primary gear type used in all regions to catch large coastal sharks from 1987 to 2004. Gillnets were the second-most common gear utilized, followed by longlines. The two most important species in the landings—blacktip and sandbar sharks—were predominantly caught with longline gear and mostly in the Gulf of Mexico region in most years (Cortés and Neer 2005). For more information on landings in the shark BLL fishery, please see the draft Consolidated HMS FMP (NMFS, 2005b).

3.5. Habitat

Section 303(a)(7) of the Magnuson-Stevens Act, 16 U.S.C. §§ 1801 *et seq*., as amended by the Sustainable Fisheries Act in 1996, requires FMPs to describe and identify essential fish habitat (EFH), minimize to the extent practicable adverse effects on such habitat caused by fishing, and identify other actions to encourage the conservation and enhancement of such habitat. A complete description of EFH for Atlantic sharks can be found in Chapter 10 and Appendix B of the draft Consolidated HMS FMP (NMFS, 2005b).

3.6. Bycatch, Incidental Catch, and Protected Species in the Shark Bottom Longline Fishery

The Magnuson-Stevens Act defines bycatch as fish which are harvested in a fishery, but which are not sold or kept for personal use, and includes economic and regulatory discards. Fish is defined as finfish, mollusks, crustaceans, and all other forms of marine animal and plant life

other than marine mammals and birds. As a result, other species such as seabirds and marine mammals are considered "incidental catch." This section provides an overview of the actions NMFS has taken to reduce bycatch and incidental catch and any results of those actions.

3.6.1. Fin Fish

The Commercial Shark Fishery Observer Program (CSFOP) has monitored the shark BLL fishery since 1994. The program has been mandatory for vessels selected to carry observers beginning in 2002. Prior to that, it was a voluntary program relying on cooperating vessels/captains to take observers. During the 2002-03 fishing season, observer coverage was equal to 3.8% of the total large coastal shark landings. In addition to the observer program, mandatory logbooks are also required in this fishery to monitor catch and effort, including bycatch of protected species.

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

Bottom longlining for sharks has relatively low observed bycatch rates. Historically, finfish bycatch has averaged approximately five percent in the BLL fishery. Finfish bycatch for the BLL fishery includes, but is not limited to, skates, rays, cobia, redfish, bluefish, and great barracuda. During the second semi-annual season of 2003, observer data indicate that approximately 4,320 sharks were caught compared to 432 other fish, 4 invertebrates, and 3 sea turtles (Burgess and Johns, 1999). In terms of bycatch rates, observed shark catches constitute 91 percent of the 4,759 total animals caught, with other fish comprising 10 percent, invertebrates less than 0.01 percent, and sea turtles less than 0.01 percent.

The proposed closures off the U.S. Virgin Islands and Puerto Rico, implemented by the CFMC for council-managed fisheries and complemented for Atlantic HMS fisheries in this rulemaking, would contribute to reductions in fishing mortality of mutton snapper, red hind, and other reef-dwelling species.

3.6.2. Marine Mammals

Under the Marine Mammal Protection Act (MMPA) (16 U.S.C. 1361 et seq.), the Atlantic shark BLL as Category III (remote likelihood or no known serious injuries or mortalities) (July 20, 2004, 69 FR 43338). However, bycatch estimates for the shark BLL fishery have not been extrapolated for marine mammals. The October 2003 BiOp concluded that the shark fishery was not likely to adversely affect marine mammals.

3.6.3. Sea Turtles

In the BLL fishery a total of 55 sea turtles were observed caught from 1994 through 2004 (Table 3.1). Seasonal variation indicates that most of the sea turtles were caught early in the year, which correlates to when the fishery is generally open during the first semi-annual (now trimester) season in the South Atlantic and Gulf of Mexico. Of the 55 observed sea turtles, 43 were loggerhead sea turtles, of which 26 were released alive. Another nine loggerheads were released in an unknown condition and eight were released dead. Based on extrapolation of observer data it was estimated that a total of 2,003 loggerhead sea turtles were taken in the shark BLL fishery from 1994 through 2002 (NMFS, 2003b). NMFS estimated an additional 503 unidentified sea turtles as taken. On average, NMFS estimated 222 loggerhead sea turtles and 56 unidentified sea turtles as taken annually during this time period in the shark BLL fishery.

Of the 55 observed sea turtle interactions in the BLL fishery from 1994-2004, four were leatherback sea turtles, of which one was dead, and three were released with their condition unknown. Based on extrapolation of observer data, NMFS estimated that 269 leatherback sea turtles were taken in the shark BLL fishery from 1994 through 2002 (Table 3.1; NMFS, 2005b). On average, 30 leatherback sea turtles were taken each year in the shark BLL fishery during 1994 through 2002. This analysis only estimates takes without discriminating between live and dead releases. Of the observed sea turtle takes, 23 percent were lethal. Based on this information, it is estimated that seven leatherback sea turtles would be killed annually by interactions with BLL gear (30 x 23 percent). According to the 2003 BiOp, the highest percentage of post-release mortality is 42 percent. This is for sea turtles that have ingested the hook. Assuming all animals ingest the hook, NMFS estimates that 42 percent of the turtles released alive will die as a result of their interaction with BLL gear, which means another 10 leatherback sea turtles could die annually (30 – 7 = 23, then 23 x 42 percent). Applying the same calculations for loggerhead sea turtles results in a total of 123 loggerheads killed annually. It should be noted that the leatherback mortality is very conservative because leatherbacks rarely ingest or bite hooks, rather they are usually foul hooked on their flippers or carapaces, reducing the likelihood of post-hooking release mortality. However, leatherback-specific data for this fishery is not available, and therefore, the most conservative estimate is used. Table 3.2 shows the observed number of sea turtle interactions by month for the period 1994-2002.

On October 29, 2003, NMFS issued a Biological Opinion (BiOp) pursuant to the Endangered Species Act (ESA) regarding Atlantic shark fisheries. This BiOp concluded that the level of anticipated take in the Atlantic shark fishery resulting from measures implemented in Amendment 1 (68 FR 74746) was not likely to jeopardize the continued existence of endangered green, leatherback, and Kemp's ridley sea turtles, the endangered smalltooth sawfish, or the threatened loggerhead sea turtle. NMFS anticipates an actual 5-year total incidental take for the Atlantic shark BLL fishery of: 172 leatherback sea turtles; 1370 loggerhead sea turtles; and a total of 30 in any combination of hawksbill, green, and Kemp's ridley sea turtles. NMFS also anticipates a 5-year incidental take of 261 smalltooth sawfish, of which no lethal takes are expected (NMFS, 2003b) (Table 3.1). If the actual calculated incidental captures or mortalities exceed the incidental take statement, a formal consultation for that gear type must be re-initiated immediately. More information is available in Amendment 1 and the October 2003 BiOp and is not repeated here.

3.6.4. Seabirds

Bycatch of seabirds in the shark BLL fishery has been virtually non-existent. A single pelican has been observed killed from BLL gear from 1994 through 2003. The pelican was caught in January 1995 off the Florida Gulf Coast (between 25^{o} 18.68 N, 81^{o} 35.47 W and 25^{o} 19.11 N, 81^{o} 23.83 W) (G. Burgess, University of Florida, CSFOP, pers. comm.). No expanded estimates of seabird bycatch or catch rates are available for the BLL fishery.

3.6.5. Smalltooth Sawfish

After reviewing the best scientific and commercial information, the status review team determined that the continued existence of the U.S. Distinct Population Segment (DPS) of smalltooth sawfish is in danger of extinction throughout all or a significant portion of its range from a combination of the following four listing factors: the present or threatened destruction, modification, or curtailment of habitat or range; over-utilization for commercial, recreational, scientific, or educational purposes; inadequacy of existing regulatory mechanisms; and other natural or man-made factors affecting its continued existence. As a result, NMFS listed smalltooth sawfish as endangered (68 FR 15674) on April 1, 2003.

Smalltooth sawfish have been observed caught (seven known interactions, six released alive, one released in unknown condition) in shark BLL fisheries from 1994 through 2002 (A. Morgan pers. comm.). Based on these observations, expanded sawfish take estimates for 1994-2002 were developed for the shark BLL fishery (NMFS, 2003a). NMFS estimates a total of 466 sawfish to have been taken in this fishery during 1994-2002, resulting in an average of 52 per year (Table 3.1). Additionally, it is important to note that except for one, all of the observed sawfish takes were released alive. NMFS considered additional BLL closure for smalltooth sawfish in the draft Consolidated HMS FMP (NMFS, 2005b) and is working on designating critical habitat.

Table 3.1 **Extrapolated Takes of Sea Turtles and Sawfish in the HMS BLL Fishery Based on Observed Interactions Between 1994 - 2002 and the 5 Year ITS for the BLL fishery.** Source: **NMFS, 2005.**

Protected Species	**1994-2002**	**5 year ITS, (mortality)**	
Leatherback Sea Turtle	269 (30/year)	150 (85)	30 (17)/year
Loggerhead Sea Turtle	2003 (222/year)	1360 (754)*	272 (150)/year
Unidentified Sea Turtles	503 (56/year)	30 (5)**	6 (1)/year
Smalltooth Sawfish	466 (52/year)	261 (0)	52/year

*1360 = 1110 + 250 of the expected 280 unidentified, which are most likely loggerhead sea turtles

**30 total in combination of hawksbill, green, and Kemp's ridley sea turtles (remaining 30 of the expected 280 unidentified). Five lethal takes per species.

Table 3.2 **Observed Sea Turtle Interactions by Month for Years 1994-2004 in the Shark BLL Fishery.** Source: A. Morgan pers. comm.

Month	Number of Sea Turtle Interactions
January	13
February	17
March	5
April	4
May	1
June	0
July	9
August	3
September	3
October	0
November	0
December	0
TOTAL	55

CHAPTER THREE REFERENCES

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NMFS. 2005b. Draft Consolidated Atlantic Highly Migratory Species Management Plan. August 2005. NOAA, NMFS, Highly Migratory Species Management Division.

4.0 ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES CONSIDERED

Pursuant to National Standard 9 (NS 9) of the Magnuson-Stevens Act NMFS must reduce, to the extent practicable, bycatch, bycatch mortality, and incidental catch in HMS fisheries, including in the Atlantic longline fisheries. The NS 9 guidelines set forth the following factors to consider when minimizing bycatch and bycatch mortality, to the extent practicable:

(A) Population effects for the bycatch species;
(B) Ecological effects due to changes in the bycatch of that species (effects on other species in the ecosystem);
C) Changes in the bycatch of other species of fish and the resulting population and ecosystem effects;
(D) Effects on marine mammals and birds;
(E) Changes in fishing, processing, disposal, and marketing costs;
(F) Changes in fishing practices and behavior of fishermen;
(G) Changes in research, administration, and enforcement costs and management effectiveness;
(H) Changes in the economic, social, or cultural value of fishing activities and nonconsumptive uses of fishery resources;
(I) Changes in the distribution of benefits and costs; and,
(J) Social effects.

Amendment 1 to the FMP for Atlantic Tunas, Swordfish, and Sharks and its final rule provide detailed discussions of bycatch and incidental catch issues associated with the various commercial and recreational shark fisheries. Specifically, Amendment 1 to the FMP for Atlantic Tunas, Swordfish, and Sharks required that all shark BLL vessels possess basic release equipment to reduce the post-release mortality of sea turtles and other protected resources, including line cutters and dipnets (both with extended reach handles), and, when approved, dehooking devices. In the summer of 2004, NMFS published a final EIS and final rule that required PLL vessels to possess, maintain, and utilize additional NMFS-approved equipment and protocols for the safe handling, release, and disentanglement of sea turtles and other protected resources. Because of similarities between these fisheries and the fact that many vessels may fish with both PLL and BLL, NMFS is reassessing the equipment and protocols required for the Atlantic shark BLL fishery, consistent with new information that has become available since Amendment 1 to the FMP for Atlantic Tunas, Swordfish, and Sharks and National Standard 9.

The following sections evaluate a number of alternatives to meet these goals. All of the alternatives described in this document apply only to vessels issued Federal Atlantic shark permits that have BLL gear onboard.

The alternatives considered for prohibiting the use of any fishing gear by HMS permit holders with BLL gear onboard in six areas off the U.S. Virgin Islands and Puerto Rico were analyzed in Chapter 6 of the FSEIS accompanying the Comprehensive Amendment to the Fishery Management Plans of the U.S. Caribbean.

4.1. Bycatch and Bycatch Mortality Mitigation Measures

Alternative 1	Maintain current requirements in the BLL fishery (No Action)
Alternative 2	Require Atlantic shark fishermen with BLL gear onboard to possess, maintain, and utilize additional equipment for the safe handling, release, and disentanglement of sea turtles, marine mammals, smalltooth sawfish, and other bycatch dependent on the vessels' freeboard height
Alternative 3	*Require Atlantic shark fishermen with BLL gear onboard to possess, maintain, and utilize additional safe handling and release equipment consistent with the requirements for the PLL fishery and comply with handling and release guidelines, as specified by NMFS, regardless of the vessels' freeboard height – Preferred Alternative*

Ecological Impacts

None of the alternatives considered would impact the number of sea turtle interactions with BLL gear. Rather, dehooking equipment is expected to increase the post-release survival of hooked non-target species. According to observer reports and the 2003 BiOp, the majority of sea turtles that interact with Atlantic BLL fisheries are large juvenile loggerhead and adult leatherback sea turtles. In addition, loggerhead and leatherback sea turtles are the two most common species observed incidentally caught in the BLL fishery. Some turtles released alive may subsequently die from hook ingestion, trailing gear, or injuries suffered when entangled in gear. Research conducted in the Northeast Distant Statistical Area (NED) indicated that post-hooking mortality of sea turtles that interact with PLL gear could be reduced by employing the protocols contained in the NOAA Technical Memorandum NMFS-SEFSC-524. Additional information on the research and the impact on the of the PLL fishery can be found in NMFS (2004).

Extrapolated estimates in the BLL fishery (1994 - 2002) indicate that this fishery interacted with an average of 30, 222, and 56 leatherback, loggerhead, and unidentified sea turtles, respectively (Table 3.1), on an annual basis. NMFS determined that, of the observed sea turtle takes, 23 percent were lethal when hooks were not ingested and 42 percent were lethal when hooks were ingested. NMFS estimated that seven leatherback sea turtles (30 x 23 percent) could be killed annually after interacting with BLL and without ingesting the hooks. However, according to the 2003 BiOp, another estimated 10 leatherback sea turtles (30 – 7 = 23 and 23 x 42 percent) would die as a result of ingesting hooks on BLL gear. Thus, 17 leatherback sea turtles could die annually as a result of interacting with BLL gear. This estimate is likely an overestimate for leatherback sea turtles, however. Leatherback sea turtles rarely ingest or bite hooks, but are usually foul hooked on their flippers or carapaces, reducing the likelihood of post-hooking mortality. Applying the same calculations to loggerhead sea turtle predicts 123 total loggerheads killed annually as a result of interactions with BLL gear.

Research conducted on the PLL fishery shows that the removal of hooks and associated gear can increase the post-release survival of bycatch and incidental takes (NMFS, 2004). Alternative 1, the no action alternative, would not have the increased ecological benefits of

removing hooks and associated gear. Alternative 1 would maintain the ecological benefits associated with the current requirements for the safe handling, release, and disentanglement of sea turtles, smalltooth sawfish, and other protected resources in the shark BLL fishery. These requirements include the use of corrodible, non-stainless steel hooks, moving 1 nmi (2 km) upon interaction with a protected species, possession of release equipment on board (long-handled dipnet and linecutter), and following guidelines for release of protected resources at 50 Part 635.21 (d) and 223.206 (d) (1). NMFS has already mailed aluminum binders with the "Careful Release Protocols for Sea Turtle Release with Minimal Injury" printed on water-resistant paper to all Atlantic shark permit holders and provides additional copies upon requrest. However, Altantic shark fishermen who use BLL gear are not currently required to possess a copy of these protocols or the dehooking equipment capable of removing hooks and associated gear for bycatch and incidental takes. Atlantic shark fishermen with BLL gear onboard are, however, required to post the sea turtle handling and release guidelines (laminated one page document), which are provided by NMFS, inside the wheelhouse. Under this alternative, approximately 17 leatherback and 123 loggerhead sea turtles could be killed annually as a result of interactions with BLL gear.

Alternative 2 would require Atlantic shark fishermen with BLL gear onboard to possess, maintain, and utilize additional equipment and protocols for the safe handling, disentanglement, and release of sea turtles and other protected resources. Required equipment would be dependent on the vessel's freeboard height. Alternative 2 would result in positive ecological impacts because possession and proper utilization of the additional required dehooking equipment is necessary for maximizing gear removal, and thereby, maximizing post-release survival after interactions with BLL gear. The proper use of these gears to remove hooks and lines would likely reduce serious injury and post-release mortality of protected resources and is essential to remove BLL gear from sea turtles and other bycatch, thereby maximizing post-hooking survival of these species. Atlantic shark fishermen with BLL gear onboard would still be required to fish with non-stainless steel, corrodible hooks and move 1 nmi (2 km) after interactions with sea turtles, smalltooth sawfish, or marine mammals. In addition to the equipment that is currently required in the shark BLL fishery (long-handled linecutter and dipnet), Atlantic shark fishermen with BLL gear onboard would be required to possess, maintain, and utilize additional equipment. The additional equipment required would depend on the vessels' freeboard height, as certain long-handled equipment would not be necessary for a vessel with a smaller freeboard. This equipment may not be necessary because on vessels with a lower freeboard, fishermen might be able to reach hooked or entangled animals with short handled dehooking equipment and/or long-handled dipnet. Design standards, example models, contact information for suppliers, and estimated costs for each piece of equipment can be found in Appendix A.

Alternative 2 would result in positive ecological impacts for sea turtles. According to the NED research, significant reductions (10-58 percent) in post-release mortality of hardshell and leatherback sea turtles could be achieved by removing all the gear from hooked sea turtles and ensuring they are safely handled and/or disentangled. Under this alternative, approximately two to ten fewer leatherback (17 leatherbacks per year killed by BLL (above) x 10 (58) percent reduction in mortality = 2 (10)) and 12 to 71 fewer loggerhead sea turtles (123 loggerheads killed per year by BLL (above) x 10(58) percent reduction in mortality = 12(71)) could die as a result

of interactions with BLL gear. This might be a over-estimate of mortality reduction, more relevant to Alternative 3, for vessels with a freeboard height 4' or less because this alternative does not include long-handled dehookers to facilitate hook removal, release, or disentanglement of large turtles that cannot be boated for these vessels. However, vessels with a freeboard height greater than 4' would be required to possess the additional long-handled required under Alternative 3.

Alternative 2 would not likely result in significant impacts to the post-release mortality rates of smalltooth sawfish that are hooked and/or entangled in the BLL fishery. According to current NMFS guidelines, dehooking equipment should not be used on smalltooth sawfish. Rather, all smalltooth sawfish must be left in the water (50 CFR § 635.21 (d)) and the line should be cut as close as possible to the hook, and Atlantic shark fishermen with BLL gear onboard should not attempt to dehook smalltooth sawfish. The vast majority of sawfish are hooked in the mouth and there are no reports of sawfish being deeply hooked. All observed smalltooth sawfish that interacted with BLL gear have been very active when reaching the water's surface (NMFS, 2003). There are no studies on post-release mortality of smalltooth sawfish; however, NMFS believes that post-release mortality is extremely low based on the condition of observed hooked smalltooth sawfish at the surface. Between 1994-2002 there were an estimated 52 smalltooth sawfish caught per year based on extrapolated observer data. All observed smalltooth sawfish, with the exception of one, were released alive.

Alternative 3 would have the similar positive ecological impacts as Alternative 2. However, since this alternative would require two additional long-handled pieces of dehooking equipment, it might facilitate improved hook removal, release, or disentanglement of larger turtles that cannot be boated, thereby resulting in slightly larger ecological benefits. This alternative would require the same suite of equipment that has been required for PLL since August 5, 2004, and would include additional long-handled equipment for all Atlantic shark fishermen with BLL gear onboard regardless of freeboard height (although the length of the handles would be based on freeboard height). The PLL vessels are required to possess, maintain, and utilize the full suite of equipment because they generally fish from larger vessels, where rough seas and higher freeboard height would necessitate additional long-handled equipment to effectively handle, release, and disentangle sea turtles or other protected resources.

The ecological impacts of Alternatives 2 and 3 would be further enhanced through the implementation of mandatory workshops for all shark BLL owners and Atlantic shark fishermen with BLL gear onboard, which is a preferred alternative in the draft Consolidated HMS FMP, which published on August 19, 2005, (70 FR 48804). Vessel owners and Atlantic shark fishermen with BLL gear onboard would have to complete an intensive, one-day workshop on safe handling, release, and disentanglement protocols and equipment for decreasing post-release mortality of protected resources by January 1, 2007. Workshops should improve the skills of operators and owners related to proper use of the additional equipment that would be implemented in this proposed rule. These workshops are being implemented in order to maintain compliance with the October 29, 2003, BiOp for the shark BLL fisheries. Vessel owners and Atlantic shark fishermen with BLL gear onboard that attended the voluntary workshops in June 2005 and that use BLL gear would still be expected to attend, and attain certification from the NMFS-approved workshops proposed in the draft Consolidated HMS FMP by January 1, 2007.

Social and Economic Impacts

Alternative 1 would not likely have any adverse social or economic impacts as it would not require participants in the BLL fishery to purchase any additional equipment or materials.

Alternative 2 would require Atlantic shark fishermen with BLL gear onboard to purchase additional equipment for the safe release, dehooking, and disentanglement of sea turtles and other protected resources. As a result this alternative would have initial minor negative social and economic impacts. However, these costs could be offset if fishermen are willing and able to construct some of the dehooking equipment themselves, provided they still meet NMFS design specifications shown in Appendix A. Some of the dehooking equipment is protected under U.S. Patent Law, therefore, these items cannot be mass produced, distributed, or sold for a profit. These items and their use are described in detail in Appendix A.

NMFS recognizes that the purchase of these items could result in additional capital expenditures for Atlantic shark fishermen with BLL gear onboard. NMFS estimates that there are 284 vessel owners/operators who might potentially be affected by this rule; 284 vessels reported using BLL gear, and also did not report using PLL gear to the SERO permits office (*i.e.*, 284 vessels had either a shark directed or shark incidental permit, but they did not also have a swordfish directed or swordfish incidental permit). Of these directed and incidental permit holders, NMFS estimated that there were approximately 94 directed and 16 incidental shark permitted vessels that reported shark landings in a Federal logbook in 2004. NMFS does not have data related to the number of shark BLL vessels with freeboard heights greater, or less than, 4' (1.22 m).

It is estimated that for vessels that have a freeboard height of 4' (1.22 m) or less the costs would range from $152.25 to $232.30 for the entire suite of required equipment (not including recommended gear). If vessel freeboard height is greater than 4', the cost would increase based on the height of the vessel's freeboard (Tables 6.2 and 6.3). A range of costs is provided because high and low estimates represent costs incurred by fishermen purchasing all pre-made long-handled materials from a commercial supplier versus fishermen purchasing materials and constructing some of the long-handled equipment themselves. It is assumed that all active vessels with HMS permits fishing with BLL gear onboard already possess the long-handled line cutters and dipnets that meet NMFS specifications. Furthermore, these are conservative estimates as many vessel operators may already possess some of the equipment required by Alternatives 2 and 3, including: long-handled boat hooks or gaffs, needle-nose pliers, automobile tires, boltcutters, monofilament line cutters and some of the approved mouth gags.

NMFS has received comment in the past that the use of dehooking devices and other disentanglement gear may not only reduce costs for the fishermen by retrieving hooks, but may also increase the efficiency of fishing operations by reducing the time and effort spent rigging gear and removing hooks and line from target and non-target species. However, if the use of these additional gears requires more time during haulback, corresponding increases in fishing costs as a result of lost fishing time may occur.

Alternative 2 provides some flexibility with regard to the equipment that Atlantic shark fishermen with BLL gear onboard must possess because it is assumed that, in general, BLL

vessels targeting sharks are smaller than PLL vessels targeting swordfish and tunas. Under this alternative, vessels with a freeboard height of 4' (1.22 m) or less would not be required to possess any additional long-handled equipment that is currently required for the PLL fishery. NMFS recommends, but is not proposing, that BLL vessels also possess, maintain, and utilize a turtle tether, such as "ninja sticks," or some other device that could be used to control sea turtles near the side of the vessel.

Alternative 3 would result in similar economic and social impacts as alternative 2 for vessels with a freeboard height greater than 4' (1.22 m); all the equipment required, and costs associated with the new required dehooking equipment would depend on the vessel's freeboard height. Differences in costs between alterative 2 and 3 are shown in Table 6.3. The only differences between alternatives 2 and 3 are the requirements for the handle lengths for dipnets and line cutters and additional replacement blades for the line cutters. Alternative 2 requires a dipnet and line cutter with at least a six-foot handle. Alternative 3 requires a dipnet and line cutter with a six-foot handle or a handle length that is 150 percent of freeboard height, whichever is greater. Under alternative 3, a vessel with a freeboard height greater than four feet could incur a cost of $398.25 to $977.30, with actual costs depending on freeboard height (Table 6.2 and Table 6.4). Vessels with a freeboard height of four feet or less would incur costs ranging from $253.25 to $487.30 (Table 6.4).

Conclusion

Alternative 3 is the preferred alternative because it would improve post-hooking survival of sea turtles, smalltooth sawfish, and other protected resources and maintain consistency between the PLL and BLL fisheries. This alternative would have positive ecological impacts and negative short-term economic impacts. Reducing mortality of these species is an integral part of maintaining compliance with the BiOp. Consistent with the October 29, 2003, BiOp, NMFS is required to ensure that fishermen handle protected species taken during fishing activities in such a way as to increase their chances of survival. The final rule that implemented NMFS-approved dehooking, disentanglement, and release gear and protocols onboard all vessels with PLL onboard represents the most up to date scientific information regarding protocols for maximizing post-hooking survival of protected species. Because of the similarities between these fisheries, and the fact that many Atlantic shark fishermen with BLL gear onboard fish with both BLL and PLL gear, Alternative 3 preferred alternative because it will enable operators to follow the protocols and possess the equipment necessary for the PLL fishery, easing determination of compliance for both fishermen and enforcement. NMFS is attempting to minimize economic impacts by allowing Atlantic shark fishermen with BLL gear onboard to construct additional equipment themselves provided it meets design specifications.

4.2. Impacts on Essential Fish Habitat

The Magnuson-Stevens Act requires that NMFS evaluate the potential adverse effects of fishing activities on EFH and include management measures that minimize adverse effects to the extent practicable. The preferred alternative would have no direct impact on EFH. NMFS is in the process of reviewing new information and data related to EFH of HMS species and potential impacts of HMS fishing gear on EFH that have been collected since 1999 as part of the 5 year

review (August 19, 2005, 70 FR 48804). Any modifications to EFH descriptions and boundaries would be addressed in a subsequent rulemaking.

The year-round closures proposed in this rulemaking to complement existing measures enacted by the CFMC were implemented to minimize, to the extent practicable, the adverse impacts of bottom-tending gear on EFH in the Caribbean region.

4.3. Impacts on Protected Species

The preferred alternative is expected to reduce the post-hooking mortality of sea turtles and other non-target species. Background information on threatened and endangered species and ESA consultation history for this fishery are provided in Chapters 1 and 3. On October 29, 2003, a BiOp was completed for the shark BLL fishery. The handling, release, and disentanglement equipment required as a result of this proposed action meets the requirements stated in the October 2003 BiOp and also mandates additional complementary equipment that has proven effective at handling, release, and disentanglement of sea turtles. Copies of the BiOp are available upon request or on the internet at: http://www.nmfs.noaa.gov/sfa/hms/Protected%20Resources/OCT_29_2003_Biological_Opinion.pdf.

The October 29, 2003, BiOp for Atlantic shark fisheries concluded that the continued operation of the shark fisheries as amended by the actions in Amendment 1 to the FMP for Atlantic Tunas, Swordfish, and Sharks would not adversely affect marine mammals. However, other protected resources, specifically sea turtles and smalltooth sawfish, may be affected by the selected actions in Amendment 1 to the FMP for Atlantic Tunas, Swordfish, and Sharks, although the actions are not likely to appreciably reduce either the survival or recovery of loggerhead, Kemp's ridley, green, hawksbill or leatherback sea turtles by reducing their reproduction, numbers, or distribution (NMFS, 2003). These species are found throughout all or a portion of the action area, defined as the U.S. Atlantic, Gulf of Mexico, and Caribbean EEZ. Sea turtles and smalltooth sawfish have been documented as taken incidentally in one or more components of the Atlantic shark fishery.

This proposed rule addresses the Reasonable and Prudent Measure 1 (RPM 1) in the October 29, 2003, BiOp. This RPM states that NMFS shall implement or fund outreach programs for shark fishermen aimed at reducing the potential for serious injury or mortality of hooked sea turtles and smalltooth sawfish. While this proposed action is not specifically requiring the implementation of workshops, it is implementing the requirement for safe handling, release, and disentanglement equipment and protocols to be possessed onboard by all Atlantic shark fishermen with BLL gear onboard engaged in fishing activities. Workshops on safe handling, release, and disentanglement equipment and protocols are proposed as a preferred alternatives in a separate rulemaking (Consolidated HMS FMP, 70 FR 48804). NMFS hosted nine voluntary workshops in June 2005 that demonstrated the proper use of, and equipment available for, safe handling, release, and disentanglement of sea turtles and smalltooth sawfish. Additionally, NMFS mailed sea turtle handling and release guidelines to all shark permit holders in the fall of 2004.

This proposed rule also pertains to Reasonable and Prudent Measure 3 (RPM 3) that requires NMFS to continue to distribute appropriate sea turtle resuscitation and handling techniques found in 50 CFR 223.206 (d) (1-5) and 635.21. This proposed rule would better enable fishermen to remove as much gear as possible from sea turtles and other protected resources by requiring them to possess, maintain, and utilize additional equipment and protocols.

Sea turtle post-release survival is not only dependent on the type of interaction (i.e., where hooked, entangled or not, etc.), but also on the amount of gear left following the release. Removal of some or all of the gear, except deeply ingested hooks, is likely to improve the probability of a sea turtle surviving the interaction. Maximizing gear removal is critical for lowering mortality ratios for smalltooth sawfish and sea turtles which is paramount for maintaining compliance with the 2003 BiOp, and its ITS for the shark BLL fishery. The 5-year ITS for the BLL fishery is listed in Table 3.1.

The proposed measures that would close six areas, year-round, off the U.S. Virgin Islands and Puerto Rico to Atlantic HMS fishermen with BLL gear onboard is not expected to alter HMS fishing practices, techniques, or effort in any way that would increase interactions with protected species or marine mammals.

4.4. Environmental Justice Concerns

Executive Order 12898 requires agencies to identify and address the proportionately high and adverse environmental effects of its regulations on the activities of minority and low-income populations. In particular, the environmental effects of the regulations should not have a disproportionate effect on minority and low-income communities. The communities of Dulac, LA, and Fort Pierce, FL, have significant populations of Native Americans and Black Americans, respectively. In addition to Dulac and Fort Pierce, there is a diffuse Vietnamese-American population in Louisiana. These two communities also have significant populations of low-income residents (NMFS, 2005). The preferred alternative is not expected to have a disproportionate impact on these minority or low-income populations because these groups do not comprise a majority of the participants in HMS fisheries.

4.5. Coastal Zone Management Concerns

NMFS has preliminarily determined that the proposed regulations would be implemented in a manner consistent to the maximum extent practicable with the enforceable policies of those Atlantic, Gulf of Mexico, and Caribbean coastal states that have approved coastal zone management programs. The proposed regulations would be submitted to the responsible state agencies for their review under Section 307 of the Coastal Zone Management Act.

4.6. Cumulative Impacts

Cumulative impacts are the impacts on the environment, which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts could result from individually minor but collectively significant actions taking place over a period of time (40 CFR § 1508.7). A cumulative impact includes the total effect on a natural resource, ecosystem, or human community due to past,

present, and future activities or actions of Federal, non-Federal, public, and private entities. The goal of this section is to describe the cumulative ecological, economic and social impacts of past, present and reasonably foreseeable future actions with regard to the Atlantic shark fishery.

The primary goals of the 1993 Shark FMP and the 1999 FMP were to establish management measures intended to reduce overfishing, rebuild U.S. Atlantic shark populations, and to prevent overfishing of fully fished stocks. In 2003, NMFS amended the measures enacted in the 1999 FMP based on the 2002 LCS and SCS stock assessments, litigation, and public comments. Implementing regulations for Amendment 1 to the FMP for Atlantic Tunas, Swordfish, and Sharks were published on December 24, 2003 (68 FR 74746). Management measures enacted in the amendment included: re-aggregating the large coastal shark complex, using maximum sustainable yield (MSY) as a basis for setting commercial quotas, eliminating the commercial minimum size restrictions, establishing three regional commercial quotas (Gulf of Mexico, South Atlantic, and North Atlantic) for LCS and SCS management units, implementing trimester commercial fishing seasons effective January 1, 2005, imposing gear restrictions to reduce bycatch, and a time/area closure off the coast of North Carolina effective January 1, 2005. As a result of using MSY to establish quotas, and implementing a new rebuilding plan, the overall annual landings quota for LCS in 2004 was established at 1,017 metric tons (mt) dressed weight (dw). The overall annual landings quota for SCS was established at 454 mt dw and the pelagic, blue, and porbeagle shark quotas were established at 488 mt dw, 273 mt dw, and 92 mt dw respectively.

The regional quotas, which were established in Amendment 1 to the FMP for Atlantic Tunas, Swordfish, and Sharks, were intended to improve overall management of the stocks by tailoring quotas to specific regions based on landings information. These quotas were based upon average historical landings (1999-2001) from the canvass and quota monitoring databases. The canvass database provides a near-census of the landings at major dealers in the southeast United States (including state landings) and the quota monitoring database collects information from dealers in the South Atlantic and Gulf of Mexico. As a result, SCS are not overfished, and while LCS complex is listed as overfished, several LCS species are showing improvement.

On November 30, 2004, NMFS issued a final rule (69 FR 69537), which established, among other things, new regional quotas based on updated landings information from 1999-2003. This final rule did not change the overall quotas for LCS, SCS, and pelagic sharks established in Amendment 1 to the FMP for Atlantic Tunas, Swordfish, and Sharks, only the percentages allocated to each of the regions. The updated information was based on several different databases, including the canvass and quota monitoring databases, the Northeast Commercial Fisheries Database (CFDBS), and the snapper grouper logbook. The new regional quotas and trimester seasons for the commercial Atlantic shark fishery became effective January 1, 2005.

Finally, on August 19, 2005 (70 FR 48804), NMFS published a proposed rule and DEIS (published on August 12, 2005) that consolidates the HMS and Atlantic Billfish FMPs. The proposed management measures that may affect the shark BLL fishery include the establishment of mandatory workshops for commercial permit holders, commercial vessels with BLL gear onboard, and shark dealers; the establishment of HMS closures for the Madison-Swanson and

Steamboat Lumps areas, per the request of the Gulf of Mexico Fishery Management Council; addressing overfishing of finetooth sharks; defining pelagic and bottom longline gears based on a maximum and minimum number of floats and indicator species; and the requirement of the anal and second dorsal fin to remain on the shark log until offloading occurs.

Cummulative Ecological Impacts

As described previously, the preferred alternative would require vessel operators with HMS permits and BLL gear onboard to possess, maintain, and utilize additional equipment, protocols, and or guidelines for the safe handling, release, and disentanglement of sea turtles, smalltooth sawfish, and other non-target species. These requirements are consistent, and are based upon, requirements for the PLL fishery that were implemented on July 6, 2004 (69 FR 40734), and effective on August 5, 2004. These requirements represent the most current, and best available information available for maximizing gear removal efficiency and reducing post-hooking mortality of sea turtles, smalltooth sawfish, or other non-target species. One reasonably foreseeable future action that may impact this proposed action includes the implementation of mandatory workshops for all HMS BLL operators and owners on the safe handling, release, and disentanglement of sea turtles and other protected resources which would require participants to attain NMFS certification by January 1, 2007. This is a preferred alternative in the draft Consolidated HMS FMP, which published on August 19, 2005. It is expected that these workshops would enhance participants' ability to use the additional equipment and follow required protocols implemented in this proposed rule.

The cumulative ecological impacts of implementing complementary regulations for Atlantic HMS fishermen in the Caribbean region were assessed in Chapter 6 of the FSEIS for the Comprehensive Amendment to the FMPs of the U.S. Caribbean. These measures combined with the requirements for shark BLL vessels to possess additional dehooking equipment are not expected to result in any adverse cumulative ecological impacts.

Cumulative Economic and Social Impacts

As described previously, the proposed measures would require vessel operators with HMS permits and BLL gear onboard to purchase and/or construct additional equipment for the safe handling, release, and disentanglement of sea turtles, smalltooth sawfish, and other non-target species. To the extent possible, the Agency has attempted to minimize initial costs to fishery participants by enabling them to construct equipment themselves. Furthermore, it is assumed that some participants are already in possession of the required equipment as vessels often fish with BLL and PLL gear; PLL participants are already required to possess the full suite of equipment. Attendance at workshops that are described above, and may be a requirement of the draft Consolidated HMS FMP, would result in some lost fishing and travel time, which would result in increased cumulative economic impacts. These economic and social impacts were fully analyzed in that document. While this action may result in minor negative socio-economic impacts, it is expected to ensure the long-term sustainability and continued economic viability of the BLL fishery by maintaining compliance with the October 2003 BiOp.

The cumulative social and economic impacts of implementing complementary regulations for Atlantic HMS fishermen in the Caribbean region were assessed in Chapter 6 of

the FSEIS for the Comprehensive Amendment to the FMPs of the U.S. Caribbean. These measures combined with the requirements for shark BLL vessels to possess additional dehooking equipment are not expected to result in any adverse cumulative social or economic impacts.

4.7. Comparison of the Alternatives

The ecological, social, and economic impacts compared in Table 4.1 are for the foreseeable short-term future. However, NMFS expects that some of the short-term, negative social and economic impacts associated with the alternatives could translate into positive long-term social and economic impacts as compliance with the October 2003 BiOp and the ITS are maintained. Table 4.1 represents a summary of impacts associated with each of the alternatives; however, referencing specific alternatives and their impacts in Chapters 4, 6, 7, and 8 provides a more comprehensive overview of the ecological, social, and economic impacts.

Table 4.1 **Impacts of the Alternatives Considered. The symbols +, -, and 0 refer to positive, negative, and zero impacts respectively. See preceding sections for details of impacts from each alternative.**

Alternative	Description of Alternative/ Requirements	Ecological Impacts	Social Impacts	Economic Impacts
1 – No action	Long-handled line cutter and dipnet, move 1 nmi after interaction with PR, non stainless steel (corrodible) hooks	0	0	0
2 – Additional equipment based on vessel freeboard height	Same as Alt. 1 plus see Chapter 2 and/or 4 for list of additional equipment, depends on vessels freeboard height (> or =/< 4' (1.22 m), possess "Careful release protocols	+	0/-	-
3 – Same equipment as PLL – Preferred Alternative	Same requirements as for PLL fishery	+	0/-	-

CHAPTER 4 REFERENCES

Epperly, S., L. Stokes, and S. Dick. 2004. Careful release protocols for sea turtle release with minimal injury. NOAA Technical Memorandum NMFS-SEFSC-524, 42pp.

NMFS. 2003. Endangered Species Act Section 7 Consultation: BiOp on the continued operation of Atlantic shark fisheries (commercial shark bottom longline and drift gillnet fisheries and recreational shark fisheries) under the Fishery Management Plan for Atlantic Tunas, Swordfish, and Sharks (1999 FMP) and the proposed Rule for Draft Amendment 1 to the FMP for Atlantic Tunas, Swordfish, and Sharks to the 1999 FMP, July 2003. NMFS, Southeast Regional Office, Protected Resources Division, I.D. No. F/SER/2003/00953. 65 pp. + apps.

NMFS. 2004. Final Supplemental Environmental Impact Statement for the Reduction of Sea Turtle Bycatch and Bycatch Mortality in the Atlantic Pelagic Longline Fishery. NOAA, National Marine Fisheries Service, Highly Migratory Species Management Division, Silver Spring, MD. Public Document.

NMFS. 2005. Draft Consolidated Atlantic Highly Migratory Species Fishery Management Plan. NOAA, National Marine Fisheries Service, Highly Migratory Species Management Division, Silver Spring, MD. Public Document.

5.0 MITIGATION AND UNAVIODABLE IMPACTS

The preferred alternative would have conservation benefits by reducing the post-release mortality of sea turtles and other non-target species that are caught as bycatch in the shark BLL fishery. Overall, NMFS anticipates positive ecological impacts due to the reductions in mortality. The preferred alterative would likely have minor negative economic impacts as it would result in additional expenditures and/or time spent constructing additional equipment for individuals that are not already actively participating in the PLL fishery and subject to that fishery's requirements. None of the alternatives are likely to have significant adverse ecological impacts.

The mitigation measures and unavoidable impacts of the alternatives considered for prohibiting the use of BLL gear by HMS permit holders in six areas (year-round) off the U.S. Virgin Islands and Puerto Rico are described in Chapter 6 of the FSEIS accompanying the Comprehensive Amendment to the Fishery Management Plans of the U.S. Caribbean.

5.1. Mitigation Measures

As described in Chapter 4, the expected impacts of the preferred alternative are relatively minor provided Atlantic shark fishermen with BLL gear onboard are willing to purchase their own materials and construct additional dehooking, release, and entanglement equipment themselves. The design standards detailed in Appendix A allow for construction of some of the equipment from materials that are readily available and employing skills that most fishermen likely possess. Furthermore, since the additional requirements are consistent with measures in the PLL fishery, HMS participants already targeting swordfish, sharks, or other pelagic species with PLL gear should already have the additional equipment in their possession. Some of the required equipment may be useful in retrieving hooks from protected resources (with the exception of smalltooth sawfish), or other bycatch, which may result in reduced gear expenditures. Furthermore, to help mitigate the cost of the proposed rule, fishermen would have the choice of several different models of dehooking equipment, provided that they meet the NMFS design specifications listed in Appendix A.

5.2. Unavoidable Adverse Impacts

There are no unavoidable adverse impacts as a result of the preferred alternative. As described above, the preferred alternative is expected to have positive ecological benefits but negative economic impacts as a result of Atlantic shark fishermen with BLL gear onboard having to purchase and/or construct additional equipment to have onboard during fishing activities. The reasons for selecting the preferred alternative are detailed in previous chapters of this document. The proposed action is necessary to maintain compliance with the BiOp for the BLL fishery, implement a requirement that was originally described in Amendment 1 to the FMP for Atlantic Tunas, Swordfish, and Sharks, maintain consistency between PLL and BLL fisheries, and reduce post-hooking mortality of sea turtles, smalltooth sawfish, and other non-target catch.

5.3. Irreversible and Irretrievable Commitment of Resources

The preferred alternative would not result in any irreversible or irretrievable commitment of resources. The preferred alternative is being implemented to protect and conserve threatened and endangered species in the Atlantic Ocean consistent with the ESA and the Magnuson-Stevens Act.

6.0 ECONOMIC EVALUATION

This section analyzes the economic impacts of the alternatives presented in this document. Analyses of the economic impacts are required under several laws, including: National Environmental Protection Act (NEPA), Magnuson-Stevens Act, Regulatory Flexibility Act (RFA), and Executive Order 12866 (E.O. 12866). This section analyzes the economic impacts of the alternatives presented in this document. Additional economic and social considerations and information are discussed in Chapters 3, 4, 7, 8, and 9 of this document.

Economic impacts to HMS participants as a result of implementing the six proposed BLL closed areas, which are complementary measures to CFMC regulations, were evaluated in Chapter 6 of the FSEIS for the Comprehensive Amendment to the Fishery Management Plans of the U.S. Caribbean.

6.1. HMS Commercial Fishing Permits

In order to examine the baseline universe of entities potentially affected by the alternatives considered, NMFS conducted an analysis of the number of permits as of October 2005 that were issued in conjunction with HMS fishing activities. As of October 2005, there were 835 shark and/or swordfish commercial fishing permits that could use longline gear (189 directed swordfish, 91 incidental swordfish, 235 directed shark, and 320 incidental shark). Of these, there are only a total of 564 commercial permit holders that could use longline gear, since permit holders often need to hold more than one type of permit. Of the 555 directed and incidental shark permit holders 284 do not have a directed or incidental swordfish permit. Therefore, NMFS assumes that 284 shark permit holders do not use PLL gear that only use BLL gear, and therefore would be affected by this proposed rulemaking. NMFS is assuming this because most fishermen use BLL to target sharks and PLL to target other species, such as swordfish. Since safe handling and release equipment and protocols are already required for the PLL fishery, permit holders that use PLL should already have the equipment that would satisfy the dehooker requirements considered in this rulemaking.

Currently, there are 555 directed and incidental shark permit holders. Of the 235 directed shark permit holders, 94 reported shark landings in the 2004 snapper/grouper logbook[1] and another 38 vessels reported other fish landings, but did not report landing sharks. Of the 320 incidental shark permit holders, 16 reported shark landings in the 2004 snapper/grouper logbook while an additional 128 vessels reported other fish landings, but did not report landing sharks. The homeports of the 94 directed shark permit holders ranged from New Jersey to Louisiana whereas the homeports of the 16 incidental shark permit holders ranged from Florida to Texas. Eighty percent of the homeports for both directed and incidental permit holders were in Florida. Most of directed permit holders use BLL to target LCS. However, SCS and pelagic sharks are also landed. Because the number of permits is limited and the seasons are relatively short, NMFS feels that it is unlikely that the fishing effort in the directed shark fishery would increase substantially in the near future.

1 Most shark fishermen report their shark landings in the snapper/grouper logbook, so this logbook is used for these analyses. Fishermen can also report shark landings in the HMS PLL logbook and the Northeast multi-species logbook.

As of October 2005, NMFS estimates that there is one incidental shark permit holder and one shark dealer permit holder in the U.S. Virgin Islands. There are no shark limited access permit holders or shark dealer permit holders in Puerto Rico.

6.2. Gross Revenues of Shark Vessels

NMFS calculated gross revenues by combining current Federal permit holders (as of October 2005) with their reported logbook landings from 2004. These landings were then multiplied by average ex-vessel 2003 prices (delineated by region and gear type) for LCS flesh, LCS fins, pelagic sharks flesh, and SCS flesh obtained from Table 3.63 in the draft Consolidated HMS FMP (NMFS, 2005). Unclassified sharks were included and assumed to be LCS landings in this analysis. Prices were reported in 2003 dollars (see Section 3.5 of the draft Consolidated HMS FMP; NMFS, 2005). Landings reported in the 2004 logbooks were used to assess the economic impacts of the proposed alternative on active, Federally permitted shark vessels. The 2004 logbooks indicate that overall landings for LCS, SCS, pelagic sharks and fins were 1050.3 mt dw. Using these BLL landings and the 2003 ex-vessel prices, gross revenues for active shark fishermen were estimated for the 2004 fishing season (Table 6.1).

Shark fins bring in the highest price per lb dw across all regions (on average, $19 per lb dw) with LCS flesh bring in the lowest price per lb dw across all regions (on average, $0.44 per lb dw) (Table 6.1). However, of all sharks in the Atlantic shark fishery, LCS flesh caught on BLL gear brings in the highest total gross revenues (~$828,625 total in 2004) (Table 6.1). Directed shark permit holders receive the majority of their shark-based revenues from LCS. The average annual gross revenues from shark fishing per vessel are approximately $13,585 ($1,276,991 / 94 active directed vessels). Gross revenues for incidental shark permit holders were not calculated since incidental shark permit holders are primarily targeting swordfish or tunas with PLL gear or snapper/grouper with BLL gear.

Available data from the Caribbean region indicate that only a small volume of sharks are landed in this area. Based upon dealer weigh-out data, shark landings totaled less than 3,200 lbs (1,422 kg) and consisted of 66 individual fish between 1997-2002. It is possible that these data do not reflect the total number of landings, due to lack of compliance with reporting and/or permitting requirements in the Caribbean region.

Table 6.1 **2003 ex-vessel price for bottom longline gear, 2004 landings, and fishery revenue for LCS, SCS, pelagic sharks, and shark fins in different regions. Landings data taken from 2004 snapper/grouper logbook data. 2003 ex-vessel prices were taken from Section 3.5 of the draft Consolidated HMS FMP.** Note: SCS are not caught in the North Atlantic region.

Species	Area		
Large coastal sharks (LCS) Average ex-vessel price across regions: $0.44 per lb dw	Gulf of Mexico	Ex-vessel $/lb dw	$0.38
		Weight lb dw	1,484,380.9
		Fishery Revenue	$564,065
	South Atlantic	Ex-vessel $/lb dw	$0.39
		Weight lb dw	645,392.3
		Fishery Revenue	$251,703
	North Atlantic	Ex-vessel $/lb dw	$0.56*
		Weight lb dw	22,958
		Fishery Revenue	$12,857
LCS Total		**Weight lb dw**	**2,152,731.2**
		Fishery Revenue	**$828,625**
Small coastal sharks (SCS) Average ex-vessel price across regions $1.84 lb dw	Gulf of Mexico	Ex-vessel $/lb dw	$0.50
		Weight lb dw	88,627.5
		Fishery Revenue	$44,314
	South Atlantic	Ex-vessel $/lb dw	$3.19
		Weight lb dw	55,355.2
		Fishery Revenue	$176,583
SCS Total		**Weight lb dw**	**143,982.7**
		Fishery Revenue	**$220,897**
Pelagic Sharks Average ex-vessel price across regions $1.00 lb dw	Gulf of Mexico	Ex-vessel $/lb dw	$1.15
		Weight lb dw	4,179
		Fishery Revenue	$4,806
	South Atlantic	Ex-vessel $/lb dw	$0.87
		Weight lb dw	2,156
		Fishery Revenue	$1,876
	North Atlantic	Ex-vessel $/lb dw	$0.98*
		Weight lb dw	839
		Fishery Revenue	$822
PEL Total		**Weight lb dw**	**7,174**
		Fishery Revenue	**$7,504**
Shark Fins Average ex-vessel price across regions: $19.00 per lb dw	Gulf of Mexico	Ex-vessel $/lb dw	$20.17
		Weight lb dw	5,513
		Fishery Revenue	$111,197
	South Atlantic	Ex-vessel $/lb dw	$17.83
		Weight lb dw	6,100.3
		Fishery Revenue	$108,768
	North Atlantic	Ex-vessel $/lb dw	-
		Weight lb dw	-

Species	Area		
		Fishery Revenue	-
Shark Fin Total		**Weight lb dw**	**11,613.3**
		Fishery Revenue	**$219,965**
Total Fishery Revenue			**$1,276,991**

*The ex-vessel price was calculated by taking the average ex-vessel prices across all gear types in 2003.

6.3. Variable Costs and Net Revenues of Commercial Shark Vessels

In 2003, NMFS began selecting 20 percent of all active directed commercial shark fishermen to report cost earnings information. Using information from trips that did not include lightstick purchases (*i.e.*, trips that are not targeting swordfish), preliminary estimates of average costs for fuel, bait, and ice were approximately $1,765, $570, and $398 per fishing trip, respectively. These should be considered preliminary and are subject to change.

At this time, NMFS believes that the variable costs for commercial shark fishermen using BLL gear are similar to the fishing costs for PLL. There are some costs that may be lower for BLL gear. For instance, shark fishermen should not need lightsticks (used to catch swordfish) and often set less gear than PLL fishermen. The average net revenues/vessel from LCS landings each year will depend the gross revenues, the number of trips made each year, and the costs associated with each trip (i.e., fuel, bait, and ice). NMFS estimates the approximate expenses per trip average as $2,733 ($1,765+$570+$398).

6.4. Expected Economic Impacts of the Alternatives

NMFS analyzed three alternatives in this document. A detailed breakdown of the cost of each piece of equipment required for each alternative can be found in Table 6.4 at the end of this section. A summary of the expected economic impacts of each alternative can be found in Table 6.2. A detailed outline with examples of different types of equipment that would satisfy the requirements of the different alternatives can be found in Appendix A.

Table 6.2 **Comparison of prices for each vessel for the different alternatives listed in Table 6.4. Note that estimated prices do not include shipping or recommended gear, and are current, 2005 prices. Costs associated with Alternatives 2 and 3 do not include the baseline cost, which is cost of gear currently required of Atlantic shark fishermen with BLL gear onboard. Thus, the outlined costs of Alternative 2 and 3 would be in addition to the baseline costs.**

Alternative		Low-end Priced Gear	High-end Priced Gear
1	Baseline/Current Cost	$102	$370
2	*4' or less freeboard height*	$152	$232
	> 4' freeboard height	$263	$477
***3**	*4' or less freeboard height*	$253	**$487**
	> 4' freeboard height	$398	**$977**

*the baseline/current cost for Alternative 3 is different from Alternative 1 or 2 due to the handle-length and additional cutting blade requirements.

Table 6.3 **Difference in costs for each vessel between alternatives 2 and 3 based on freeboard height.**

	Difference Between Alt. 2 & 3 (low-end prices)	Difference Between Alt. 2 & 3 (high-end prices)
4' or less freeboard height	$101	$255
> 4' freeboard height	$135	$500

A low-end and a high-end price were calculated for each alternative. In addition, the costs listed in Table 6.2, Table 6.3, and Table 6.4 are given in 2005 dollars (whereas the costs and revenues in the above sections are given in 2003 dollars). Below, the 2003 equivalent cost of each alternative is given in the text in order to aid in comparison between ex-vessel revenues and expected costs2. The low-end price represents the least expensive equipment options listed in Appendix A. Table A. 1 in Appendix A is meant to give tangible examples of equipment that meets NMFS design standards. Fishermen do not have to purchase these exact equipment examples; fishermen would be in compliance with a given alternative if they could purchase or make any piece of equipment needed as long as the equipment conforms to the design standards outlined in Appendix A. NMFS is aware that fishermen may know of other suppliers/retailers who could sell particular pieces of equipment for less than what is quoted in this document. In addition, most fishermen already have bolt cutters, needle nose pliers, monofilament cutters and some mouth gags (i.e., the wooden handle of a wire brush, hank of rope, etc) onboard their vessel, so these items would not have to be purchased.

In addition, the costs outlined in Table 6.2 and Table 6.4 do not include the cost of shipping because the cost of shipping would depend on the distance equipment has to be shipped, the type of shipping requested, and the weight of the shipment. Finally, the costs shown in Table

[2] 2003 prices were calculated from 2005 prices by using an automated calculator found on the website: http://www.bls.gov/. 2003 prices can also be calculated by multiplying 2005 prices by 0.923.

6.2 are based on a one-time cost. These costs do not include the cost of replacing equipment that is either broken or lost while at sea.

Similarly, the estimated high-end prices in Table 6.2 and Table 6.4 are meant to illustrate the cost of purchasing equipment that is specifically made for different alternatives (i.e., long-handled dehookers with included 12 foot (3.66 m) handles to meet a 12 foot (3.66 m) handle requirement). However, the different equipment combinations are not necessarily the highest price possible for a given alternative; combining certain gear types to achieve the highest possible cost for an alternative did not always make practical sense. Thus, the low-end and high-end prices are meant to illustrate the practical range in costs that fishermen could incur in order to be compliant with a given alternative.

As mentioned above, alternative 1 would maintain the existing regulations. Alternative 1 in Table 6.2 represents the costs BLL fishermen have already incurred to comply with HMS BLL regulations for the safe handling, release, and disentanglement of sea turtles, smalltooth sawfish, and other protected resources. In addition to having to possess a long-handled dipnet and line cutter, Atlantic shark fishermen fishing with BLL gear must also use corrodible hooks and must post inside the wheelhouse the sea turtle handling and release guidelines provided by NMFS. Additional economic impacts associated with alternative 1 would not be expected (since it is the current status quo of the fishery). However, adverse economic impacts could result if no action is taken to reduce sea turtle bycatch mortality. Sea turtles could have significantly lower post-release survival if hooks and associated fishing gear are not removed; removing fishing hooks and associated gear could help reduce post-release mortality and help the fishery stay below the mortality incidental take limits for the fishery.

The economic impact of alternative 2 depends on freeboard height of the BLL vessel. The estimated economic impact of the examples for the different freeboard heights can be seen in Table 6.2. These costs range from a low-end equipment cost of $152 ($140 in 2003) for vessels with a freeboard four feet (1.22 m) or less to a high-end equipment cost of $477 ($440 in 2003) for vessels with a freeboard height greater than four feet (these costs do not include current requirements for the BLL fishery as outlined in alternative 1). When this is calculated on a fishery-wide scale (*i.e.*, the 284 vessels that currently have directed or incidental shark permits, but do not also have PLL gear), it would result in a total of approximately $43,200 (284 vessels x $152) to $135,500 (284 vessels x $477) in capital costs in the first year. While the increased costs associated with alternative 2 result is an initial negative economic impact, there could be long-term positive economic impacts by avoiding potentially more restrictive regulations to reduce sea turtle mortality as a result of interactions with BLL gear, retrieving gear, and decreasing time for re-rigging gear. Specifically, post-release survival of sea turtles and other protected resources could increase with the removal of hooks and associated gear. This would help the fishery stay below the mortality incidental take limits for the fishery, avoiding potentially more restrictive measures. In addition, the retrieval of hooks and associated gear from hooked sea turtles and other protected resources would reduce the cost of replacing hooks and fishing gear as well as reduce the amount of time fishermen have to spend re-rigging gear. Economic gain from retrieving hooks could be substantial given the average price for circle hook is $2.24 (ranging from $0.30 to $7.00 each), and an average price of a J-hook is $2.70 (ranging from $0.50 to $7.50 each) (NMFS, 2005). Fishing efficiency may be reduced initially due to lost

time while dehooking sea turtles and other protected resources. However, as fishermen become more proficient with dehooking equipment, such lost time should decrease.

Alternative 3, the preferred alternative, would have the largest expected initial economic impact by requiring all the handling, dehooking and disentanglement equipment required of the PLL fishery. All dehooking equipment would be required to have handle lengths at least six feet (1.83 m) or 150 percent of the vessel's freeboard height, whichever is greater. Unlike alternative 2, all dehooking equipment is required under alternative 3, regardless of a vessel's freeboard height. However, the cost associated with alternative 3 changes depending on a vessel's freeboard height. The current cost for a vessel with a freeboard height greater than four feet ranged from $398 ($367 in 2003) to $977 ($902 in 2003) (Table 6.2 and Table 6.4). Vessels with lower freeboards would incur a smaller negative economic impact; for example, the current costs associated with a freeboard height of four feet or less ranged from $253 to $487 ($233 to $450 in 2003). When calculated on a fishery-wide scale, this would result in a total of $71,900 (284 vessels x $253) to $138,400 (284 vessels x $487) in initial capital costs for vessels with a freeboard height of four feet or less. This alternative exemplifies the more extreme range of alternatives considered by NMFS. However, as already stated above, negative economic impacts could be mitigated by fishermen recovering attached fishing gear to hooked animals using the dehooking equipment. Dehooking animals may also allow fishermen to offset some labor costs since fishermen would spend less time re-rigging fishing equipment, and sea turtles and other protected resources could have higher post-release survival when hooks and associated fishing gear are removed; increasing post-release survival of sea turtles would help the Atlantic shark BLL fishery stay below their mortality ITS.

Table 6.4 **The current estimated costs of different alternatives given the example models selected. Prices do not include shipping costs. Note: costs associated with alternative 2 and 3 are dependent on freeboard height. Different vendors where equipment can be purchased for the shown estimated costs can be found in Table A1 in Appendix A.**

			Low-end Priced Gear:	Price	High-end Priced Gear:	Price
Alternative		**Requirement**	**Gear Combination**	**Low-end**	**Gear Combination**	**High-end**
1		(A) Long-Handled Line Cutter	NOAA/Arceneaux line clipper (no handle included)	$5	NLO6 Laforce 6' line cutter (6' handle included)	$160
		8' wooden pole for handle for line cutter*		$36	-	-
		(E) Dip Net	6' Ranger Landing Net Model 997 (6' handle included)	$61	DN6P ARC 6' dipnet (6' handle included)	$210
		Alt. 1 Total (Baseline Costs to Comply with Current Requirements)		**$102**		**$370**
2	*Minimum handle length of 6' (equivalent to 4' freeboard height or less)*	(F) Standard Automobile Tire	Standard tire	$20	Standard tire	$20
		(G) Short-Handled Dehooker for Internal Hooks	ST08 ARC Bite Block Deep Hooked Turtle Dehooker	$50	ST08 ARC Bite Block Deep Hooked Turtle Dehooker	$50
		(H) Short-Handled Dehooker for External Hooks	Satisfied with G	$0	SC24 24" Scotty's Dehooker	$28
		(I) Long-nose/needle-nose Pliers	12-in. (30.48-cm) S.S. NuMark Model #030281109871	$20	12-in. (30.48-cm) S.S. NuMark Model #030281109871	$20
		(J) Monofilament Cutter	Jinkai Model MC-T	$21	Jinkai Model MC-T	$21
2	*Minimum handle length of 6' (equivalent to 4' freeboard height or less)*	(K) Bolt Cutter	Manufacturer H.K. Porter 1490 AC	$40	Manufacturer H.K. Porter 1490 AC	$40
		(L) Mouth Gags (2 different types)	1) Set of ropes (2) covered with hose 2) Hank of rope	1) $0.50 2) $0.75	1) Set of (3) canine mouth gags 2) Large avian oral speculum	1) $37.80/set 2) $15.50
		Alt. 2 Total (4' or less freeboard height)		**$152.25**		**$232.30**
	> 4' freeboard height (handle length must be 150% of freeboard height)	(B) Long-Handled Dehooker for Internal (and External) Hooks	BPIN ARC 9" pigtail dehooker (handle not included)	$40	BP11 ARC 12' Pole Dehooker (12' handle included)	$210
		8' wooden pole for handle for dehooker*		$36	-	-
		(C) Long-Handled Dehooker for External Hooks	Satisfied with B	$0	Satisfied with B	$0

Alternative		Requirement	Low-end Priced Gear: Gear Combination	Price Low-end	High-end Priced Gear: Gear Combination	Price High-end
		(D) Long-Handled device to pull "Inverted V"	12' Gorelic Telescoping Boathook	$35	12' Gorelic Telescoping Boathook	$35
		(F) Standard Automobile Tire	Standard tire	$20	Standard tire	$20
		(G) Short-Handled Dehooker for Internal Hooks	ST08 ARC Bite Block Deep Hooked Turtle Dehooker	$50	ST08 ARC Bite Block Deep Hooked Turtle Dehooker	$50
		(H) Short-Handled Dehooker for External Hooks	Satisfied with G	$0	SC24 24" Scotty's Dehooker	$28
		(I) Long-nose/needle-nose Pliers	12-in. S.S. NuMark Model #030281109871	$20	12-in. S.S. NuMark Model #030281109871	$20
2	*> 4' freeboard height (handle length must be 150% of freeboard height)*	(J) Monofilament Cutter	Jinkai Model MC-T	$21	Jinkai Model MC-T	$21
		(K) Bolt Cutter	Manufacturer H.K. Porter 1490 AC	$40	Manufacturer H.K. Porter 1490 AC	$40
		(L) Mouth Gags (2 different types)	1) Set of ropes (2) covered with hose 2) Hank of rope	1) $0.50 2) $0.75	1) Set of (3) canine mouth gags 2) Large avian oral speculum	1) $37.80/set 2) $15.50
		Alt. 2 Total (> 4' freeboard height)		**$263.25**		**$477.30**
3	*4' freeboard height or less (6'minimum handle length)*	Replacement Blades for Line Clipper	NOAA/Arceneaux line clipper (seat belt cutter) - replacement blade	$5	NLBL ARC serrated replacement blades for Laforce line cutter	$15
		(B) Long-Handled Dehooker for Internal (and External) Hooks	BPIN ARC 9" pigtail dehooker (handle not included)	$40	6P10 ARC 6' Pole Dehooker **or** P610 Big Game Dehooker (extended handle included)	each $120
		8' wooden pole for handle for dehooker *		$36	-	-
		(C) Long-Handled Dehooker for External Hooks	Satisfied with B	$0	LJ6P ARC J-Style Dehooker	$100
		(D) Long-Handled device to pull Inverted "V"	6' Davis Telescoping Boathook	$20	6' Davis Telescoping Boathook	$20
		(F) Standard Automobile Tire	Standard tire	$20	Standard tire	$20
3	*4' freeboard height or less (6'minimum handle length)*	(G) Short-Handled Dehooker for Internal Hooks	ST08 ARC Bite Block Deep Hooked Turtle Dehooker	$50	ST08 ARC Bite Block Deep Hooked Turtle Dehooker	$50

Alternative		Requirement	Low-end Priced Gear: Gear Combination	Price Low-end	High-end Priced Gear: Gear Combination	Price High-end
		(H) Short-Handled Dehooker for External Hooks	Satisfied with G	$0	SC24 24” Scotty’s Dehooker	$28
		(I) Long-nose/needle-nose Pliers	12-in. S.S. NuMark Model #030281109871	$20	12-in. S.S. NuMark Model #030281109871	$20
		(J) Monofilament Cutter	Jinkai Model MC-T	$21	Jinkai Model MC-T	$21
		(K) Bolt Cutter	Manufacturer H.K. Porter 1490 AC	$40	Manufacturer H.K. Porter 1490 AC	$40
		(L) Mouth Gags (2 different types)	1) Set of ropes (2) covered with hose 2) Hank of rope	1) $0.50 2) $0.75	1) Set of (3) canine mouth gags 2) Large avian oral speculum	1) $37.80/set 2) $15.50
		Alt. 3 Total (4’ freeboard height or less)		**$253.25**		**$487.30**
	> 4’ freeboard height (handle length must be 150% of freeboard height)	(A) Long-Handled Line Cutter**	NOAA/Arceneaux line clipper (seat belt cutter) (handle not included)	$5	NL12 Laforce 12’ line cutter (extended handle included)	$210
		12’ wooden pole for handle for line cutter *		$45	-	-
		(E) Dip Net**	Ranger Landing Net Model 997 (9’ handle included)	$71	DN14 ARC 12’ dipnet (12’ handle included)	$275
3	*> 4’ freeboard height (handle length must be 150% of freeboard height)*	Replacement Blades for Line Clipper	NOAA/Arceneaux line clipper (seat belt cutter) – replacement blade	$5	NLBL ARC serrated replacement blades for Laforce line cutter	$15
		(B) Long-Handled Dehooker for Internal (and External) Hooks	BPIN ARC 9” pigtail dehooker (handle not included)	$40	BP11 ARC 12’ Pole Dehooker	$210
		12’ wooden pole for handle for dehooker*		$45	-	-
		(C) Long-Handled Dehooker for External Hooks	Satisfied with B	$0	Satisfied with B	$0
		(D) Long-Handled device to pull “Inverted V”	12’ Garelick Telescoping Boathook	$35	12’ Garelick Telescoping Boathook	$35
		(F) Standard Automobile Tire	Standard tire	$20	Standard tire	$20
		(G) Short-Handled Dehooker for Internal Hooks	ST08 ARC Bite Block Deep Hooked Turtle Dehooker	$50	ST08 ARC Bite Block Deep Hooked Turtle Dehooker	$50
		(H) Short-Handled Dehooker for External Hooks	Satisfied with G	$0	SC24 24” Scotty’s Dehooker	$28
		(I) Long-nose/needle-nose Pliers	12-in S.S. NuMark Model #030281109871	$20	12-in. S.S. NuMark Model #030281109871	$20

Alternative		Requirement	Low-end Priced Gear: Gear Combination	Price Low-end	High-end Priced Gear: Gear Combination	Price High-end
		(J) Monofilament Cutter	Jinkai Model MC-T	$21	Jinkai Model MC-T	$21
		(K) Bolt Cutter	Manufacturer H.K. Porter 1490 AC	$40	Manufacturer H.K. Porter 1490 AC	$40
3	*> 4' freeboard height (handle length must be 150% of freeboard height)*	(L) Mouth Gags (2 different types)	1) Set of ropes (2) covered with hose 2) Hank of rope	1) $0.50 2) $0.75	1) Set of (3) canine mouth gags 2) Large avian oral speculum	1) $37.80/set 2) $15.50
		Alt. 3 Total (>4' freeboard height)		**$398.25**		**$977.30**
	****Recommended only*	*Turtle Tether*	*Turtle Tether Ninja Sticks*	*$20*	*Turtle Tether TT06 6' ARC*	*$170-250*

* Wooden poles listed for low-end priced long-handled equipment come in 8' (2.43 m) and 12' (3.65 m) lengths but could be cut to the appropriate length. See Appendix A for suggested design specifications.
** Large vessels may need to replace existing dipnets and line cutters to ensure adequate handle length. The new gear would cost between $24 to $130 (low-end and high-end price estimates, respectively) to update existing gear.
***Recommended gear not included in price of low- or high-end prices

CHAPTER 6 REFERENCES

NMFS. 2005. Draft Consolidated Atlantic Highly Migratory Species Fishery Management Plan. NOAA, National Marine Fisheries Service, Highly Migratory Species Management Division, Silver Spring, MD. Public Document.

7.0 REGULATORY IMPACT REVIEW

The Regulatory Impact Review (RIR) is conducted to comply with Executive Order 12866 (E.O. 12866) and provides analyses of the economic benefits and costs of each alternative to the nation and the fishery as a whole. Certain elements required in an RIR are also required as part of an environmental assessment (EA). Thus, this section should be considered only part of the RIR, the rest of the RIR can be found throughout this document.

The RIR corresponding to the measures proposed in this rulemaking that complement CFMC closures are found in Chapter 7 of the FSEIS for the Comprehensive Amendment to the Fishery Management Plans of the U.S. Caribbean.

7.1. Description of the Management Objectives

Please see Chapter 1 for a description of the management objectives associated with this Amendment.

7.2. Description of the Fishery

Please see Chapter 3 for a description of the fisheries that could be affected by this Amendment.

7.3. Statement of Problem

Please see Chapter 1 for a description of the problem and need for this Amendment.

7.4. Description of Each Alternative

Please see Chapter 2 for a summary of each alternative and Chapter 4 for a complete description of each alternative and its expected ecological, social, and economic impacts. Chapters 6 and 8 provide additional information related to the alternatives.

7.5. Economic Analysis of Expected Effects of Each Alternative Relative to the Baseline

NMFS does not believe that the national net benefits and costs would change significantly in the long term as a result of implementation of the proposed action. The total amount of sharks landed and available for consumption are not expected to change. Table 7.1 indicates the possible net economic benefits and costs of each alternative. As described in Chapter 6, under the preferred alternative, each vessel could spend between $254 and $978 to comply with the proposed regulations. Fishery-wide, this could range from $71,900 to $277,553. This is more than the other alternatives in the short-term; however, it could have long-term benefits in reducing impacts to protected resources and avoiding more restrictive regulations to reduce sea turtle bycatch.

7.6. Conclusion

Under E.O. 12866, a regulation is a "significant regulatory action" if it is likely to: (1) have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities; (2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; (3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights, and obligation of recipients thereof; or (4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order. The proposed actions described in this document and in the proposed rule do not meet the above criteria. Therefore, under E.O. 12866, the proposed actions described in this document have been determined to be not significant for the purposes of E.O. 12866. A summary of the expected net economic benefits and costs of each alternative can be found in Table 7.1.

Table 7.1 Summary of the Net Benefits and Current Costs for Each Alternative.

Alternative	Estimated Net Economic Benefits	Estimated Net Economic Costs
1	None	None
2	-Minor positive benefit from reduced hook replacement costs (if hooks retrieved undamaged) -Reduce the potential for the need to impose more restrictive regulations	Vessels would incur an estimated compliance cost of approximately $153 – $478 Dehooking may result in lost fishing time
3 – Preferred Alternative	Minor positive benefit from reduced hook replacement costs (if hooks retrieved undamaged) -Reduce the potential for the need to impose more restrictive regulations	Vessels would incur an estimated compliance cost of approximately $254 – $978 Dehooking may result in lost fishing time

8.0 INITIAL REGULATORY FLEXIBILITY ANALYSIS (IRFA)

The Initial Regulatory Flexibility Analysis (IRFA) is conducted to comply with the Regulatory Flexibility Act (5 USC 601 et. seq.) and provides analyses of the economic impacts of the various alternatives on small entities. Certain elements required in an IRFA are also required as part of an environmental assessment (EA). Thus, this section should be considered only part of the IRFA. The rest of the IRFA for the complementary measures to CFMC regulations can be found throughout this document and the FSEIS for the Comprehensive Amendment to the Fishery Management Plans of the U.S. Caribbean.

8.1. Description of the Reasons Why Action is Being Considered?

Please see Chapter 1 for a description of the need for action.

8.2. Statement of the Objective of, and Legal Basis for, the Proposed Rule

Please see Chapter 1 for a description of the objectives of the proposed rule.

8.3. Description and Estimate of the Number of Small Entities to Which the Proposed Rule Would Apply

NMFS considers all permit holders to be small entities as reflected in the Small Business Administration's (SBA) criteria (gross receipts less than $3.5 million, the SBA size standard for defining a small versus large business entity). A description of the fisheries affected can be found in Chapter 3 of this document and in Chapter 5 of the FSEIS for the Comprehensive Amendment to the Fishery Management Plans of the U.S. Caribbean.

As of October 2005, there were approximately 235 directed shark permit holders and 320 incidental shark permit holders for a total of 555 permit holders who are authorized to fish for sharks. As described in Chapter 6, NMFS considers the 284 shark permit holders that do not also hold swordfish permits to be the universe of permit holders that would be affected this proposed rulemaking.

The complementary measures implemented by the CFMC that are proposed in this rulemaking for Atlantic HMS fishermen would result in six, year-round, BLL gear closures. This could *potentially* impact all 555 directed and incidental shark fishermen. However, NMFS assumes that shark fishermen residing outside of the Caribbean region would not travel to this region to target sharks due to the extensive distances involved. Therefore, only one incidental shark fishing permit holder and one shark dealer permit holder (both in the U.S. Virgin Islands) may be directly affected by these measures. There are no shark limited access permit holders or shark dealer permit holders in Puerto Rico.

Other sectors of HMS fisheries such as dealers, processors, bait houses, and gear manufacturers, some of which are considered small entities, might be indirectly affected by the proposed regulations. However, the proposed rule does not apply directly to them. Rather it applies only to permit holders and fishermen.

8.4. Description of the Projected Reporting, Record-Keeping, and Other Compliance Requirements of the Proposed Rule, Including an Estimate of the Classes of Small Entities Which Would Be Subject to the Requirements of the Report or Record

The preferred alternative for additional requirements for safe handling and release of sea turtle and other non-target species in this document would result in additional equipment and compliance requirements for vessels fishing with shark BLL gear. However, there would be no change in projected reporting or record-keeping requirements.

Alternative 3, the preferred alternative, would require the possession and use of specific equipment by shark BLL fishermen to participate and remain compliant in Atlantic shark BLL fishery. Although the release equipment required under preferred alternative 3 is relatively simple to use, limited training may be required to use them effectively. NMFS has conducted voluntary workshops to teach fishermen how to use the gear. NMFS also has a video available, free of charge, in English, Spanish, Vietnamese, that demonstrates how to use the equipment. Currently, a preferred alternative in the draft Consolidated HMS FMP (August 19, 2005, 70 FR 48804) would require Atlantic shark fishermen with BLL gear onboard to attend mandatory workshops on safe handling, release, and disentanglement of protected species. These workshops would consist of an initial one-day, hands-on workshop with re-certification occurring every three years. More information on these workshops is available in the draft Consolidated HMS FMP and related proposed rule.

Furthermore, this proposed rule would implement complementary Atlantic HMS measures to ensure that the Atlantic HMS fishermen with BLL gear onboard do not fish with, or deploy BLL gear in six areas off the coast of U.S. Virgin Islands and Puerto Rico. Specifically, this proposed rule would prevent the deployment of BLL gear on a year-round basis at the following locations: 1) Grammanik Bank closed area, 2) existing mutton snapper aggregation areas off the southwest coast of St. Croix, U.S. Virgin Islands, and 3) existing red hind spawning aggregation areas (East of St. Croix, West of Puerto Rico (including Bajo de Cico, Tourmaline Bank, and Abrir La Sierra Bank). The exact coordinates of these areas are listed at 50 CFR 622.33 (a) (1)-(a)(3).

8.5. Identification of All Relevant Federal Rules Which May Duplicate, Overlap, or Conflict with the Proposed Rule

Fishermen, dealers, and managers in these fisheries must comply with a number of international agreements, domestic laws, and other FMPs. These include, but are not limited to, the Magnuson-Stevens Act, the Atlantic Tunas Convention Act (ATCA), the High Seas Fishing Compliance Act, the MMPA, the ESA, the NEPA, the Paperwork Reduction Act (PRA), and the Coastal Zone Management Act (CZMA). NMFS strives to ensure consistency among the regulations with Fishery Management Councils and other relevant agencies. NMFS does not believe that the proposed regulations would conflict with any relevant regulations, Federal or otherwise.

The measures in this proposed rule that would implement complementary closures to Atlantic HMS participants with BLL gear onboard were published in the Federal Register by the CFMC for Council-managed fisheries on October 28, 2005 (70 FR 62073) and became effective on November 28, 2005.

8.6. Description of Any Significant Alternatives to the Proposed Rule that Accomplish the Stated Objectives of Applicable Statues and that Minimize any Significant Economic Impact of the Proposed Rule on Small Entities

One of the requirements of an IRFA is to describe any alternatives to the proposed rule that accomplish the stated objectives and which minimize any significant economic impacts. These impacts are discussed below, in Chapters 4 and 6 of this document, and in the FSEIS for the Comprehensive Amendment to the Fishery Management Plans of the U.S. Caribbean. Additionally, the Regulatory Flexibility Act (5 U.S.C. § 603 (c) (1)-(4)) lists four general categories of "significant" alternatives, which should be discussed. These types of alternatives (all of which assume the proposed action could impact small entities differently than large entities) are:

1) Establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities;
2) Clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities;
3) Use of performance rather than design standards; and,
4) Exemptions from coverage of the rule for small entities.

As noted earlier, NMFS considers all permit holders to be small entities. In order to meet the objectives of this proposed rule, consistent with Magunson-Stevens Act, ATCA, and the ESA, NMFS cannot exempt small entities or change the reporting requirements only for small entities. Additionally, the handling and release gear requirements would not be effective with different compliance requirements. Thus, there are no alternatives discussed which fall under the first and fourth categories described above. In addition, none of the alternatives considered would result in additional reporting or compliance requirements (category two above). All alternatives considered are based on design standards rather than performance standards; fishermen would be in compliance of the proposed rulemaking as long as they possess gear and utilize gear that conforms to the design specifications located in Appendix A for the safe handling, release, and disentanglement of protected resources. Any item meeting the design standards may be constructed or purchased and used, as long as the design is first certified by the NMFS Pascagoula Laboratory. When new items are certified, a notice in the Federal Register will be published. As described below, NMFS considered three different alternatives in this proposed rulemaking that could minimize the economic impact on small entities.

The preferred alternative of this rulemaking would require Atlantic shark fishermen with BLL gear onboard to possess, maintain, and utilize all the equipment that is currently required for the HMS PLL fishery regardless of vessel freeboard height. NMFS preferred this alternative because it would improve post-hooking survival of sea turtles, smalltooth sawfish, and other protected resources and maintain consistency between the PLL and BLL fisheries. This alternative would have positive ecological impacts and negative short-term economic impacts.

Alternative 3 is estimated to have an economic impact of a minimum of $253 to $487 for vessels with a freeboard height of four feet (1.22 m) or less. This range represents the range of low-end and high-end priced gears (see Table 6.2 andTable 6.4 in Chapter 6). Larger economic impacts are expected for Atlantic shark fishermen with vessels with freeboard heights greater than four feet (and costs will be dependent on freeboard height due to variable costs of long-handled dehooking gears; Table 6.2).

However, reducing mortality of sea turtles, smalltooth sawfish, and other protected resources is an integral part of maintaining compliance with BiOp. Consistent with the October 29, 2003, BiOp, NMFS is required to ensure that fishermen handle protected species taken during fishing activities in such a way as to increase their chances of survival. The final rule that implemented NMFS-approved dehooking, disentanglement, and release gear and protocols onboard all vessels with PLL onboard represents the most up to date scientific information regarding protocols for maximizing post-hooking survival of protected species. Because of the similarities between these fisheries and the fact that many vessel operators and owners fish with both BLL and PLL gear, NMFS prefers the alternative that would enable Atlantic shark fishermen with BLL gear onboard to follow the protocols and possess the equipment necessary for the PLL fishery, easing determination of compliance for both fishermen and enforcement. This could also provide fishermen with the flexibility to change between PLL and BLL gear without additional cost. The proposed rule would allow Atlantic shark fishermen with BLL gear onboard to construct additional equipment themselves provided it meets design specifications. Such construction could reduce economic impacts. In addition, most fishermen have bolt cutters, needle nose pliers, monofilament cutters, boat hooks, and some mouth gags (i.e., the wooden handle of a wire brush, hank of rope, etc) already onboard their vessel, so these items would not have to be purchased. The cost of dehooking gear and time and effort involved in properly dehooking animals maybe be offset by gaining efficiency in not having to re-rig fishing equipment, and economic gain from retrieving hooks. Such gain could be substantial given an average price for circle hook is $2.24 (ranging from $0.30 to $7.00 each), and an average price of a J-hook is $2.70 (ranging from $0.50 to $7.50 each) (NMFS, 2005).

Other alternatives considered were alternative 1, which would maintain the current requirements in the Atlantic shark BLL fishery for safe handling, release, and disentanglement of protected resources, and alternative 2, which would require Atlantic shark fishermen with BLL gear onboard to possess, maintain, and utilize certain safe handling, release, and disentanglement of protected resources gears based on freeboard height. The costs for Alternative 1 provided in Table 6.2 represent the cost BLL fishermen have already incurred to comply with HMS BLL regulations for the safe handling, release, and disentanglement of sea turtles, smalltooth sawfish, and other protected resources. Additional economic impacts would not be expected relative to the status quo of the fishery. However, adverse economic impacts could result if no action is taken to reduce sea turtle bycatch mortality. Sea turtles could have significantly lower post-release survival if hooks and associated fishing gear are not removed; removing fishing hooks and associated gear could help reduce post-release mortality and help the fishery stay below the mortality incidental take limits for the fishery. This could avoid more restrictive regulations to reduce sea turtle bycatch.

The economic impact of alternative 2 depends on freeboard height of the Atlantic shark BLL vessel. Estimated economic impact for the different freeboard height examples can be seen in Table 6.2. These costs range from $152 for low-end priced equipment on vessels with a freeboard four feet (1.22 m) or less to $477 for high-end priced equipment on vessels with a freeboard height greater than four feet (these costs do not include current requirements for the BLL fishery as outlined in alternative 1). The economic impacts of alternative 2 are slightly less than those of the preferred alternative. However, unlike alternative 3, which would require Atlantic shark fishermen with BLL gear onboard to possess, maintain, and utilize all the equipment that is currently required for the HMS PLL fishery, under alternative 2, BLL fishermen and crew would not be able to move to the PLL fishery as easily because they would not have all the required dehooking equipment and appropriate training.

The dehooking equipment requirement under alternative 2 would depend on the vessel's freeboard height, as certain long-handled equipment would not be necessary for vessels with a smaller freeboard (a four-foot (1.22 m) or less. The four-foot or less freeboard height was chosen as the threshold for not needing long-handled dehookers because it is assumed that the handle length of a short-handled dehooker in addition to a fisherman's arm length would be sufficient for reaching and dehooking non-boated sea turtles and other protected resources. However, the majority of sea turtles that would interact with Atlantic BLL fisheries are large juvenile loggerhead and adult leatherback sea turtles. Large juvenile loggerheads and adult leatherback sea turtles would most likely be too large to be boated, requiring dehooking to occur while the sea turtles remain in the water (*i.e.*, small sea turtles can be boated and short-handled dehookers can be used to remove hooks). If long-handled dehookers might facilitate improved hook removal, release, or disentanglement of larger turtles (and research in the NED for the PLL fishery has shown that some turtles released alive may subsequently die from hook ingestion, trailing gear, or injuries suffered when entangled in gear), alternative 2 would have less of an ecological benefit compared to alternative 3.

The measures implemented by the CFMC are intended to minimize adverse impacts to EFH (coral and hard bottom habitat), to the extent practicable, as a result of bottom tending gear. This proposed rule would implement six closures off the U.S. Virgin Islands and Puerto Rico, preventing HMS permit holders with BLL gear onboard their vessels, from deploying, or fishing with any fishing gear in these closed areas. These closures are expected to have *de minimus* impacts on HMS permit holders in the Caribbean region. There are no other alternatives that would achieve the objective of minimizing adverse impacts of bottom fishing on EFH. Additional detail and analysis is included in the FSEIS for the Comprehensive Amendment to the Fishery Management Plans of the U.S. Caribbean and the final rule implementing these measures for council managed fisheries.

9.0 COMMUNITY PROFILES

This chapter serves as a brief overview and determination of the social impacts associated with the requirement of dehooking devices for the shark BLL fishery. A more comprehensive review of community profiles for all HMS fisheries can be found in Section 9 of the draft Consolidated HMS FMP (NMFS, 2005). Furthermore, more specific information on the communities affected within the Caribbean region can be found in Chapter 5 of the FSEIS for the Comprehensive Amendment to the Fishery Management Plans of the U.S. Caribbean.

9.1. Introduction

Mandates to conduct social impact assessments come from both the NEPA and the Magnuson-Stevens Act. NEPA requires federal agencies to consider the interactions of natural and human environments by using a "systematic, interdisciplinary approach, which would ensure the integrated use of the natural and social sciences...in planning and decision-making" (§102(2)(A)). Moreover, agencies need to address the aesthetic, historic, cultural, economic, social, or health effects, which may be direct, indirect, or cumulative. Consideration of social impacts is a growing concern as fisheries experience increased participation and/or declines in stocks. With an increasing need for management action, the consequences of these actions need to be examined in order to mitigate the negative impacts experienced by the populations concerned.

Social impacts are generally the consequences to human populations that follow from some type of public or private action. They may include alterations to the ways people live, work or play, relate to one another, and organize to meet their needs. In addition, cultural impacts, which may involve changes in values and beliefs that affect people's way of identifying themselves within their occupation, communities, and society in general, are included under this interpretation. Social impacts analyses help determine the consequences of policy action in advance by comparing the status quo with the projected impacts. Although public hearings and scoping meetings provide input from those concerned with a particular action, they do not constitute a full overview of the affected constituents.

9.2. State and Community Profiles

As mentioned in previous sections, NMFS does not anticipate that any of these alternatives either individually or cumulatively would result in significant social impacts. The regulations specifying a mandatory dehooking equipment onboard all BLL vessels would apply to all directed and incidental shark permit holders that use BLL gear. In addition, none of the alternatives drastically modify the shark BLL fishery, as it currently exists. Rather, this regulation would only require vessels with shark BLL gear for dehooking sea turtles and other protected resources. Thus, this regulation would comply with the National Standards of the Magnuson-Stevens Act (see Chapter 10). NMFS is also considering a number of ways to minimize economic impacts associated with requiring new dehooking equipment on BLL vessels (e.g., the ability of individuals to make their own dehooking equipment).

However, if there were any negative social impacts associated with this rulemaking, they would most likely occur in communities with high numbers of directed and/or incidental shark permit holders. Figure 9.1 shows the top five states that have the highest number of directed and/or incidental shark permit holders. The map also shows where the highest concentrations of permit holders are located in different communities in these five states. The number of directed and/or incidental shark permit holders in these states range from 24 to 278 permits holders (Table 9.1). The numbers of permit holders in other states range from one to 22 permit holders per state with a total of 550 directed and incidental shark permit holders in the Atlantic, Gulf and Caribbean areas as of April 2005.

Some of the directed and incidental shark permit holders also possess PLL gear. Since safe handling and release equipment and protocols are already required for the PLL fishery, these permit holders already have the equipment to satisfy the dehooker requirement being analyzed here. Therefore, NMFS considers the 284 shark permit holders that do not also hold swordfish permits to be the universe of permit holders that would be affected this proposed rulemaking. The majority of shark permits holders (without PLL gear) are located in Florida (106 or 68 percent). Of the remaining 48 shark permit holders without PLL gear, eight are in North Carolina, six are in New Jersey, five are each in Massachusetts, Louisiana and Texas, three are each in Maine, Mississippi, and South Carolina, two are each in Georgia, New Hampshire and New York, and one is each in Alabama, Maryland, Kentucky and Virginia. For additional information pertaining to community profiles see draft Consolidated HMS FMP (2005).

CHAPTER 9 REFERENCES

NMFS. 2005. Draft Consolidated Atlantic Highly Migratory Species Fishery Management Plan. NOAA, National Marine Fisheries Service, Highly Migratory Species Management Division, Silver Spring, MD. Public Document.

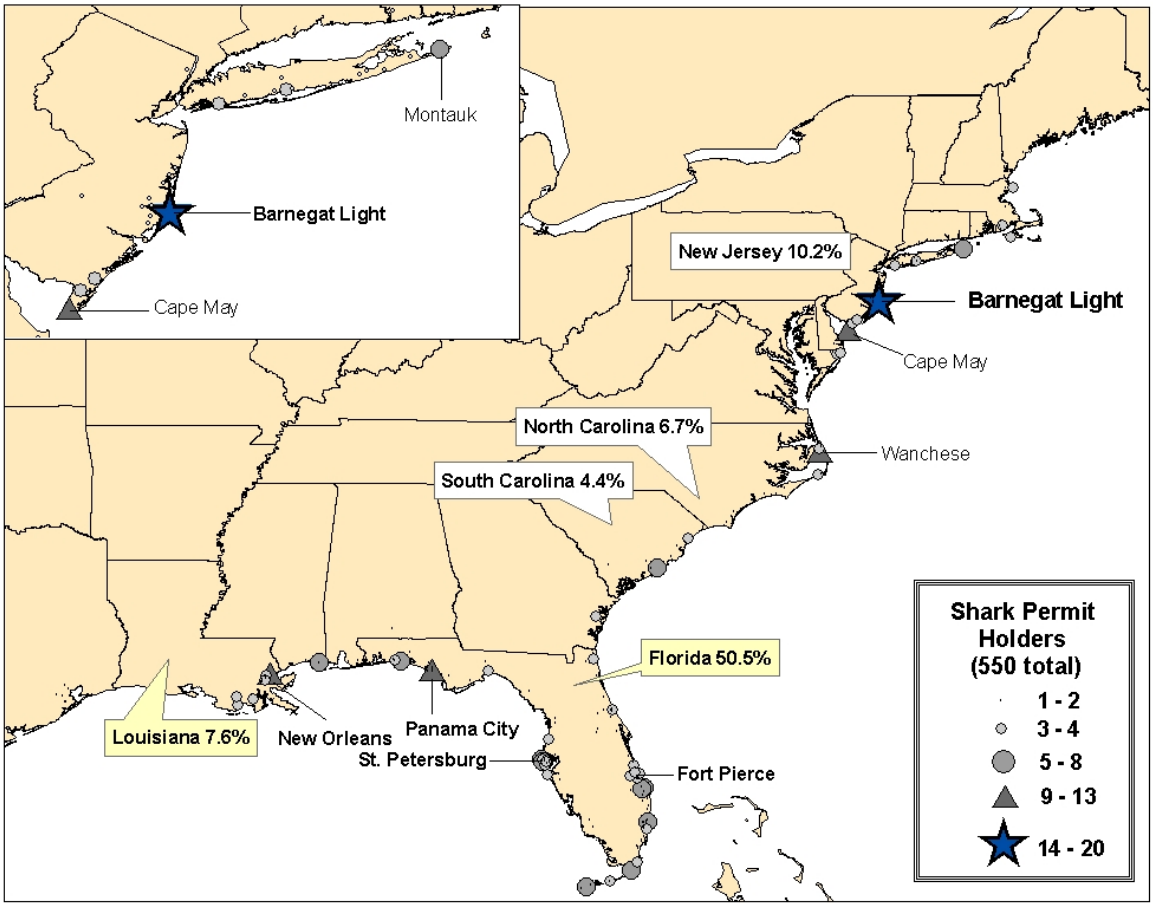


Figure 9.1 **Location of the Shark Directed and Incidental Permit Holders as of April 2005 and percentage of shark permit holders for the top five states.**

Table 9.1 **Number and Percentage of Directed and Incidental Shark Permit Holders by State as of April 2005.**

Shark Permits		
State	**Total**	**%**
Florida	278	50.5%
New Jersey	56	10.2%
Louisiana	42	7.6%
North Carolina	37	6.7%
South Carolina	24	4.4%
New York	22	4.0%
Massachusetts	19	3.5%
Texas	13	2.4%
Rhode Island	10	1.8%
Maryland	9	1.6%
Mississippi	8	1.5%
Virginia	7	1.3%
Maine	6	1.1%
Alabama	4	0.7%
Georgia	4	0.7%
Delaware	3	0.5%
Kentucky	2	0.4%
New Hampshire	2	0.4%
California	1	0.2%
Connecticut	1	0.2%
Indiana	1	0.2%
Virgin Islands	1	0.2%
Grand Total	**550**	**100.0%**

10.0 OTHER CONSIDERATIONS

10.1. National Standards

The analyses in this document are consistent with the National Standard (NS) guidelines set forth in the 50 CFR part 600 regulations. The preferred alternative is anticipated to reduce the post-release mortality of sea turtles and marine mammals and may also benefit other bycatch species by reducing and post hooking mortality. NMFS continues to work in the international community to protect highly migratory species in the Atlantic Ocean throughout their range, while also implementing domestic measures that are consistent with domestic legislation.

The proposed rule is consistent with NS 1, which provides that conservation and management measures shall prevent overfishing while achieving on a continuing basis, the optimum yield from the fishery. This proposed rule would not increase fishing effort on target-species beyond the determined quotas. In addition, it is consistent with domestic efforts to rebuild, manage and conserve the target species. The alternatives considered are based on the best scientific information available (NS 2), including stock assessment, observer, and logbook data, which provide for the management of the species throughout their ranges (NS 3). The alternatives considered are required for all fishermen with HMS permits, who use BLL gear, and thus, they do not discriminate against fishermen in any state (NS 4) nor do they alter the efficiency in utilizing the resource (NS 5). Dehooking equipment would be required by this proposed rulemaking are necessary as a protected resources conservation measure throughout the shark BLL fishery for Atlantic HMS. With regard to NS 6, the alternatives take into account any variations that may occur in the fishery, fishery resources, and catches by analyzing the possibility that different pieces of equipment (either from different vendors or hand-made equipment according to design specifications) can be used to satisfy the specified requirements. In addition, the preferred alternative would enable Atlantic shark fishermen with the flexibility to change between PLL and BLL gear without additional cost. NMFS would continue data collection programs with respect to this fishery in order to assess the effectiveness of management measures.

Additionally, NMFS considered the costs and benefits of the various alternatives both economically and socially under NS 7 and 8 in Chapters 4, 6, 7, 8, and 9 of this document. As reflected in those chapters, the preferred alternative would impose costs on the industry and have potential administrative and enforcement costs. In analyzing and comparing the ecological, economic, and social impacts of various alternatives, including the no action alternative, NMFS has concluded that the benefits of the preferred alternative are real and substantial relative to the costs. The preferred alternative does not result in unnecessary duplication and, where practicable, NMFS has considered ways to minimize costs while addressing conservation and management needs. Specifically, NMFS prefers dehooking alternatives that are expected to reduce sea turtle post-release mortality consistent with the ESA while being consistent with regulation in other HMS fisheries. NMFS has sought to minimize economic impacts, to the

extent practicable, by allowing fishermen to make their own dehooking equipment (as long as they do not sell and distribute patented equipment and it meets the design specifications).

This rulemaking specifically focuses on NS 9. As reflected in Chapters 4, 6, and 9, NMFS has analyzed the ecological impacts of various dehooking alternatives on bycatch and protected species and related economic and social impacts, as well as administrative, enforcement, and management considerations. Based on these analyses and in consideration of the other national standards, NMFS has concluded that the preferred alternative would minimize bycatch and mortality of such bycatch to the extent practicable, as required under NS 9, and is consistent with the ESA. This action would not require fishermen to travel greater distances, work in bad weather, or otherwise fish in an unsafe manner (NS 10).

10.2. Paper Reduction Act

This action does not contain any new collection-of-information requirement for purposes of the Paperwork Reduction Act.

10.3. Federalism

This action does not contain regulatory provisions with federalism implications sufficient to warrant preparation of a Federalism Assessment under E.O. 13132.

11.0 APPENDIX A

Requirements and Equipment Needed for the Careful Release of Sea Turtles Caught in the Atlantic Shark Bottom Longline Fisheries

Introduction

The following requirements and specifications have been prepared in consultation with NMFS Southeast Fisheries Science Center. As specified in 50 CFR 635.21(c)(5)(I), they are intended to be used by all Atlantic vessels that have BLL gear onboard and have been issued, or are required to have, Federal HMS limited access permits. The equipment specified in this document must be used in accordance with NMFS' "Careful Release Protocols for Sea Turtle Release With Minimal Injury" (Epperly et al., 2004), which is required to be onboard all vessels issued a limited access swordfish, shark or tuna longline category permit. The purpose of this equipment is to increase post-release survival of incidentally captured sea turtles by releasing them with minimal injury.

All U.S. BLL vessels with Federal HMS permits have been required to carry dip nets and line clippers on board that meet NMFS design and performance standards, and to comply with the equipment use standards for the handling of incidentally caught sea turtles (December 24, 2003, 68 FR 747406). These requirements have been revised and expanded, based upon field-testing of equipment, user feedback, and product design updates resulting from recent experiments in the NED statistical reporting area. Proposed mandatory requirements and design specifications for the revised and newly required items according to the preferred alternative, 3, are outlined below. All items identified as "mandatory," for both boated and non-boated turtles, must be onboard HMS BLL vessels.

This document contains the approved design standards for release gears. Example models of certified commercially available products are listed in the design standards outline below and in Table A. 1. Any item meeting the design standards may be constructed or purchased and used, as long as the design is first certified by the NMFS Pascagoula Laboratory. Fishermen are allowed to make different pieces of equipment that have a patented design for their own use; however, fishermen are not allowed to make and then sell or distribute patented items. There is an additional NMFS-approved dehooking device that could be made by the fishermen and used for internal and external hooks on non-boated turtles. Design information for this dehooker can be obtained from Charles Bergmann of the NOAA's Southeast Fisheries Science Center (Phone: 228-623-0748). When additional new items are certified, a notice in the Federal Register would be published. Although these product design standards have been developed primarily with sea turtles in mind, many of the devices and techniques also are effective on other species of fish, marine mammals and seabirds and should be used, whenever possible, on all catch to be released.

In circumstances where a sea turtle is too large to be boated, or conditions preclude the safe boarding of the animal, vessels are required to possess, maintain, and utilize long-handled line cutters, and dehooking devices, that are a minimum of 6 feet in length or 150 percent freeboard height, whichever is greater, according to the preferred alternative, 3.

Whenever possible, sea turtles must be brought on board immediately and handled in accordance with the procedures outlines in the standards for the handling of incidentally caught sea turtles [50 CFR 223.206 (d)(1)], unless extreme sea conditions prevent the crew from safely boating the turtle. Generally, all turtles < 3' straight carapace length should be boated. Vessels are required to possess, maintain, and utilize a long-handled dipnet to facilitate safe handling of sea turtles by allowing them to be brought onboard for gear removal without causing further injury to the animal. The turtle should never be brought onboard without a net. In addition, a tire is required for supporting the turtle while it is onboard. If the turtle is too large for the tire, it must be contained and supported on a cushioned surface. Short-handled dehooking devices, line cutters, bolt cutters and appropriate mouth gags could then be used to remove fishing gear and hooks from the boated sea turtle.

Mandatory Equipment and Design Standards for Use with Sea Turtles for Vessels with Freeboard Height Greater Than 4':

(A) *Long-Handled Dipnet.* A long-handled dipnet is required to facilitate safe handling of sea turtles by allowing them to be brought onboard for gear removal without causing further injury to the animal. The turtle should never be brought onboard without a net. Using the line to raise the turtle may result in serious injury and impact post-release survivorship, especially in cases where the turtle has ingested the hook. NMFS has established minimum design standards for the dip nets (65 FR 16347, March 28, 2000 and 66 FR 17370, March 30, 2001). These minimum design standards for dip nets are as follows and are modified based on experiments in the Northeast Distant statistical reporting area. One dip net is required onboard. Minimum design standards are as follows:

(1) Design Standards:

(i) *Size of dip net*. The dip net must have a sturdy net hoop of at least 31" inside diameter and a bag depth of at least 38" to accommodate turtles below 3' carapace length. The bag mesh openings may not exceed 3" x 3". There should be no sharp edges or burrs on the hoop or where it is attached to the handle. There is no requirement for the hoop to be circular as long as it meets the minimum specifications;

(ii) *Extended reach handle.* The dip net hoop must be securely fastened to an extended reach handle or pole with a minimum length equal of six feet. For flexibility of configuration during use and for storage purposes, it is recommended that the handle break down into sections, although this is not a requirement. There is no restriction on the type of material used to construct this handle, as long as it is sturdy enough to support a minimum of 100 lbs without bending or breaking, and facilitates the sturdy attachment of the net hoop.

(2) Example models meeting current design standards:

(i) *ARC 12' Breakdown Lightweight Dip Net Model DN6P (6'), DN08 (8') or DN14 (12') or ARC Net Assembly (hoop, net, coupling-DNIN) and handle (Figure 5 and 8D).* This dipnet is constructed of a hollow heavy duty aluminum tubing to form a 97" circumference hexagonal frame, and the 38" bag is 2 ½" square nylon mesh;

(ii) *Ranger Landing Net Model 997.* This net has a hoop size of 40" x 36" with a net depth of 48" with 1-3/4" heavy duty mesh. Comes with 1-1/4" diameter unbreakable fiberglass handle in variable lengths. Handle slide up into the hoop or may be removed.

(iii) *Lindgren-Pitman, Inc. Model NMFS-Turtle Net.* This dip net is constructed of heavy duty stainless steel tubing to form a 31" diameter circular frame with a 45" bag of 2" square nylon mesh.

B) Long-handled line clipper/cutter. Line clippers or cutters are designed to cut high test monofilament line as close as possible to the hook and to assist in removing line from entangled sea turtles, in an effort to minimize remaining gear upon release. NMFS has established minimum design standards for the line clippers (65 FR 16347, March 28, 2000, and 66 FR 17370, March 30, 2001) that could be purchased or fabricated using available and low cost materials. One long-handled line clipper or cutter and a set of replacement blades are required to be onboard. These minimum design standards for line clippers or cutters have been modified based on experiments in the Northeast Distant statistical reporting area, and are as follows:

(1) Design Standards:

(i) *A protected and secured cutting blade*. The cutting blade(s) must be capable of cutting 2.0-2.1 mm monofilament line (400 # test) or polypropylene multi strand material, known as braided or tarred mainline, and should be maintained in working order. The blade must be curved, recessed, contained in a holder, or otherwise designed to facilitate its safe use so that direct contact between the cutting surface and the sea turtle or the user is prevented. The cutting instrument must be securely attached to an extended reach handle and easily replaced. One extra set of replacement blades meeting these standards must also be carried on board to replace all cutting surfaces on the line cutter or clipper;

(ii) *Extended reach handle*. The line cutter blade must be securely fastened to an extended reach handle or pole with a minimum length of six feet. For flexibility of configuration during use and for storage purposes, it is recommended that the handle break down into sections, although this is not a requirement. There is no restriction on the type of material used to construct this handle as long as it is sturdy and facilitates the secure attachment of the cutting blade.

(2) Models meeting current design standards:

(i) *NOAA/Arceneaux Line Clipper (Figure 1).* The NOAA/Arceneaux line clipper could be fabricated by securely attaching a flat hardened stainless steel seat belt cutter with recessed

cutting blades (such as the Emergency Seat Belt Cutter, Lifesaver Seat Belt Cutter or similar) to an extended reach handle using bolts and/or cable ties. A replacement blade set would require one additional seat belt cutter for the NOAA/Arceneaux Line Clipper;

(ii) *NOAA/Laforce Line Cutter (Figure 2).* The Laforce Line Cutter has a cutting end manufactured from a 6" long ½" aluminum rod with a 4 1/8" end at a 45 angle with (2) 420 C stainless steel serrated cutting blades secured inside the angle. It must be attached to an extended reach handle. A set of replacement blades would require (2) stainless steel serrated cutting blades for the NOAA/Laforce Line Cutter.

C) *Long-handled dehooker for internal hooks.* A long-handled dehooking device designed to remove internal hooks from sea turtles that cannot be boated is required. Because this design shields the barb of the hook and prevents it from re-engaging, this device is also to be used to engage a loose hook when the turtle is entangled, but not hooked, and line is being removed. One long-handled device to remove internal hooks is required onboard. Minimum design standards are as follows:

1) Design Standards:

(i) *Hook removal device.* The hook removal device should be constructed of 5/16" 316 L stainless steel and have a dehooking end no larger than 1 7/8" outside diameter. This device must securely engage and control the leader while shielding the barb to prevent the hook from re-engaging during removal. It cannot have any unprotected terminal points (even blunt ones), as these could cause injury to the esophagus during hook removal. The device must be of a size appropriate to secure the range of hook sizes and styles observed to date in the BLL fishery;

(ii) *Extended reach handle*. The dehooking end must be securely fastened to an extended reach handle or pole with a minimum length equal or greater than 150% of the freeboard or a minimum of 6', whichever is greater. Freeboard is defined here as the working distance between the top rail of the gunwale to the water's surface and would vary based on the vessel design. For flexibility of configuration during use and for storage purposes, it is recommended that the handle break down into sections, although this is not a requirement. There is no restriction on the type of material used to construct this handle as long as it is sturdy and facilitates the secure attachment of the hook removal device.

2) Models meeting current design standards:

(i) *ARC Pole Model Deep-Hooked Dehooker Model 6P10 (6'), BP08 (8'), or BP11 (12') (Figure 8A).* This device is constructed of a 5/16" 316 L stainless steel rod curled into a pigtail spiral loop end with no exposed terminal point. The rod is 7" from point of attachment to the end of the loop, and includes a 13 angle offset to create a 1/8" gap between rod and loop to facilitate line engagement. The loop is designed at a 24 angle bend from the rod and has an inside diameter of 1 ¼" and an outside diameter of 1 7/8". It may be purchased with a 3-part anodized aluminum pole (12') that breaks down into 4' sections for storage. This item is covered under

U.S. Patent # 4,914,853 and U.S. Design Patent # 382,628 held by Aquatic Release Conservation of Ormond Beach, FL;

(ii) *ARC pigtail dehooker Model BP04 and BPIN*. See Section (C)(2)(i) above for a description of this item and patent information. Model BP04 has the head of the dehooker attached to a 4' anodized aluminum pole that may be screwed into other four-foot sections. Model BPIN has the head of the dehooker (and is 9" in length) that could be attached to any suitable handle that follows design standards in Section (C)(1)(ii).

(iii) *ARC 6' Pole Big Game Dehooker Model P610.* See Section (C)(2)(i) above for a description of this item and patent information. This model has a fixed length 6' anodized aluminum handle with a "T" handle.

D) *Long-handled dehooker for external hooks.* A long-handled dehooker is required for use on externally hooked sea turtles that cannot be boated. One of these types of long- handled devices to remove external hooks is required onboard. The long-handled dehooker for internal hooks used for Item B would also satisfy this requirement. Minimum design standards are as follows:

(1) Design Standards:

(i) *Hook removal device.* The dehooker should be constructed of 5/16" 316 L stainless steel rod. A 5" tube T-handle of 1" outside diameter is recommended. The design should be such that the hook could be rotated out without pulling it out at an angle. The dehooking end should be blunt and all edges rounded. The device must be of a size appropriate to secure the range of hook sizes and styles observed to date in the BLL fishery;

(ii) *Extended reach handle.* The handle must be a minimum length equal to the freeboard of the vessel or 6', whichever is greater. Freeboard is defined here as the working distance between the top rail of the gunwale to the water's surface and would vary based on the vessel design.

(2) Models meeting current design standards:

(i) *Any 6' or greater J-Style Dehooker or "Flip Stick" [e.g., ARC Model LJ6P (6') (Figure 3 and 8A)]*. This item is constructed according to the specifications above [Section (D)(1)(i)] with a 1" dehooking end at a 45 angle to the rod forming a "J" shape;

(ii) *ARC Pole Model Deep-Hooked Dehooker Model 6P10 (6'), BP08 (8'), or BP11 (12') (Figure 8A).* See Section (C)(2)(i) for description;

(iii) *ARC 6' or greater Pole Big Game Dehooker Model P610.* See Section (C)(2)(iii) for description;

E) *Long-handled device to pull an "Inverted V."* The primary use for this tool is to pull a "V" when implementing the "Inverted V" dehooking technique for disentangling and dehooking

entangled sea turtles. One long-handled device to pull "Inverted V" is required onboard. If 6' J-Style Dehooker is used for Item D, it would also satisfy this requirement. Minimum design standards are as follows:

(1) Design Standards:

(i) *Hook end.* The device, such as a boat or gaff hook, should be constructed of stainless steel or aluminum. The semicircular or "J" shaped end must be securely attached to a handle. A sharp point, such as a gaff hook, is only to be used in holding the monofilament line and should never contact the sea turtle;

(ii) *Extended reach handle.* The handle must be a minimum length equal to the freeboard of the vessel or 6', whichever is greater. Freeboard is defined here as the working distance between the top rail of the gunwale to the water's surface and would vary based on the vessel design.

(2) Example models meeting current design standards:

(i) *Any 6' or greater long-handled J-Style Dehooker or "Flip Stick" [e.g., ARC Model LJ6P (6') (Figure 3 and 8A)]* See Paragraph (C)(2)(I) above for a description;

(ii) *Any standard boat hook [e.g., 6'-8' Davis Telescoping Boat Hook, Garelick Telescoping Boathook];*

(iii) *Any standard fishing gaff [e.g., 6'-8' Pompanette Gaffs or 6' Taper-Tip Gaffs (Figure 8A)].*

(F) ***A standard automobile tire*****.** A tire is required for supporting the turtle while it is onboard. If the turtle is too large for the tire, it must be contained and supported on a cushioned surface. A minimum of one tire is required onboard, although an assortment of sizes is recommended to accommodate a range of turtle sizes.
Minimum design standards are as follows:

(1) Design Standards

(i) The tire should be a standard passenger vehicle tire, not from a truck or heavy equipment, and should be free of exposed steel belts.

(2) Example models meeting current design standards:

(i) *Any standard automobile tire that is free of exposed steel belts.*

(G) ***Short-handled dehooker for internal hooks.*** This dehooker is designed to remove internal hooks from boated sea turtles, including hooks in the front of the mouth, as well as external

hooks. One short-handled device for removing internal hooks is required onboard. Minimum design standards are as follows:

(1) Design Standards:

(i) *Hook removal device.* The 1/4" 316 L stainless steel end must allow the hook to be secured and the barb to be shielded without re-engaging during the removal process. It must be no larger than 1 5/16" outside diameter. It cannot have any unprotected terminal points (even blunt ones) as this could cause injury to the esophagus during hook removal. A sliding PVC bite block must be used to protect the beak and facilitate hook removal if the turtle bites down on the dehooking device. The bite block should be constructed of a ¾" inside diameter high impact plastic cylinder (*e.g.*, Schedule 80 PVC) that is 10" long to allow for 5" of slide along the shaft. The device must be of a size appropriate to secure the range of hook sizes and styles observed to date in the BLL fishery;

(ii) *Handle length*. The handle should be 16"- 24" long with a ~ 5" long tube T-handle of ~ 1" diameter recommended.

(2) Example models meeting current design standards:

(i) *16" Hand Held (sleeved) Bite Block Deep-Hooked Turtle ARC Dehooking Device Model ST08 (Figure 8B).* This device is constructed of a ¼" 316 L stainless steel rod curled into a pigtail spiral loop end. The loop is placed at a 13 angle offset to create a 1/8" gap between rod and loop to facilitate line engagement. The loop is designed at a 24 angle bend from the rod, and an inside diameter of 13/16" and an outside diameter of 1 5/16". This item is covered under U.S. Patent Pending # 10/712, 731, International Patent Pending # PCT/US2003/036233 held by Aquatic Release Conservation of Ormond Beach, FL.

(H) ***Short-handled dehooker for external hooks.*** These dehookers are designed for use when the hook is external, or when hooks are located in the front of the mouth. One of these types of short handled devices for removing external hooks is required onboard. The short handled dehooker for internal hooks used for Item G would also satisfy this requirement. Minimum design standards are as follows:

(1) Design Standards:

(i) Hook removal device. The dehooker should be constructed of 5/16" 316 L stainless steel, and the design should be such that the hook could be rotated out without pulling it out at an angle. The dehooking end should be blunt and all edges rounded. The device must be of a size appropriate to secure the range of hook sizes and styles observed to date in the BLL fishery;

(ii) *Handle length.* The handle should be 16"-24" long with a ~5" long tube T-handle of ~1" diameter recommended.

(2) Example models meeting current design standards:

(i) *The "J-Style Dehooker" [e.g., ARC Hand Held Large J-Style Dehooker Model LJ07 or LJ24 (Figure 3, 8A & B)]*. See description in Section (D)(2)(i) above;

(ii) *16" Hand Held (sleeved) Bite Block Deep-Hooked Turtle ARC Dehooking Device Model ST08 (Figure 8B).* See description in Section (G)(2)(I) above;

(iii) *The "Scotty's Dehooker (Figure 4 and 8B)."* This device has (2) 1 ¼" long prongs at the end to form a ¾" wide fork.

(I) ***Long-nose or needle-nose pliers.*** Long-nose or needle-nose pliers could be used to assist in removal of hooks that are deeply embedded in the animal's flesh and must be twisted during removal, or for removing hooks from the front of the mouth. They are also useful in holding PVC splice couplings in place when used as mouth openers. One pair of pliers is required onboard. Minimum design standards are as follows:

(1) Design Standards:

(i) *General.* They should be ~ 12" in length. It is recommended that these be of stainless steel material.

(2) Example models meeting current specifications:

(i) *Any 12" Long-nose or Needle-nose pliers* [*e.g., 12" S.S. NuMark Model #030281109871 (Figure 8C)]*.

(J) ***Bolt cutter***. Bolt cutters are essential for removing hooks, and must be of a size practical to be used inside the turtle's mouth. They are used to cut off the eye or barb so that the hook could be pushed through easily without causing further injury to the sea turtle. They also are used to cut off as much of the hook as possible when the remainder cannot be removed. One pair of bolt cutters is required onboard. Minimum design standards are as follows:

(1) Design Standards:

(i) *General*. They should be ~ 14-17" in total length, 4" long blades that are 2 ¼" wide (closed) with 10-13" long handles. They must be able to cut hard metals such as stainless or carbon steel hooks up to 1/4" diameter.

(2) Example models meeting current design standards:

(i) *Any bolt cutters meeting design standards [e.g., H.K. Porter Model 1490 AC (Figure 8C)]*.

(K) ***Monofilament line cutter.*** Monofilament line cutters must be used to remove line as close as possible to the eye of the hook in the event that the hook was swallowed, or when the hook cannot be removed. This reduces the amount of gear retained by the animal in the event that the hook cannot safely be removed. One pair of monofilament cutters is required onboard. Minimum design standards are as follows:

(1) Design Standards:

(i) *General*. These should be ~ 7 ½" in length with 1 ¾" long, 5/8" wide (closed) blades, preferably Teflon (a trademark owned by E.I. Dupont de Nemours and Company Corp.) coated.

(2) Example models meeting current design standards:

(i) *Any monofilament cutters meeting design standards [e.g., Jinkai Model MC-T (Figure 8C)]*.

(L) Mouth openers and mouth gags (Figure 8E). In many cases, a mouth opener or gag must be used in order to remove internal hooks from boated turtles. It must be designed to allow access to the hook or line without causing further injury to the turtle. It is recommended that at least one type allow for hands-free operation of the gear removal devices once the gag is in place (only the canine mouth gag satisfies this recommendation, see item (2) below). Design standards are included in the item description. A minimum of 2 of the 7 different types/categories of mouth openers/gags from the following list is required onboard:

(1) *A block of hard wood*. A smooth block of hard wood is an inexpensive, effective and practical mouth-gagging device that meets these requirements and is readily available on most vessels. Placed in the corner of the jaw, it is used to gag open the mouth. The wood should be of a type that does not splinter (e.g., maple) with rounded edges, and it should be sanded smooth, if necessary, and soaked in water to soften the wood. The dimensions should be approximately 11" x 1" x 1". Any block of hard wood meeting these specifications is acceptable. A long-handled, wire shoe brush with a wooden handle and the wires removed is an inexpensive, effective and practical device that meets these requirements (e.g., *Olympia Tools Long-Handled Wire Brush and Scraper #974174);*

(2) *A Set of (3) Canine mouth gags*. The use of canine mouth gags is highly recommended as one of the categories used to hold the mouth open, as the gag locks into the open position and allows for hands free operation once it is in place. A set of canine mouth gags must include one of each of the following sizes: small (~5"), medium (~6"), and large (~7"). They must be constructed of stainless steel. A set includes one of each size and can be purchased through veterinary supply businesses. An example set meeting these specifications is *Jorvet Model #4160, 4162, and 4164;*

(3) *A set of (2) sturdy dog chew bones.* These "chew toys" are inexpensive, easy to handle, and sold in several sizes in pet stores. Placed in the corner of the jaw, it is used to gag open the

mouth. They should be designed of durable nylon or thermoplastic polymer, strong enough to withstand biting without splintering. One large (e.g., "Giant" 8" or "Wolf" 5 ½") and one small (e.g., "Regular" 4 ½" or "Petite" 3 ½") are required to accommodate a variety of beak sizes. Example models meeting current specifications include: Nylabone (a trademark owned by T.F.H. Publications, Inc.); Gumabone (a trademark owned by T.F.H. Publications, Inc.); and Galileo dog chew (a trademark owned by T.F.H. Publications, Inc.);

(4) *A set of (2) rope loops covered with hose*. A set consists of two pieces of poly braid rope covered with light duty garden hose each tied or spliced into a loop to provide a one-handed method for keeping the mouth open. The upper loop gives the user control using one hand, and the second rope/hose length is secured on lower beak using the user's foot for extra control. This keeps the mouth open to allow access to the hook and/or line. Two 36" lengths of poly-braid rope (3/8" diameter suggested) should be covered with an 8" section of ½" or ¾" light duty garden hose and each tied or spliced into 2 loops. Any set of rope loops covered with hose meeting these specifications is acceptable;

(5) *A hank of rope.* A lanyard of braided nylon rope could be folded to create a hank of rope. Placed in the corner of the jaw, it is used to gag open the mouth. A 6' lanyard of approximately 3/16" braided nylon rope could be folded to create a hank of rope. Any size soft braided nylon rope is acceptable, provided it creates a hank of approximately 2-4" thickness;

(6) *A set of (4) PVC splice couplings.* Inexpensive PVC couplings could be positioned inside the mouth to allow access to the back of the mouth. They should be held in place with the needle-nose pliers. Standard Schedule 40 PVC couplings in a variety of sizes (1", 1 ¼", 1 ½", and 2") are required to ensure proper fit and access. A set includes all 4 sizes;

(7) *A large avian oral speculum*. An avian oral speculum gives you the ability to hold the mouth open and control the head with one hand while removing the hook with the other hand. This tool is for use only on small turtles, as larger turtles may be able to crush the speculum. The avian oral speculum must be 9" long, and constructed of 3/16" wire diameter surgical stainless steel (Type 304). It must be covered with 8" of clear vinyl tubing (5/16" outside diameter, 3/16" inside diameter). These can be purchased through veterinary supply businesses. Example models meeting these specifications include: Model # 85408 from Webster Vet Supply; VSP # 216-08 from Veterinary Specialty Products; Jorvet Model J-51z; and Krusse Model 273117.

Recommended, but not Required, Equipment and Design Standards

M) *Turtle Tether* *(aka "Flipper Gripper") and Ninja Sticks* (Figure 6). Currently, two types of turtle tethers have been developed to reduce safety risks associated with removing gear from active sea turtles not boated, particularly leatherbacks. Their function is to secure the front flipper(s) of the sea turtle so that the animal can be controlled at the side of the vessel while the gear is removed. This will facilitate rapid gear removal from the animal while reducing the chances that taut monofilament line could snap under the strain of the active sea turtle and recoil

towards the crew members on deck. Specifications for the two types currently in use are as follows:

(1) Design Standards:

(i) *Line* 20' of ½" Hard Lay negative buoyancy line is used to make a ~30" loop to slip over the flipper. The line is fed through a ¾" fair lead at the end of a pole, and through a ¾" eyebolt in the midsection. A ½" quick release cinch cleat holds the line in place near the end of the pole.

(ii) *Extended reach handle.* A handle with a minimum length equal or greater than 150% of the freeboard, or a minimum of 6', whichever distance is greater, is needed. Freeboard should be defined as the working distance between the top rail of the gunwale to the water's surface, and will vary based on the vessel design. There is no restriction on the type of material used to construct this handle, as long as it is sturdy. The handle must include a tag line to attach the tether to the vessel to prevent the turtle from breaking away with the tether still attached.

The *ARC Turtle Tether Model TT08 (8') or TT12 (12') (Figure 6 and 8A*) currently meets the design specifications).

(ii) *Ninja sticks* (Figure 7).

(1) Design Standards:

(i) *Line.* Approximately 30-35' of ½" to 5/8" soft lay polypro or nylon line is fed through 2 PVC conduit poles and knotted using an overhead (recommended) knot at the end of one pole. There should be ~18-24" of exposed rope between the poles to be used as a working surface to capture and secure the flipper. Knot the line at the end of the second pole to prevent line slippage. The remaining line is used to tether the apparatus to the boat.

(ii) *Extended reach handles* (2). Two handles each with a minimum length equal to or greater than 100% of the freeboard are needed. Freeboard should be defined as the working distance between the top rail of the gunwale to the water's surface, and will vary based on the vessel design. Two lengths of rigid electrical conduit #40 sunlight resistant ¾" PVC or similar should be used.

References Cited in Appendix A

Epperly, S., L. Stokes, and S. Dick. 2004. Careful Release Protocols for Sea Turtle Release with Minimal Injury. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Fisheries Science Center Technical Memorandum # 524.

Hataway, D. and S. Epperly. 2004. Removing Fishing Gear from Longline Caught Sea Turtles. http://www.sefsc.noaa.gov/seaturtlefisheriesobservers.jsp. Video. National Marine Fisheries Service, Southeast Fisheries Science Center, Miami, FL.

VESSEL EQUIPMENT LIST FOR PREFERRED ALTERNATIVE 3

Handle length for all long handled items must be 6' in length or 150 percent freeboard in length, whichever is greater:

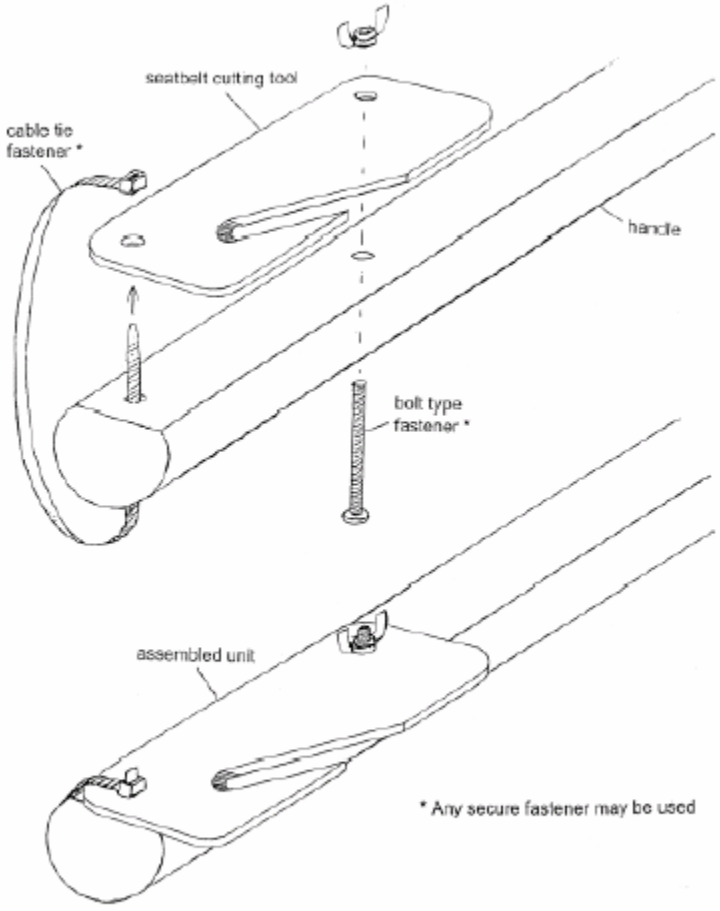
A- (1).Long-handled line cutter with at least a 6' handle; replacement set of cutting blades.
B- (1) Long-handled dehooker for internal hooks.
C- (1) Long-handled dehooker for external hooks (The long-handled dehooker for internal hooks used for Item C would also satisfy this requirement)
D- (1) Long-handled device to pull an "Inverted V" (If 6' J-Style Dehooker is used for Item D, it would also satisfy this requirement)
E- (1) Long-handled Dipnet with at least a 6' handle
F- (1) Standard automobile tire.
G- (1) Short-handled dehooker for internal hooks.
H- (1) Short-handled dehooker for removing external hooks (The short- handled dehooker for internal hooks used for Item G would also satisfy this requirement).
I- (1) Long-nose or needle-nose pliers.
J- (1) Bolt cutter.
K- (1)Monofilament line cutter.
L- (2) Different types of mouth openers/mouth gags from the following list:

1) A block of hard wood;
2) A set of (3) canine mouth gags;
3) A set of (2) sturdy dog chew bones;
4) (2) rope loops covered with hose;
5) A hank of rope;
6) A set of (4) PVC splice couplings;
7) A large avian oral speculum.

Recommended Equipment:

(M)-(1) Turtle tether.

FIGURE 1 **NOAA/ARCENEAUX LINE CLIPPER**



50 CFR 660.33 Ch. VI (10-1-02 Edition)
[65 FR 16347, Mar. 28, 2000, as amended at 67 FR 40236, June 12, 2002; 67 FR 48576, July 25, 2002]

FIGURE 2

NOAA/LAFORCE LINE CUTTER

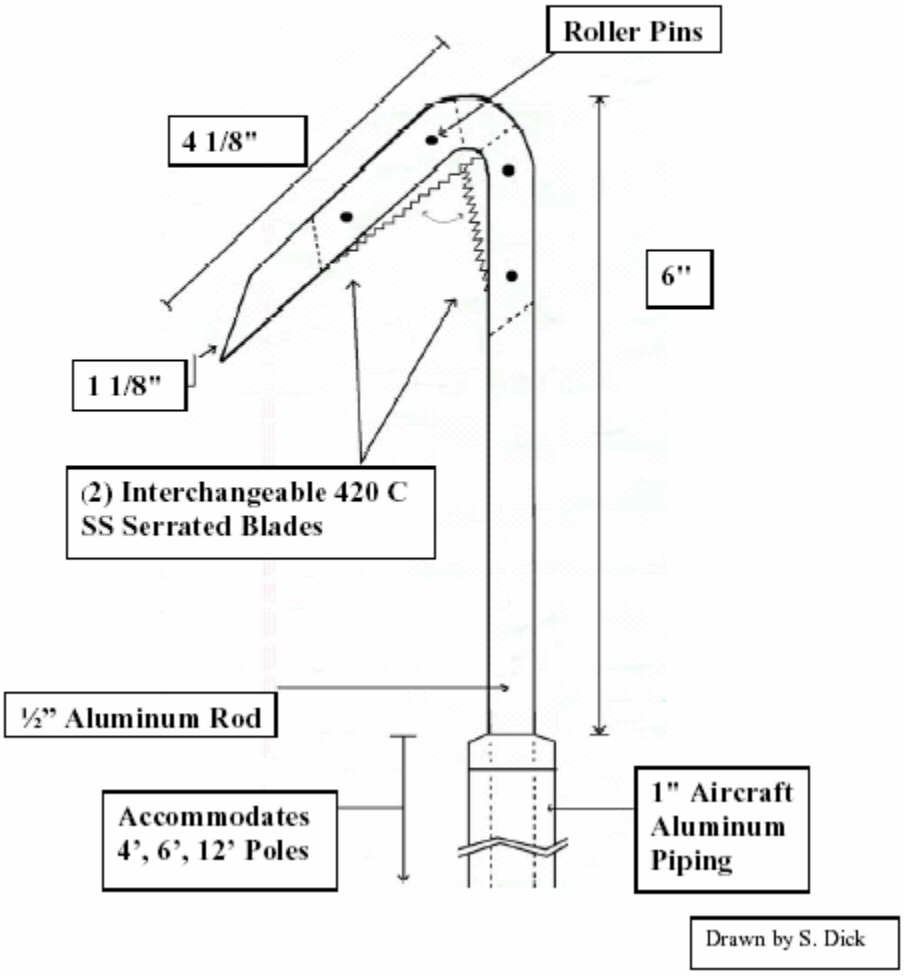


FIGURE 3

J-STYLE DEHOOKER

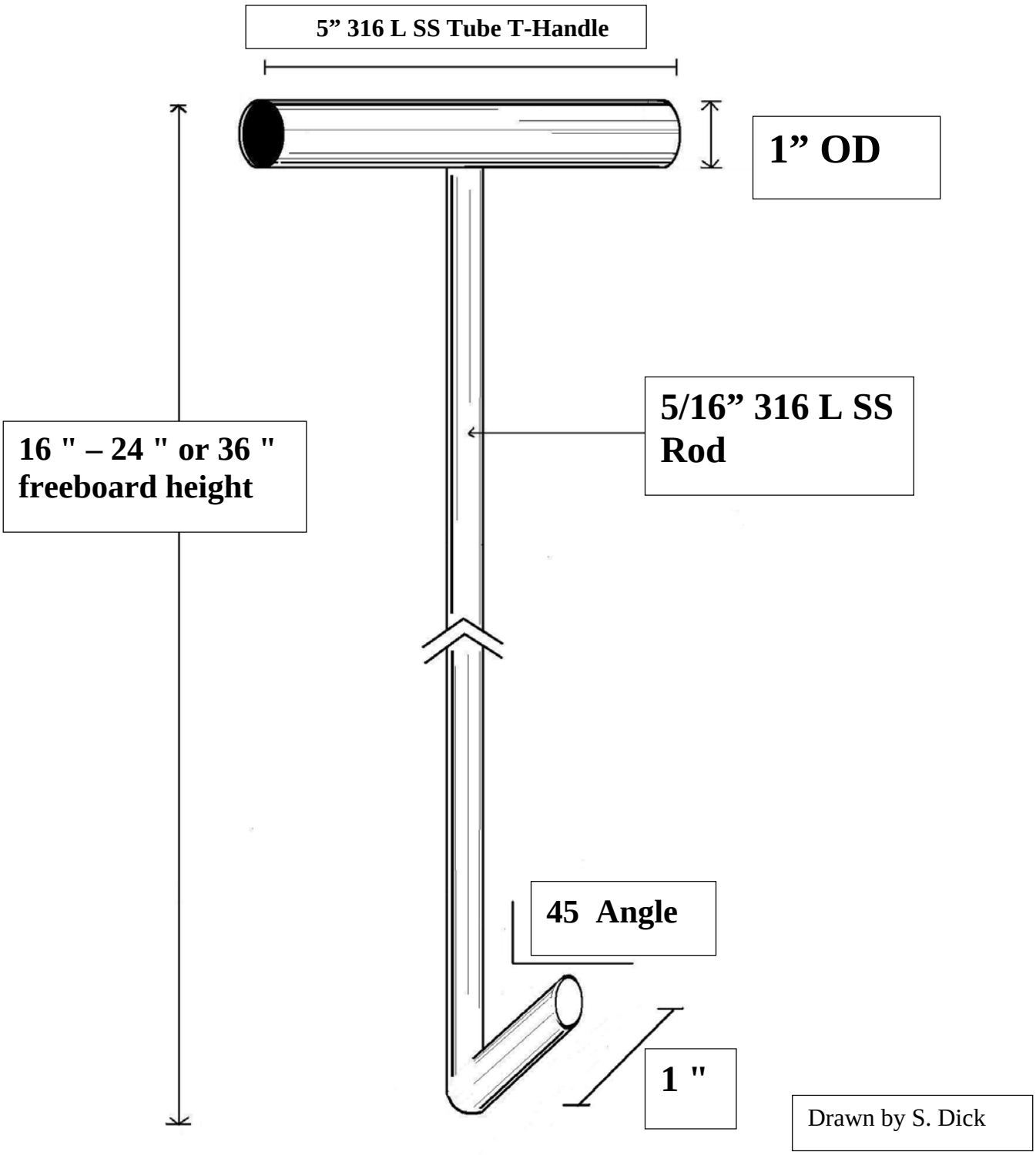
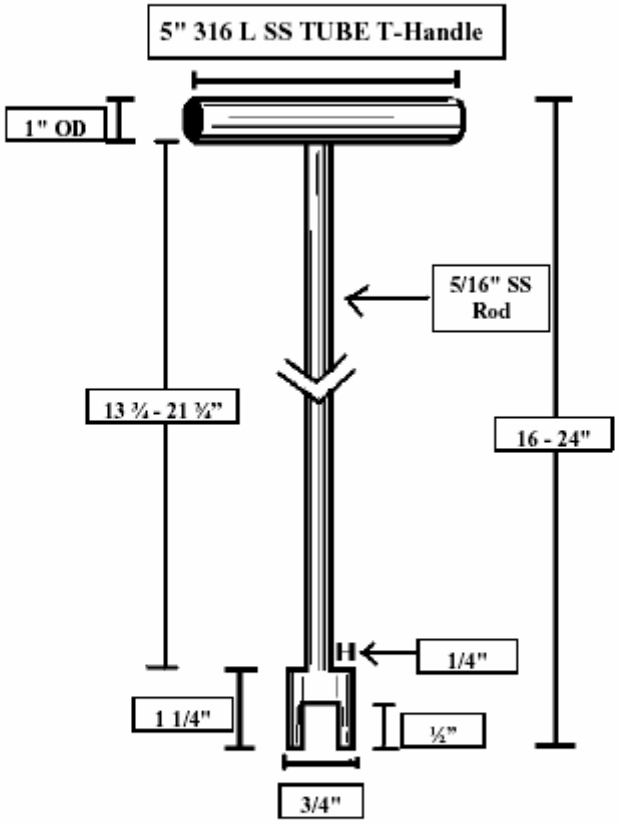


FIGURE 4

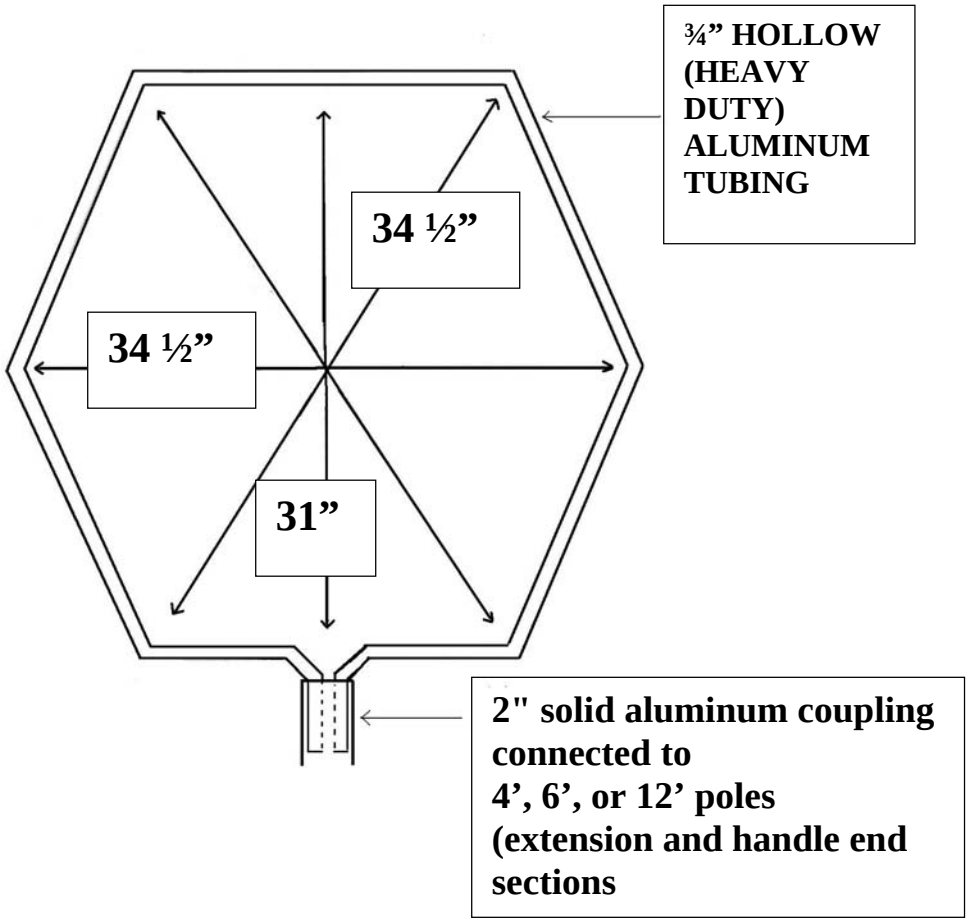
SCOTTY'S DEHOOKER



Drawn by S. Dick

FIGURE 5

LIGHTWEIGHT DIPNET



97"circumference 2 ½" square nylon mesh, with 38" bag depth (coated/dipped) knotless webbing

Drawn by S. Dick

Figure 6

Turtle Tether

Drawn by S. Dick

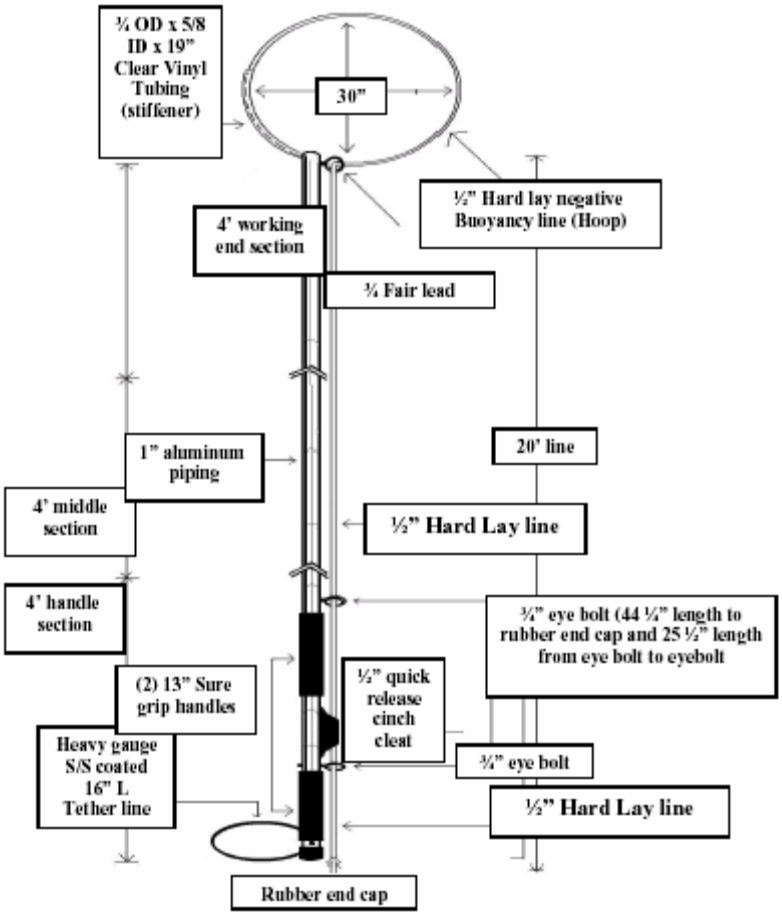
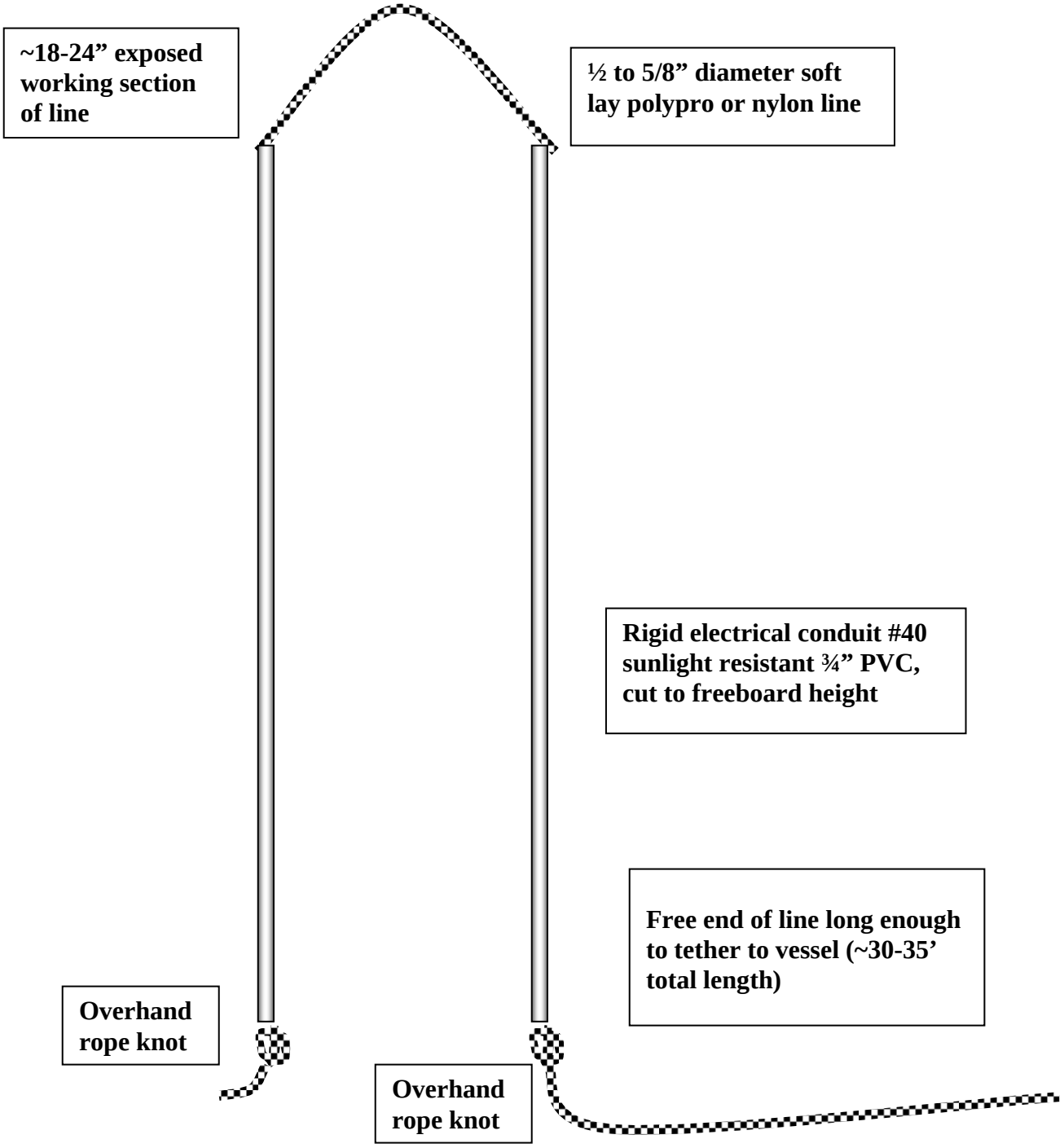
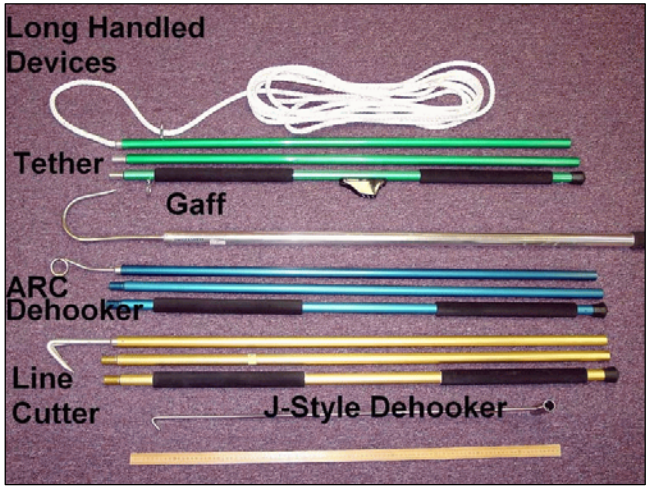


Figure 7

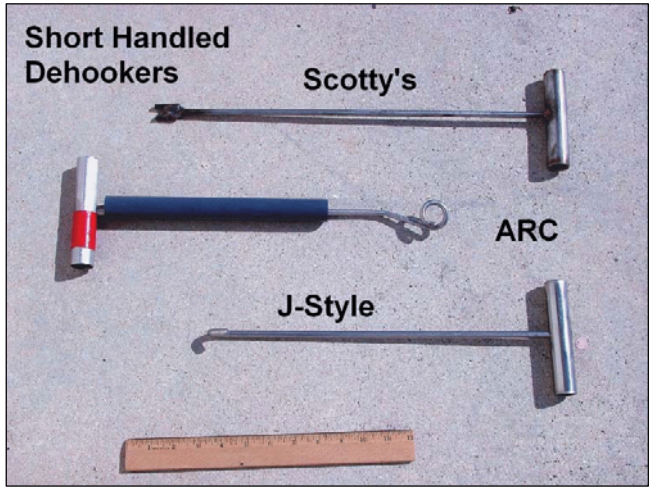
Ninja Sticks



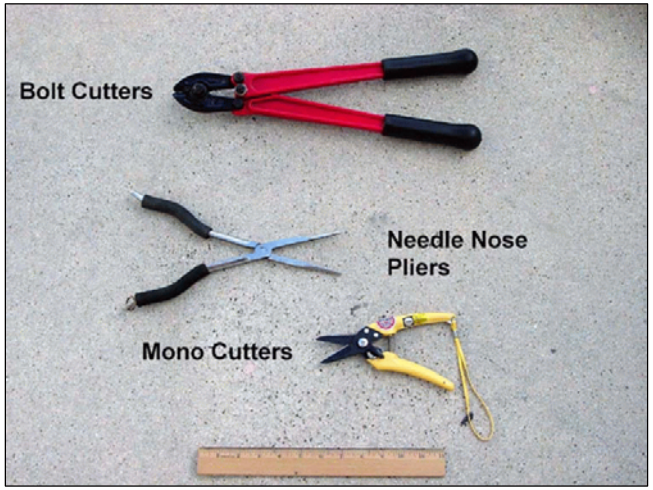
A



B



C



D

E

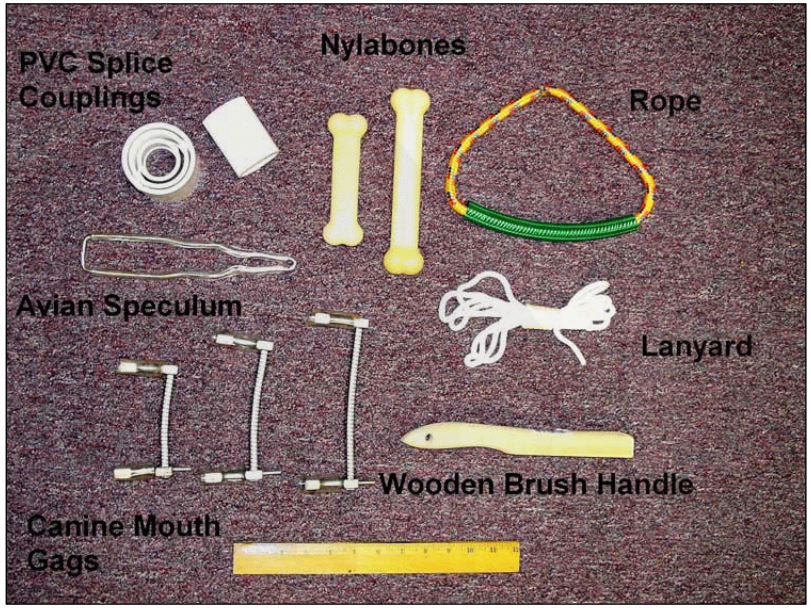


Figure 8

Table A. 1. List of equipment that would meet the NMFS design standards for alternatives 1-3.

Equipment	Design Standards	Example Model	Example Source	Requirement	Estimated Retail Cost of Example Models
(A) Long-handled line cutter	Section (A)(1)	-*NOAA/Laforce Line Cutter ARC Model NL06* -*NOAA/Arceneaux Line Clipper (seat belt cutter) with suitable handle*	-Aquatic Release Conservation (ARC) (877) 411-4272 www.dehooker4arc.com -Seat Belt cutters: goldenhourmed.com **or** allmed.net	1 required for turtles not boated	-$160 (NL06 Laforce 6' line cutter) -$200 (NL08 Laforce 8’ line cutter) -$210 (NL12 Laforce 12’ line cutter) -$90 (NLIN Laforce 6" cutter with end that could be attached to a handle) -$140 (NL04 Laforce 4' line cutter with end that could be screwed into ARC extension handle) -$5 (NOAA/Arceneaux Line Clipper (sea belt cutter) to be attached to a handle) *Types of handles* -$50 (SKU MSP-030 ARC 4’ middle section of extension handle-no hand grips) -$55 (SKU MSP-031 ARC 4’ end section of extension handle with hand grips) -$36-$45 (8'-12' wooden poles; 2” banister poles from Lowes) ~$40 (8' aluminum pole) *Replacement Blades* -$15 (NLBL ARC serrated replacement blades for Laforce line cutter)

Equipment	Design Standards	Example Model	Example Source	Requirement	Estimated Retail Cost of Example Models
(B) Long-handled dehooker for internal or external hooks	Section (B)(1)	*-ARC Pole Dehooker Model 6P10, BP08, BP11* *-ARC pigtail dehooker Model BP04, BPIN and suitable handle* *ARC 6' Pole Big Game Dehooker Model P610*	-Aquatic Release Conservation (877) 411-4272 www.dehooker4arc.com -Home Depot www.homedepot.com (800) 553-3199 -Lowes www.lowes.com (800) 445-6937 -local hardware store	1 required for turtles not boated	-$120 (6P10 ARC 6' Pole Dehooker) -$210 (BP08 ARC 8' and BP11 ARC 12' Pole Dehooker) -$100 (BP04 ARC 4' pigtail dehooker with end that could be screwed into ARC extension handle) -$40 (BPIN ARC 9" pigtail dehooker with end that could be attached to a handle) -$120 (P610 ARC 6' Big Game Dehooker) *Types of handles* -$50 (SKU MSP-030 ARC 4' middle section of extension handle-no hand grips) -$55 (SKU MSP-031 ARC 4' end section of extension handle with hand grips) -$36-$45 (8'-12' wooden poles, 2" banister poles from Lowes) ~$40 (8' aluminum pole)

Equipment	Design Standards	Example Model	Example Source	Requirement	Estimated Retail Cost of Example Models
(C) Long-handled dehooker for external hooks only	Section (C)(1)	-*ARC J-Style Dehooker Model LJ6P (6')*	-Aquatic Release Conservations (877) 411-4272	1 required for turtles not boated (but requirement could be filled with an option from B above)	-$100 (LJ6P ARC J-Style Dehooker)
(D) Long-handled device to pull "Inverted V" (boat hook, gaff, etc.)	Section (A)(1)	-*West Marine Pompanette or Taper-Tip Gaffs* -*Davis Telescoping Boat hook* -*Garelick Telescoping Boat hook* -*ARC J-Style Dehooker Model LJ6P*	-West Marine (800) 262-8464 -www.boatersworld.com (877) 690-0004	1 required for turtles not boated (but requirement could be filled with D from above)	-$65-$78 (6'-8' Pompanette Gaffs) -$95 (6' Taper-Tip Gaffs) -$20-$33 (6'-8' Davis Telescoping Boat hooks) -$35 (12' Garelick Telescoping Boat hook -$100 (LJ6P ARC J-Style Dehooker)

Equipment	Design Standards	Example Model	Example Source	Requirement	Estimated Retail Cost of Example Models
(E) Dip Net	Section (E)(1)	*-ARC 6' Breakdown Lightweight Dip Net Model DN6P, DN04* *-Net Assembly (hoop, net, coupling) DNIN and suitable handle* *-Ranger Landing Net Model 997* *-Lindgren-Pitman Model NMFS-Turtle Net*	-Aquatic Release Conservation (877) 411-4272 www.dehooker4arc.com -Bluewater Fishing Tackle Company 610-270-9620 -Lindgren-Pitman, Inc. (954) 943-4243	1 required for turtles boated	-$210 (DN6P ARC 6' dipnet) -$225 (DN08 ARC 8’ dipnet) -$275 (DN14 ARC 12’ dipnet) -$160 (DNIN ARC net assembly; attach to a handle) -$185 (DN04 ARC 4’ dipnet with end that could be screwed into ARC extension handle) -$61-82 (Ranger Landing Net Model 997 with 6’-12’ handle; contact Bluewater Fishing Tackle Company) -$249.95 Lindgren-Pitman *Types of handles* -$50 (SKU MSP-030 ARC 4’ middle section of extension handle-no hand grips) -$55 (SKU MSP-031 ARC 4’ end section of extension handle with hand grips) -$36-$45 (8'-12' wooden poles, 2” banister pole from Lowes) ~$40 (8' aluminum pole)
(F) Standard Automobile Tire	Section (F)(1)		local tire store	1 required for turtles boated	~$20
(G) Short-handled	Section (G)(1)	*-16" ARC Hand Held (sleeved) Bite Block*	-Aquatic Release Conservation (877) 411-4272	1 required for turtles boated	-$50 (STO8 ARC Bite Block Deep Hooked Turtle Dehooker)

Equipment	Design Standards	Example Model	Example Source	Requirement	Estimated Retail Cost of Example Models
dehooker for internal and external hooks		*Deep Hooked Turtle Dehooker Model ST08*			
(H) Short-handled dehooker for external hooks	Section (H)(1)	*-Hand held large J-Style Dehooker [e.g., ARC Model LJ07 (16") or LJ24 (24")]* *-Scotty's Dehooker [e.g., ARC Model SC16 (16") or SC24 (24")]*	-Aquatic Release Conservation (877) 411-4272	1 required for turtles boated (but requirement could be filled with G from above)	-$14 (LJ07 ARC 16" J-Style Dehooker) -$22 (LJ24 ARC 24" J-Style Dehooker) -$20 (SC16 16" Scotty's Dehooker) -$28 (SC24 24" Scotty's Dehooker)
(I) Long-nose/needle-nose pliers	Section (I)(1)	*-12-in. (30.48-cm) S.S. NuMark Model #03028110987* *-any 12-inch (30.48-cm) stainless steel long-nose or needle-nose pliers*	-Boat's USA (800) 937-2628 -JD's Big Game Tackle (800) 660-5030 -local boat supply **or** hardware store	1 required for turtles boated	$20
(J) Bolt cutter	Section (J)(1)	*-Manufacturer H.K. Porter 1490 AC*	-Grainger (888) 361-8649 www.grainger.com -Ben Meadows (800) 356-0783 www.benmeadows.com -Lab Safety Supply (800) 356-0783 www.LSS.com	1 required for turtles boated	$40
(K) Monofilament Cutter	Section (K)(1)	*Jinkai model MC-T*	-Tackle Direct (888) 354-7335 -www.captharry.com (800) 327-4088	1 required for turtles boated	$21

Equipment	Design Standards	Example Model	Example Source	Requirement	Estimated Retail Cost of Example Models
			-local boat supply store		
(L) Mouth openers/mouth gags: Minimum of 2 different categories (#1-7) - all items in category required	Section (L)			2 required for turtles boated	
(1) Block of hard wood	Section (L)(1)	-*Wire brush wooden shoe handle e.g., Olympia Tools Long-handled Wire Brush and Scraper #974174*	-Home Depot (800) 553-3199 www.homedepot.com -Lowes (800) 445-6937 www.lowes.com -local hardware store		$2.50
(2) Set of (3) canine mouth gags	Section (L)(3)	-*Jorvet #4160 (small), #4162 (medium), and #4164 (large)*	-Webster Vet Supply (800) 225-7911 -www.cotrancorp.com (800) 345-4449 -Jorgensen Laboratories jorvet.com (800) 525-5614		$12.60 each = $37.80/set
(3) Set of (2) sturdy dog chew bones	Section (L)(3)	-*Nylabone™* -*Gumabone™* -*Galileobone™*	-Pet Supermarket (954) 351-0834 -www.petsmart.com (888) 839-9638 -local pet supply store		$3.70-$5.00 each= $8.70/set
(4) Set of (2) rope loops covered with hose	Section (L)(4)		-Home Depot (800) 553-3199 www.homedepot.com -Lowes (800) 445-6937 www.lowes.com		$0.50

Equipment	Design Standards	Example Model	Example Source	Requirement	Estimated Retail Cost of Example Models
			-local hardware store		
(5) Hank of rope	Section (L)(5)	*6' lanyard ~ 3/16" braided nylon rope*	-Home Depot (800) 553-3199 www.homedepot.com -Lowes (800) 445-6937 www.lowes.com -local hardware store		$0.75
(6) Set of (4) PVC splice couplings	Section (L)(6)		-Home Depot (800) 553-3199 www.homedepot.com -Lowes (800) 445-6937 www.lowes.com -local hardware store		$0.25-$0.60 each = $1.50/set
(7) Large avian oral speculum	Section (L)(7)	*-Webster Vet Supply #85408* *-Veterinary Specialty Products # 216-08* *-Jorvet Model J-51z*	-Webster Vet Supply (800) 225-7911 -Veterinary Specialty Products Vet-products.com (800) 362-8138 -jorvet.com		-$0.50 vinyl tubing -$15 avian speculum
(M) Turtle tether	Section (M)(1)	*-ARC Turtle Tether Model TT06 (6'), TT08 (8'), TT12 (12')* *- Ninja sticks*	-Aquatic Release Conservation (877) 411-4272	Recommended for turtles not boated	-$170 (TT06 6' ARC Turtle Tether) -$200 (TT08 8' ARC Turtle Tether) -$250 (TT12 12' ARC Turtle Tether) ~$40 negative buoyancy line with PVC to make ninja sticks